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 The Old School, Brewhouse Hill, Wheathampstead,
 Hertfordshire AL4 8AN, UK
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Circus and zoo animal welfare in Sweden: an epidemiological analysis of data from regulatory inspections by the official competent authorities

PL Hitchens^{*†‡}, J Hultgren[§], J Frössling^{§#}, U Emanuelson[†] and LJ Keeling[‡]

[†] Equine Centre, Faculty of Veterinary and Agricultural Sciences, University of Melbourne, 250 Princes Hwy, Werribee, VIC 3030, Australia

[‡] Swedish University of Agricultural Sciences, Department of Animal Environment and Health, PO Box 7068, SE-750 07 Uppsala, Sweden

[§] Swedish University of Agricultural Sciences, Department of Animal Environment and Health, PO Box 234, SE-532 23 Skara, Sweden

[#] National Veterinary Institute, SE-751 89 Uppsala, Sweden

[†] Swedish University of Agricultural Sciences, Department of Clinical Sciences, PO Box 7054, SE-750 07 Uppsala, Sweden

* Contact for correspondence and requests for reprints: phitchens@unimelb.edu.au

Abstract

Good animal welfare is crucial for the success of circuses and zoos. Epidemiological studies of animal welfare that investigate associations between animal-based measures (ABMs) and resource- and management-based measures are needed. However, due to the relatively low numbers of animals within each species kept at individual facilities, such investigations can be difficult to carry out. In this paper, we report the analysis of a multi-facility epidemiological study using data from all regulatory inspections of circus and zoo animals in Sweden for 2010 to 2014. Information from 42 inspections of 38 circuses, and 318 inspections of 179 zoos was analysed. For ABMs assessed during routine inspections of circuses ($n = 14$) and zoos ($n = 61$), 9.1 and 14.3% did not comply with requirements for general care of hooves/claws and coat, 10.0 and 8.6% for body condition, and 0 and 1.7% for animal cleanliness, respectively. In addition, the zoo checklist assessed whether animals were kept in appropriate groups, finding non-compliance in 17.0% of inspections. The most frequent non-compliant resource- and management-based measures at routine inspections of circuses were for space (41.7%) and exercise requirements (38.5%). For zoos, 29.4% did not comply with space followed by 28.8% for enrichment requirements. In multivariable logistic regression analyses, zoos that had inadequate or unsafe housing and space design, inadequate bedding, or failed to meet nutritional requirements, were more likely to be non-compliant with at least one ABM. The checklists should be improved to better assess welfare status by including more ABMs; benchmarking of risks and trends over time is also recommended.

Keywords: animal-based measures, animal welfare, circus, epidemiology, legislation, zoo