

Analysis of Supply Chain Wastage in the Thoroughbred and Harness Racing Codes

Introduction

In 2008 the NZ Racing Board commissioned a study of supply chain wastage for the thoroughbred and harness codes.

The term wastage was used as a "catch-all" for animals bred for the purpose of racing that for whatever reason did not race or failed to participate to their full potential. Wastage may be caused by several factors including physical injury or inadequate economic or race programming opportunities.

The study sought to describe and dimension the thoroughbred and harness supply chains by tracking and analysing key milestones over consecutive foal crops, such as:

- Mares mated/Foals born
- Foal survival at branding
- Horse Exports/Imports
- Horses registered with a trainer
- Horses trialed and/or raced
- By age, sex and frequency

The thoroughbred study also sought to overlay physical injury data drawn from a longitudinal study commissioned by the Equine Research Foundation and undertaken by Mr Nigel Perkins between October 1997 and July 2000.¹ Unfortunately, no similar data was available for the harness code.

Analysing each foal crop separately provided greater visibility of the trends that were occurring than was evident from comparing seasonal data – which at any time reflects an amalgam of many crops, thereby smoothing the impact of trends.

This analysis enabled the identification and quantification of supply chain wastage and the potential impact wastage related trends could have on the future number of horses participating in tote racing in New Zealand – a key driver of industry funding.

The critical issues common to both codes are relatively low utilization of existing horse populations and a declining foal crop, which is expected to result in a reduction in the number of starters available to race in New Zealand. Absent an increase in lifetime starts per starter, there will be a reduction in the total number of annual tote starts and therefore total industry available to the funding.

¹ Epidemiology of health and performance in New Zealand racehorses. A report to the New Zealand Equine Research Foundation.

Thoroughbred

Between 2001 and 2006 there was a progressive decline in the annual number of registered foals from 5,191 to 4,119.

Two thirds of this decline can be attributed to a reduction in the number of mares being mated – probably in response to diminishing returns to breeders. One third of this decline can be attributed to a reduction in the number of mares now being mated after 1 December each season – probably in response to reduced market acceptance of late foals.

The number of registered broodmares has decreased proportionately with the decline in the foal crop. This suggests breeders have not retained or replaced mares and there is not a pool of empty registered broodmares that can be quickly reactivated.

Over the same period there was no significant change in net imports and exports. As approximately 70% of thoroughbred exports are colts, the remaining pool of horses available to race in New Zealand consists of 57% fillies and 43% colts.

Over the period of the study, the average number of race starts was approximately 31,000 per annum. For example, the profile for the 1999 crop (5,004 foals) was:

Racing Frequency Profile of 1999 Crop

	Individual Horses	Total Starts	Average Starts	% of Total Starts
Raced 30 or more times	241	10,109	41.9	33.1%
Raced 20-29 times	260	6,195	23.8	20.3%
Raced 10-19 times	500	6,971	13.9	22.8%
Raced 5-9 times	386	2,628	6.8	8.6%
Raced 1-4 times	525	1,302	2.5	4.3%
Exported	304	3,328	10.9	10.9%
	2,216	30,533	13.8	100.0%

There is a high reliance on approximately 500 horses per crop that have in excess of 20 lifetime starts and account for 53% of all starts and relatively poor utilization of approximately 900 horses per crop that have less than 10 lifetime starts and only account for 13% of all starts.



Absent an increase in participation rates, if the NZ foal crop remains at the current level of 4,000 and if export demand remains constant, it is estimated there will be approximately 430 less race starters per crop from 2006 onwards. A realistic approximation of the resultant supply chain would be:

Source of Horses

Notified NZ Foal Crop	4,000	91%
Total Imports	410	9%
Total Crop	4,410	100%
Application of Horses		
Deaths & exports before branding	156	4%
Net Exports	1,345	30%
Never registered with a Trainer***	981	22%
Horses that go into work with a Trainer	1,928	44%
Of which:		
Suffers a career ending physical event***	329	
Suffers a physical event requiring a lengthy spell***	609	
Voluntarily retired - predominantly poor performance***	607	
Never suffers a physical event requiring a spell	383	
Total Crop	4,410	100%

***2,526 horses (57%) fail to participate to their full potential, i.e. supply chain wastage.

Significantly, 48% of horses that go into work with a trainer at some stage sustain an injury that either requires a significant spell or ends their career. Approximately 72% of these injuries are musculoskeletal ("MSTs") and 20% are respiratory issues.

31% of horses in work with a trainer are retired sound but are perceived to have limited ability. Arguably these horses are available to participate further but the current programming and handicapping regimes do not provide adequate opportunity and/or incentive to do so. 61% of horses never registered with a trainer are fillies of which only 20% ultimately go to stud. Similarly, of the horses registered with a trainer that never race, 62% are fillies, of which only 32% ultimately go to stud. Fillies that race have fewer lifetime starts than colts and typically have shorter racing careers. Only 39% of these fillies ultimately go to stud.

As there is no genetic or physical reason why fillies might be markedly less capable of racing, this suggests a large number of fillies do not race, or have their careers curtailed, for economic or commercial reasons (e.g. the current cost/return equation, the lack of a secondary market as exists for colts and; absent achieving black type, their minimal residual value as a broodmare).

A reduction of 430 starters per crop with no increase in the starts/starter of the remaining starters could progressively lead to a reduction of 5,900 starts annually as each smaller crop commences racing. The initial impact of the decline in the 2003 and 2004 foal crops is already evident in the 2yo and 3yo starter numbers in the last two seasons. To maintain total starts at current levels, the remaining population would need to increase their lifetime starts by 34% from 13.8 to 18.5.

If however wastage can be reduced through a reduction of physical injuries and/or if the remaining starters (including horses with only moderate ability and fillies) race for longer and/or more often, the impact on annual starts could to some extent be mitigated.

Harness

Between 1995 and 2006 there was a progressive decline in the annual number of registered foals from 3,554 to 2,865 with 70% of this decrease occurring since 2003.

Over the same period there was no significant change in net imports and exports. As approximately 60% of exports are colts, the pool of horses available to race in New Zealand consists of approximately 52% fillies and 48% colts.

Over the period of the study, the average number of race starts was approximately 28,000 per annum. As with the thoroughbred code, a relatively small number of horses from each crop accounted for a large percentage of these starts. For example, the profile for the 1998 crop (3,200 foals) was:

	Horses	Starts	Average	% of starts
Raced 30 or more times	343	16,904	49.3	59.8%
Raced 20-29 times	192	4,619	24.2	16.3%
Raced 10-19 times	324	4,592	14.2	16.2%
Raced 5-9 times	220	1,523	6.9	5.4%
Raced 1-4 times	271	629	2.3	2.2%
	1,350	28,267	20.9	100.0%

High reliance on 535 horses with > 20 lifetime starts
Poor utilisation of 491 horses with < 10 lifetime starts



Notwithstanding the decline in the foal crop, the lifetime starts per starter increased from 18.1 (1995 crop) to 21.7 (1999 crop) and the number of horses racing has trended upwards since 2002, from 3,200 to approximately 3,400. As the number of horses entering the supply chain has reduced, these trends evidence an increase in the longevity of the racing careers of those horses racing and an increase in the frequency of starts.

This outcome is consistent with a number of programming and handicapping initiatives implemented by HRNZ over that period designed to improve horse utilization, including:

- Nomination transfers and greater programming flexibility
- Special conditions races
- Preferential draws
- Changes to the handicapping system (e.g. penalty free races, age and junior driver exemptions)
- Tuesday racing

Absent any further increase in participation rates, if the NZ foal crop remains at or around 2,865 and if export demand remains constant, there will be approximately 168 less race

starters from each crop from 2006 onwards. A realistic approximation of the supply chain would be:

Source of Horses

NZ Foal Crop	2,865	100%
Total imports	12	0%
Total Crop	2,877	100%
Application of Horses		
Deaths & Exports before branding***	85	3%
Exported prior to racing	230	8%
Never registered with a trainer***	936	33%
Horses that go into work with a Trainer	1,626	57%
Of which		
Never races***	443	
Races < 5 times***	237	
Races 5-9 times***	193	
Races 10-19 times	284	
Races 20-29 times	168	
Races 30+ times	300	
Total Crop	2,877	100%

1,182 horses (41% of the crop) race
1,894 horses (66%) including horses that race less than 10 times fail to participate to their full potential - i.e. supply chain wastage
Fillies are over-represented in all segments of low participation

A reduction of 168 starters per crop with no increase in the starts/starter of the remaining starters could progressively lead to a reduction of approximately 3,500 starts annually as each smaller crop commences racing. To maintain total starts at current levels, the remaining population would need to increase their lifetime starts by 14% from 21.7 to 24.7.

Key differences between the Thoroughbred and Harness Supply Chains

There are differences between the harness and thoroughbred codes which combine to reduce the relative impact on harness of a declining foal crop. For example:

- The harness breeding industry is predominantly South Island based, is less capital intensive and has lower cost structures.
- Harness yearling prices largely reflect domestic racing potential and are on average substantially lower than thoroughbred prices.

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- The role of commercial breeders is less substantial than in the thoroughbred industry - with a significant portion of production being bred to race.
- Importation of harness racing stock is negligible. Approximately 7% of the harness foal crop is exported before being raced compared to 21% of the thoroughbred crop.
- Approximately 15% of the harness foal crop is exported after having raced compared to 6% of the thoroughbred crop. However, prior to export, harness horses have on average raced 19.8 times compared to thoroughbred's 10.9 times.
- A greater percentage of thoroughbreds are exported at an early stage of their racing career, representing a lost opportunity to New Zealand racing. In contrast, a significant portion of harness exports are well tried horses, being sold to markets such as the United States as "go around" horses at lesser meetings. While these exports do represent supply chain leakage, they are arguably also part of a culling process that releases industry capital and facilitates reinvestment. Exports therefore represent less significant leakage from the harness supply chain.
- The majority of harness horses are trained on private properties and therefore maintaining industry training infrastructure is a less significant issue.
- While there is no physical injury research available for harness, anecdotally harness horses suffer fewer injuries - suggesting their training and racing regimes result in less injury. Harness horses race 60% more often than thoroughbreds; often back-up more quickly and/or require shorter spells.
- Anecdotally, harness horses are also more versatile in the distances they can race over at various stages of their preparation. They are therefore less dependant on race programming at specific distances to get a race start.
- Harness horses race on all weather tracks that are reasonably consistent. Over the past decade most of the major harness tracks have been upgraded to improve their surfaces, camber and safety. 61% of all race meetings are held at five key racecourses and 76% are held at the top ten racecourses.

As a result of these supply chain differences, some initiatives being contemplated by the thoroughbred code, such as initiatives to improve training centre infrastructure and the introduction of synthetic tracks, are less relevant to the harness code. Similarly, some of the effective programming and handicapping initiatives successfully implemented by harness may not easily be replicated by the thoroughbred code. The detailed approach taken by each code to addressing of supply chain wastage may therefore necessarily differ.

ABOUT THE AUTHOR



Greg McCarthy is a Director of Sutton McCarthy Ltd, a business which provides strategic, financial, and treasury advice to corporate and other clients. Greg has also been actively involved in the thoroughbred industry for 20 years, both as a breeder and an owner. This mix of commercial and industry experience led to his being asked to undertake this supply chain wastage study.

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