

# Are there opportunities to strengthen animal welfare through improved management of feedlot chronic pens?

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## Introduction

In feedlot cattle production systems, there is a population of sick cattle that fail to respond to treatment, are deemed chronically ill, and typically placed in a “chronic pen”. This population of chronic cattle is understudied in the current literature, and the absence of evidence-based protocols and guidance resources may lead to specific cattle welfare risks associated with chronic pens. Anecdotally, management of this population of animals varies widely across feedlots with potential impacts on animal welfare and productivity. The purpose of this descriptive epidemiologic study was to identify and describe key demographic patterns in chronic feedlot cattle populations.

## Materials and methods

Data from 17 feedlots located in the U.S. (8 feedlots) and Canada (9 feedlots) over a 7-year period (2014-2020) was retrospectively retrieved from a large feedlot consulting and data-management service (Feedlot Health Management Services, A Division of TELUS Agriculture Solutions Inc., Okotoks, Alberta, Canada). Data received included individual chronic animal demographic information and treatment records, as well as data for each lot of cattle received during the 7-year period. For the purpose of this study, chronic cattle were defined as any animal that had been assigned to the designated chronic pen for the feedlot.

## Results

The average number of cattle placed per year per feedlot was  $26,321 \pm 17,732$  head. The total number of cattle placed at all 17 feedlots over the 7-year span was 3,044,358 head. The average chronicity rate of this population, calculated as the number of chronic animals out of the total population of animals at the feedlots, was  $2.3 \pm 1.8\%$ . Across feedlots, the minimum and maximum chronicity rates were 0.08%, and 7.7%, respectively. Across all feedlots, 41.8% of chronic cattle were treated at least once for respiratory issues, 27.8% as bullers, 7.9% for lameness, 2.0% for musculoskeletal issues, 1.5% for metabolic issues, 3.1% for other diagnoses, and 15.9% of chronic cattle were treated

for multiple issues. Across all feedlots, 68.3% of chronic cattle were shipped, 20.5% died (either naturally or via euthanasia), and 11.0% were railed (shipped early before reaching market weight). These outcomes varied considerably across feedlots, with a range of 20.1 to 94.1% of chronics shipped, 5.9 to 37.5% that died, and 0 to 49.5% railed. When considering the 20.5% of chronic calves that died, mortality causes were attributed to: infectious (56.8%), metabolic (7.8%), lameness (3.7%), musculoskeletal (1.6%), buller (0.6%) and other (29.7%). Of the chronic calves that died in the feedlots, 13.8% were euthanized. Individual feedlot euthanasia rates ranged between 0% and 52%. Euthanasia rates by mortality causes were 8.3% of infectious mortalities, 78.1% of lameness mortalities, 58.5% of musculoskeletal mortalities, 12.1% of metabolic mortalities, 37.2% of buller mortalities, and 13.7% of other mortalities.

## Significance

In summary, this data introduces key patterns in chronic feedlot cattle populations in North America. Chronicity rates and chronic animal outcomes varied greatly across feedlots. This variation may be due in part to chronic pen entry criteria, but also indicates that there is room for refinement in chronic animal management strategies. Certain diagnoses of chronic animals, such as those with infectious disease where high morbidity rates are combined with high mortality and low euthanasia rates, may have a higher risk of unfavorable welfare outcomes and need additional care. Finally, the wide range in euthanasia rates across feedlots and between mortality causes is worthy of future scrutiny to determine the possible animal welfare implications. In conclusion, these data can be used to inform future studies on chronic feedlot cattle populations, with the ultimate goal of developing informed management and decision-making tools for producers managing the unique health and welfare needs of chronic feedlot cattle.

