

Assessing and Predicting Feedlot Mortality and Culling Using Standard Feedlot Arrival Data

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Introduction

Economic losses due to mortality and out-cattle (any animal that died or was culled prior to harvest) are substantial in commercial feedlots, and the ability to estimate potential losses at arrival would be a valuable tool. Our objectives were to quantify effects of arrival risk factors on cumulative mortality and out-cattle risk and assess the resulting models' performance at predicting these risks in commercial feedlots.

Materials and Methods

We collected data on 71,453 lots arriving during 2000 – 2007 from 23 midwest feedlots. We used negative binomial regression models with lot-level counts of dead and out cattle as dependent variables (offset by number at risk), and arrival year, month, weight, gender, and relevant two-way interactions as independent variables. Following the quantification of risk factors, the predictive abilities of the models were assessed using a different data set containing 2008 and 2009 data.

Results

Cumulative mortality risk within lots ranged from 0% to 31.9% (median = 0.80%), whereas out-cattle risk varied from 0% to 100% (median = 1.35%). All risk factors and two-way interactions investigated were significantly ($p < 0.05$) associated with these outcomes. Results and performance of predictive models varied and will be discussed relative to specific classes of cattle.

Significance

Factors associated with feedlot mortalities have been previously described, but quantifying these effects on both mortality and out cattle is unique. Determining the predictive capabilities of data commonly collected at arrival is an important step towards providing veterinarians and feedlot managers with quantitative information about economically relevant health outcomes.