

Title: A retrospective study of ACC equine related injury reports in New Zealand

In 2015 the Accident Compensation Corporation (ACC) released 2014 figures on the costs of claims associated with animal related injuries. Injuries arose with a range of animals from sharks to mice, but of ~55,000 claims worth \$20.5 million, there were 8,177 associated with horses at a cost of \$6.59 million. Based on estimated 80,000 horses in New Zealand, up to 10% of NZ horses are involved. Horse rider related injuries in particular were estimated to range from 5,900 to 6,750 (2009-2012) with little indication of a decline. In urban New Zealand, horses are among the most common reasons for animal related hospital admissions. Despite evidence based recommendations for protective helmet and vest use, it is unclear if these have been translated into practice, or if their use has moderated rates and type of equine related injury in New Zealand. There is a need for detailed review of ACC data, and exploration of such information as is available that can determine risk factors associated with equine related injury, and trends over the last decade since previous reports. Our aim is to fulfil this need. Study design A retrospective study of case files from ACC. Closed and active ACC files will be solicited from 2005 - 2015. Requested injury claim files will have the term "horse, horses, pony, ponies or equine". Cohorts associated with the workplace (e.g. farms) and recreational activities will be separated. Distributions of ages (using the categories defined by the ACC) and incidence will be plotted, confidence intervals calculated and Fishers exact or Wilcoxon sign tests used to examine associations with rates of injury. Gender, ethnicity, claim type, ACC account types, injury sites, causes, diagnoses, sports related, scenes and regions will be evaluated for injury association. The use of basic protective equipment will be evaluated for their impact on injury. Associations will be considered significant for $p < 0.05$. Variables with $p < 0.20$ will then be assessed for inclusion into a multivariable model.

Final Report

The ACC study is still progressing, but over the summer break the relevant committees that were required to give us permission had a hiatus. We still in negotiation with them about release of data, following preparation an ethics application with them. They're also still determining whether not to charges a fee for the data. As progress is slow, the student spent the remainder of her time working on other horse-human related injury studies. Her work on both of them was exemplary, and we already have substantial datasets. The student injury data has already been presented to faculty, and a poster of the horse and human transport related injuries has been presented. Data analyses are ongoing as of preparation of reports and manuscripts for publication.

During this summer scholarship I was a part of three different projects; a survey distributed to the BVSc class of 2016 investigating the risk factors associated with large-animal related injuries and illnesses that have occurred during the BVSc programme at Massey University, writing the ethics application to ACC for the project exploring the frequency and type of equine-related ACC claims, and writing and distributing an online survey to research the factors associated with horse transport related injuries in New Zealand. When completing these tasks, I got to work with a team of researchers from Massey University and from Universities in England and Australia. Working with a team of people was helpful with the surveys as a control check could be carried out to make sure the questions were interpreted to give the information needed.

The BVSc large-animal related injury and illnesses survey was originally developed by Prof Chris Riley with, a previous IVABS summer scholarship BVSc student. This was in hard copy format only but needed to be adapted to an online copy so it could be distributed to the 5th years electronically as it was the end of the year and they were leaving University. To make

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the survey I used a programme called Qualtrics, which is a global software company designed for customer experience and completing surveys. Most of the questions were computer friendly but a few had to be adapted so they could be completed online. The survey began with general questions around previous animal handling experience and understanding of the safety practices at Massey University. It then asked if the respondent has had any large animal related injuries and illnesses during the BVSc program and if selected yes, they were given the options to completed a set of questions to report the most recent incidents. There were 3 chances for each of injury or illness to fill out the set questions asking specific questions about the factors involved. The survey was quite complex to get the flow right as there were several different pathways respondents could take depending on the number of injuries and illnesses they have had. To pilot the survey, another BVSc student completed it to check for misunderstandings, with this feedback and help from Chris Riley the survey was adapted and then distributed to the class of 2016 via email at the beginning of December 2016. Despite several reminder emails only there were only 30 respondents from the class. This is too low to be statically representative of the class however, it was a good chance to see how the survey ran so that other student can take on the project this year and distribute it to the rest of the vet school. The survey was then open to currently enrolled student in the BVSc programme. The early results indicate that over 50% of currently enrolled students have experienced an injury or illness associate with large animal aspects of their veterinary training program. There were more injuries due to cattle and horses, and most injuries affect the limbs. A further analysis is being conducted

The research project investigating the rate and type of equine-related injuries reported to the ACC is a large project that will take many months. I was a part of getting it going by helping to complete the ethics report to be sent to the ACC. This was mainly with Chris Riley but there was collaboration from Chris Rogers (Massey University), Kirrilly Thompson (Central Queensland University), and Sarah Rosanowski (Royal Veterinary College, London). It was great working with a team of people as they approached some ideas differently as to what I may have. The ethics approval was interesting to work on as I had not done anything in this area before. To begin with lots of background research was needed to see what studies had been conducted similar to this topic before. We found that the last research like this was completed by Glenda Northey in 2001 but it did not go into depth as to see what the risk factors may be. The summative ACC data from 2009-2014 illustrated a rise in the ACC claims for equine related injuries, showing that the codes for safety in place may not be working as well as they should be. Unfortunately, due to breaks over the Christmas period and not being able to get ethics approval from the ACC as there were no meetings the project was not able to be advanced any further while I was still working on it. Completing the background research exemplified that the number of equine related accidents that are occurring is a problem that needs to be address and I look forward to seeing the results of the research.

The final project I worked on was to develop an online survey to identify the risk factors associated with horse transport injuries in New Zealand. To do this I used Qualtrics software again, and worked with Barbara Padalino from the University of Sydney who had just ran a similar survey in Australia. With help from Chris Riley we decided to take out the horse transport related illnesses from Barbara's survey and add a human injury aspect which could then be developed into another study depending on the response and interested. Apart from that our survey was similar to Barbara's but was adapted to the New Zealand systems for horse transport. During this project, we also got feedback from Gabriella Gronqvist, Chris Rogers, and Charlotte Bowell all from Massey University who each have experience with surveys in the equine community so their feedback was helpful. This survey is still currently being distributed via social media platforms but as of the beginning of March 2017 there were over 600 respondents; at the completion of the survey there are almost 1500 respondents,

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giving a 3% error. An early analysis of the results has been performed, and a poster presented at Fieldays at Mystery Creek. Over 18% of respondents reported that they had a horse injured during transport, and more than 10% said they had themselves been injured during the transport of horses. Most of the horse injuries were associated with bruises, cuts and abrasions most of the human injuries involved the hands or lower legs, but some had severe fractures. These data are currently undergoing content analysis and the study has already attracted some international interest.

Overall, this summer scholarship working with Chris Riley and other researchers was a great learning experience. I had no previous experience in research and this has given me a good basis to build on in the future. It was intriguing to see how much background research must be done when a new idea is proposed and how ethics is a big part of any project involving humans and animals. Working with many different researchers allowed me to see how you can approach problems in a different way and that all feedback should be considered when putting something together such as a survey. I look forward to doing research in the future.