

STATISTICAL ANALYSIS OF CAMPYLOBACTER RISK FACTORS AT BROILER FARMS

Weyermair, K.¹, Pless, P.², Matt, M.³

¹ *Department for Data, Statistics, Risk Assessment, Austrian Agency for Health and Food Safety, Graz, Austria*

² *Veterinary Administration, Styrian Government, Graz, Austria*

³ *Department for Data, Statistics, Risk Assessment, Austrian Agency for Health and Food Safety, Innsbruck, Austria*

ABSTRACT

The bacterium *Campylobacter* is recognized as the most common cause of bacterial foodborne disease in Austria. *Campylobacter* is mainly related to poultry - however no symptoms are caused in birds. Several risk factors are discussed contributing the entry of *Campylobacter* in broiler flocks.

In order to identify risk factors in Austrian broiler farms, 53 flocks were investigated regarding 18 hygiene characteristics by official veterinarians. Each characteristic was rated with values 1 to 5 corresponding to – roughly speaking - low to high hygiene, respectively. The *Campylobacter* status of the flocks was determined by faecal samples at slaughter over several rearing periods and was also rated with values 1 to 5 (always *Campylobacter* positive to never *Campylobacter* positive).

The statistical analysis (performed with SAS/STAT software) intended to model the influence of the 18 hygiene characteristics on the *Campylobacter* status with ordinal logistic regression. As the 18 predictor variables were correlated among each other, first principal component analysis was used to characterize relations within the set of predictor variables and the logistic regression model was established on the scores of the principal components. Since the effect of a change in one single hygiene characteristic was difficult to determine, simple sum scales on the identified variable bundles were used instead of the scores. The estimation of the *Campylobacter* status with both models led to similar results and because of easier interpretation the second model was preferred. This model may serve as a valuable tool in the sense of a “*Campylobacter*-herd-status prediction tool” used for the assessment of several intervention strategies as well as an informatory application for farmers, vets and interested stakeholders. Validation of the prediction model with new data of other farms is planned.