

## **Effect of Training Location and Time Period on Racehorse Performance in New Zealand**

Researchers from Massey University's EpiCentre have recently finished one of a series of reports investigating aspects of racehorse performance in New Zealand. The study was funded by the New Zealand Equine Research Foundation with additional support from New Zealand Thoroughbred Racing, and was designed to provide information on the performance of the new track surface installed at the Matamata Racing Club in early 1998.

The study was completed by Nigel Perkins, a veterinary researcher based at the EpiCentre and principal investigator in another large scale study also funded by the NZERF that is investigating wastage in New Zealand racehorses.

The objectives of the study were:

- to determine if there were any detectable differences in the patterns of racing between Matamata horses and horses from other locations in NZ
- to use information from NZTR records covering one time period prior to 1998 (while the old track was in use) and a similar time period after completion of the new track surface
- if any differences were detected, could they be attributed to the new track surface or could they be explained by other factors?

The sole source of data for this study were electronic downloads of race and trial results for all starts across NZ, and horse identity information for two 19 month time periods (May 1st to November 30th of 1996-1997 and 1998-1999). All data were obtained from NZTR. NZTR records identify trainer and trainer location for every horse. Location was coded as Matamata and Other (all locations in NZ other than Matamata) for the analyses.

NZTR records do not contain information on horse injuries or any other condition that could interfere with training. The study used NZTR records to generate two outcome variables that could be used as indirect indicators of horse health and performance:

- whether or not a horse had a 6-month no-race period after any start. This was used as an indirect indicator of possible injury interfering with training or racing.
- total count of the number of starts by each horse.

A series of analyses were performed, beginning with descriptive and simple procedures and finishing with more advanced, multivariate statistical procedures. Individual horses started between 1 and 48 times in either time period with the median number of starts for any horse equal to 5.

The population of horses trained at Matamata appeared to differ from horses trained at all other locations in two ways. Matamata trained horses reside in larger stables (85% of Matamata horses are in stables containing more than 20 horses compared to less than 70% for other locations). In addition Matamata horses appear to be younger. 50% of all starts from Matamata horses involve horses aged 2 or 3 years compared to 30% for horses from other locations.

Horses from Matamata were more likely to place first, second or third in trials or races compared to horses from other locations. This association was present in both 96-97 and 98-99 though the gap had narrowed slightly in 98-99.

Multivariate statistical analyses were used to investigate factors that might influence either the total count of starts for any horse and the risk of a 6-month no-race period following a start.

Increased likelihood of a 6-m no-race period following a start was observed in:

- horses starting in 98-99 compared to 96-97.
- horses placing 4th or worse compared to 1st, 2nd or 3rd.
- 3 yr-olds more than 2-yr olds. Older horses no different to 2-yr olds.
- trial more than race.
- female horses more than male horses.
- Summer more than Autumn.
- soft or heavy tracks more than firm or easy tracks.
- longer races more than shorter races.
- horses that race more frequently.

Horses start in more trials and races when:

- they are younger in age
- when they are starting in races with >\$25,000NZD stakes

## **Conclusion**

This study used information from the entire population of horses starting in trials and races in NZ. Summary measures and comparisons were limited by the information contained in the NZTR database. It was not possible to measure injuries directly in horses and indirect and more approximate measures were used instead. It was also not possible to determine with complete accuracy which horses trained on the new track surface and which horses did not. These limitations were offset by the very large number of horses and starts in the dataset, and the use of advanced statistical procedures to investigate patterns in the data.

Matamata horses tend to be in larger stables and to be younger than horses at other locations. The population of horses trained at Matamata is not directly comparable to the population of horses trained at other locations in NZ.

A number of factors identified in the multivariate analyses that influence number of starts and likelihood of a horse not racing for 6 months following any one start. These factors concern horse characteristics like gender and age and race characteristics like distance, prizemoney, season and track condition. There was no evidence to suggest that the pattern of starts or 6-month no-race periods was influenced by the installation of the new track surface at Matamata.

It is important that any results and conclusions be interpreted in light of the advantages and disadvantages inherent in the study design.