



The British Animal Rescue and Trauma Care Association in partnership with Intelligent Horsemanship

An Initial Review of Horse Transport Safety

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Bad Horses, Bad Driving, Bad Boxes, Bad Luck?

This joint project was inspired by a strong desire to identify the chief causes of incidents and accidents in the transportation of horses by road, and to improve the safety and comfort of horses when travelling. The authors were aware that people would put their own lives at risk to save that of their horse, and wanted to gather together all of the relevant evidence before pressing for change.

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Summary of purpose

Phase One is intended to form a dynamic compendium of resources and information about horse transport from a UK perspective.

The joint BARTA and Intelligent Horsemanship Survey and review has been carried out with the intention of gathering information and establishing a clear picture of the causes, effects, and circumstances of incidents in horse transport. The review also seeks to document the development of modern horse transport vehicles, and the legislation which covers it. It also considers the historical research available. It is envisaged that this compendium will continue to grow and evolve. Indeed there may be undiscovered research that may be added once uncovered.

Phase Two of the review analyses the weight of the evidence and forms conclusions. It looks forward to see what further information is required and how best that can be obtained. At present this represents a loose framework only and is presented on an interim basis.

Phase Three set out areas where changes need to be made to make horse transport safer for horses and humans, at the same time as improving the welfare and comfort of the horses being carried.

Phase Four describes the collaboration process by which this might be achieved.

Section 1: The BARTA and IH transport survey

1.1 Introduction to the transport survey

Jim Green is the Co-Founder and Director of The British Animal Rescue and Trauma Care Association, and Animal Rescue Specialist for Hampshire Fire and Rescue Service. Sarah Weston is a Recommended Associate of Intelligent Horsemanship.

The Fire Service has grave concerns about the risk of people being seriously or fatally injured when endeavouring to rescue their animals from danger, and this includes rescuing horses in trouble inside transportation vehicles.

Middleton man killed by 'agitated' horse in Lancashire

🕒 1 November 2012 | Lancashire

A man has died and his wife has been seriously injured by a horse in Lancashire.

They were towing a horse box on the A56 in Haslingden on Wednesday evening when the horse became agitated, police said.

The man, 51, from Middleton in Greater Manchester, stopped his vehicle to tend to the animal, which kicked him in the head. His skull was fractured.

His wife suffered a broken femur and chest injuries. The couple's teenage daughter was present but was not hurt.

'Freak accident'

Croft Top Equestrian Centre in Accrington said it was believed the family was on their way to a show-jumping event there. She was treated in hospital for shock.

Police said when paramedics arrived at about 18:00 GMT they found the man unconscious and trapped in the horse box with the horse.

An emergency vet was called to the scene to sedate the animal and enable the man to receive treatment but he died at the scene.

Police said the horse became agitated while it was



Horses do sometimes get distressed in transport

Figure 1: News report of human fatality

In addition, in August 2011, Hampshire Fire and Rescue Service reported that they were experiencing a rise in the number of call outs to horses trapped in rear facing horseboxes.¹

"We have concerns as we are being mobilised to a disproportionate number of incidents involving this design of horsebox where the horse is getting trapped in this way." Anton Phillips, Animal Rescue Specialist.



Figure 2: Horse breaching the breast partition of a rear facing horsebox

Before coming to any conclusions about the safety or otherwise of rear facing horseboxes, the authors felt that they should undertake a survey of accidents and incidents within the UK of all types of horse transport.

In February 2015 The British Animal Rescue and Trauma Care Association, in collaboration with Intelligent Horsemanship, set out to gather data about accidents and incidents in horse transport in the United Kingdom. They wanted to take a snap shot of what was really happening by looking at data from the last five years. The survey ran from 2nd February, 2015 to 30th June, 2015.

¹ <http://www.bbc.co.uk/news/uk-england-hampshire-14644082>

1.2 The perceived problem with British rear facing transport

Given that historical research² suggests that rear facing travel is preferred by and is less stressful for the horse it is hard to explain why there has been a perceived rise in incidents with these horseboxes and trailers; in theory, they should be safer because the horse is more comfortable in that position.

When the UK Fire and Rescue Service highlighted the problem of horses going over the breast partition of rear facing horse transport, the immediate and instinctive reaction was to recommend that those partitions were made high enough, preferably floor to ceiling, so that horses could not do so; from a safety point of view, they felt that it was imperative that the horses could not get over the partition and were discouraged from doing so. However, horses with a high partition or full bulkhead in front of them, whether vertical or with a space for the horse's head, still exhibited signs of distress such as pawing, chewing, and even climbing the walls. Full bulkheads prevent a horse from jumping into the living area but they do not prevent the horse from feeling discomfort when travelling.

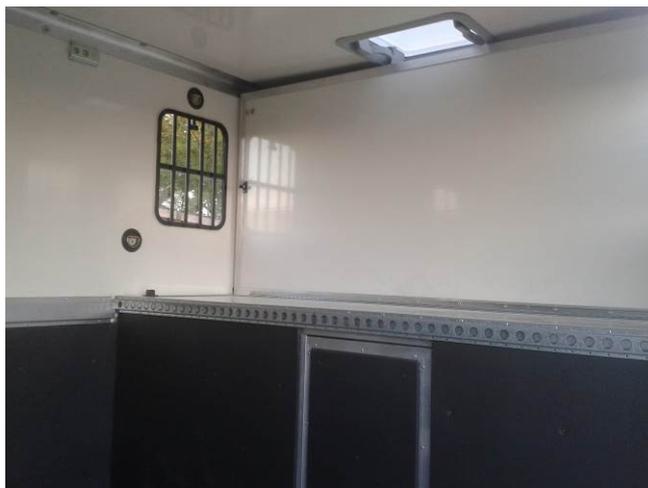


Figure 3: Partition enclosed by a wall. Horses can climb up onto the flat ledge.

² See pages 71-79 of this report

Dr Sharon Cregier³ researcher and horse transport expert from Canada, currently working on formulating standards for the Canadian Standards Association, is convinced that a *lower* partition, allowing the horse to have a natural stance, would negate the horse's desire to jump the partition in the first place and that a 'pillar-style' tying up position would prevent it from doing so. This 'pillar style' tying up position is illustrated in a video.⁴

Dr Cregier has expressed frustration concerning the design of rear facing transport in the UK, stating that "...the current practices do not resemble the original..."⁵

The fear for horse owners, transporters and animal rescue organisations alike is whether having a lower breast bar/ partition, which would allow the horse to have a more comfortable ride and use less energy to travel, would actually mean that a horse has the ability to express its natural desire to escape; in other words that the design of these boxes gives a stressed horse somewhere to go whereas other designs do not. If that were the case would the 'pillar-style' tying up position recommended in the research prevent that happening when clearly the height of the partition would not?

What is not known is whether the **rate** of this type of incident in a rear facing horsebox or trailer is worse than in other forms of horse transport. The rise in incidents may be due to the fact that there are now so many more of these vehicles on the road and, due to the complexities of releasing the horse, such incidents are more likely to be reported to the emergency services and need the assistance of an Animal Rescue Team. In other types of vehicles quick release pins mean that owners are more likely to resolve the situation themselves without involving the emergency services.

The availability of smaller vehicles potentially opened up horse transport to lots of inexperienced and young people who may not drive well and therefore increase the risk of an incident. However, that wouldn't explain why so many horses attempt to go over the back partition in rear facing horse boxes or trailers when the vehicle is stationary.

³ The Welfare of Horses During Transit, Cregier, S. and Holmes, O. International Equine Science Meeting 2008, University of Regensburg, Germany

⁴ www.youtube.com/watch?v=j2O_ItTcR9M, Sharon Cregier

⁵ Personal correspondence to co-author S. Weston 21.10.14

1.3. Summary of key findings of the transport survey

- **People will put their lives and that of others at risk in order to rescue their horse**
- **Horses were very likely to be badly injured in an incident**
- **Over 75% of incidents in horse transport involve the behaviour of the horse.**
- **Horses were just as likely to rear over the breast bar or partition in a front facing vehicle as a rear facing one**
- **Almost one third of incidents occurred while the vehicle was stationary**
- **Most trailer overturns occurred as a result of people travelling too quickly downhill**
- **Few horses had received any systematic training in loading or travelling**
- **Only one tenth of incidents led to the involvement of the professional rescue services**
- **No formal records are kept of the overall number of transport related incidents**
- **Most accidents were preventable**

1.4 Terms of reference

Many people, such as horse owners, transporters, and emergency service officers, have theories about how and why incidents occur in horse transport, based on their experience and understanding of horse and human behaviour, and the vehicles involved. The survey asked for a detailed and thorough history of individual incidents and explored the type of horse involved in terms of age, height, previous travelling experience, as well as the vehicle involved, including layout, tying up position, and the positioning of bars and partitions. It also closely examined the manner of driving and what the vehicle was doing immediately before the incident. Nevertheless, the survey is a purely anecdotal snapshot of the causes, effects, and circumstances of incidents in horse transport.

The survey was designed to provide a broader basis upon which to base recommendations for changes in the training of horses, the training of drivers, and the design of transport vehicles for horses.

1.5 Survey content and distribution

A national survey of horse owners was broadcast through industry media, most notably the Horse and Hound magazine, and social media, and was supported by the British Horse Society, the British Equine Veterinary Association and Baroness Mallalieu of the All Party Parliamentary Group for the Horse.



Figure 4: Publicity for the BARTA Transport Survey

1.6 Findings from the transport survey

1.6.1 Responses

There were 129 responses to the transport survey, of which 104 incidents occurred within the five year period (taken from the first entry for 2010, 28th April, 2010, through to the closing date of the survey, 30th June, 2015) 15 were before, 2 were incorrectly dated (in the future!) and 8 were undated.

Given that the older, undated and incorrectly dated entries were still very detailed, they were included in analysis of the survey results. There was an average of 20 incidents reported for every year of the five year period taken from 28th April, 2010 to 27th April, 2015.

The survey looked at the number of incidents each year to identify whether there was a significant rise which might indicate a growing number of problems which occurred in rear facing vehicles. This was not borne out by the figures. Whilst there was an apparent increase in the number of incidents each year over that five year period this is most likely to be due a higher incidence of reporting whilst the details of incidents, and the trauma of it, were still fresh in people's minds and it still mattered to them.

It is likely that the overall figures represent a small proportion of the number of incidents which actually occurred within the relevant period since most health and safety type incidents are under-reported.

Year	Number of incidents reported
2010	11
2011	9
2012	14
2013	21
2014	34
2015 (Jan to June inc)	15 (Extrapolated would be 30)

Table 1: Number of responses per annum

1.6.2 Time of year

The authors considered whether the time of year, and particularly an increase in temperature, might have an impact on the number of incidents at any given time. This was not reflected by the figures in the survey.

There was a fairly even spread of incidents throughout the months of the year with a gentle rise in the Spring through to the Summer when there are more shows and other horse events, slightly dropping again as the Autumn approached.

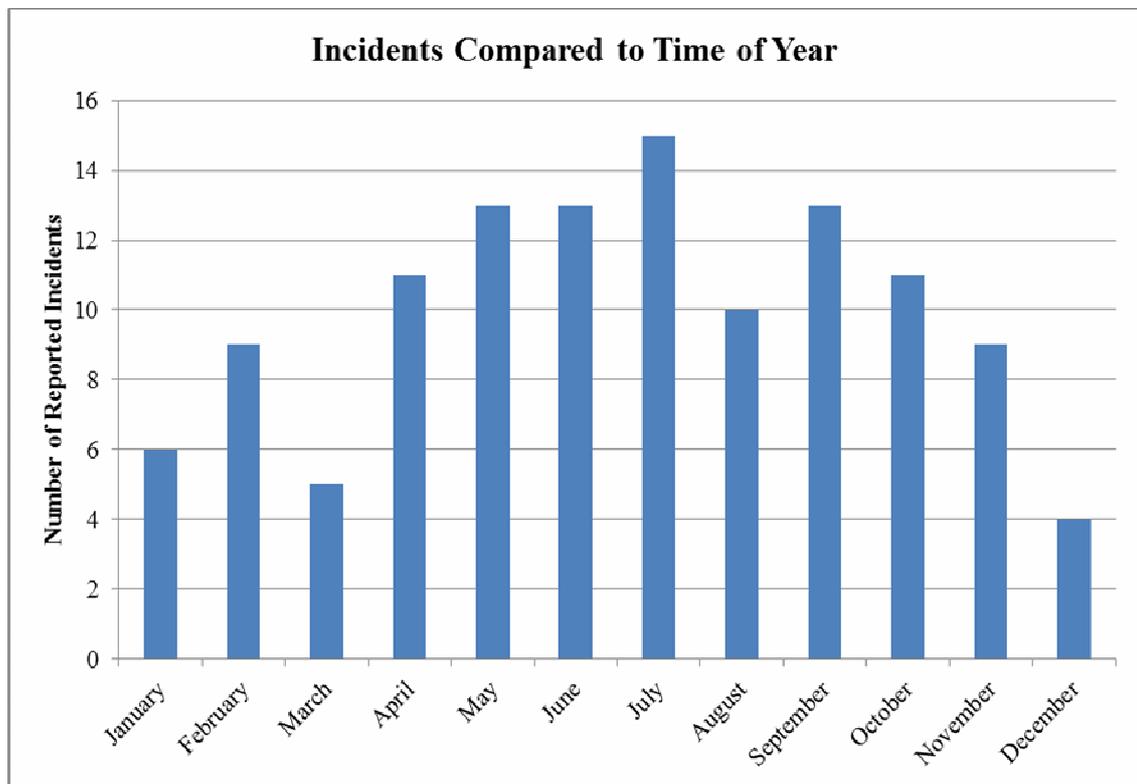


Table 2: Incidents compared to time of year

1.6.3 Primary nature of incidents

The survey was designed to identify the primary nature of incidents in horse transport and any underlying patterns. Over three-quarters of all of the incidents involved the behaviour of the horse. Design or maintenance failure, or human error accounted for the rest of the incidents.

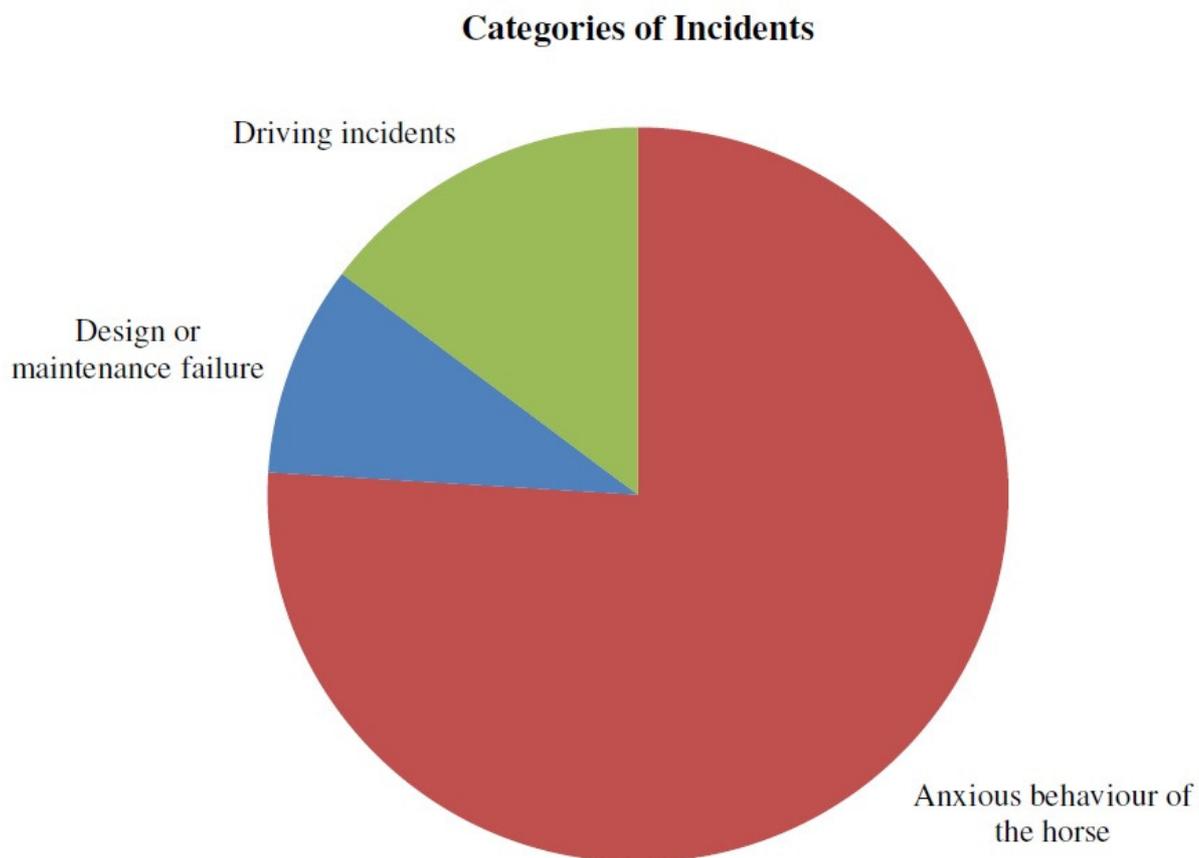


Table 3: Primary nature of incidents

1.6.4 Categories of incidents

Incidents could be placed into the following broad categories.

Broad category	No. (%)	Sub-category	No. (%)	Type of incident	No.
Incidents involving anxious behaviour by the horse	98 (76)	Incidents involving rearing	66 (51)	Rearred over the breast bar, breast partition or tack locker	57
				Rearing over central partition	3
				Rearing	1
				Somersaulting	3
				Attempt go through window/hoof through window	2
		Incidents involving falling	18 (14)	Fall	12
				Scrabbling	6
		Incidents involving the horse going under bars/partitions	4 (3)	Trapped under breast bar	1
				Caught under partition	3
		Horse showing obvious signs of anxiety	7 (5)	Panicking or agitated	6
Struck out at groom's door	1				
Loading/unloading incidents	3 (2)	Caught under breech bar	3		
Design or maintenance failure	12 (9)	Design failure	1 (1)	Foot caught between ramp and spring	1
				Structural failure	8 (6)
		Went through the floor	1		
		Mechanical failure	3 (2)		
				Fire	1
Tyre blow out	1				
Driving incidents	19 (14)	Trailer instability	10 (7)	Overturned trailer or spin	10
				Main ramp came down	1
		Human error	1 (1)	Side ramp came down	1
				Road traffic incident	7 (5)
				Total number of incidents	129

Table 4: Categories of incidents

1.6.5 BEHAVIOURAL INCIDENTS

Orientation

The authors wanted to find out whether the orientation of the vehicle had any influence on the likelihood of an incident occurring.

	Orientation	Number of 'behaviour' incidents	No. where horse over the breast bar or over the breast partition
Trailers	Front Facing	65	33
Horseboxes	Front Facing	4	3
	Rear facing	20	14
	Herringbone (towards cab)	4	
	Herringbone (away from cab)	4	
	Sideways	1	
		Number of 'behaviour' incidents (%)	No. where horse over the breast bar or over the breast partition (%)
Total all front facing		69 (67)	36 (36)
Total all rear facing		20 (20)	14 (14)
Total all herringbone		9 (9)	
	Total number of 'behaviour' incidents	98	

Table 5: Summary of orientation

The figures tend to show that horses are just as likely, if not more likely, to rear and go over the breast bar or partition in front facing vehicles, as they are in rear facing vehicles. It is likely that incidents in front facing vehicles with a breast bar have been under-reported because people are much more likely to be able to rescue the horse themselves than if the horse is trapped over a breast partition which cannot be easily dismantled. In a herringbone vehicle of course there is no front partition to rear over. Horses reared over or got under the central partition in both front facing and herringbone layouts (4), and reared onto the tack locker in rear facing and herringbone layouts (5). Where known, respondents indicated that their rear facing horseboxes were all 3.5T or under.

Incidents in stationary vehicles

The survey considered the motion of the transportation vehicle and whether there was any particular pattern of motion which precipitated an incident. However, 39 incidents (30%) incidents occurred while the horsebox or trailer was stationary.

Of these, 37 (95%) involved the behaviour of the horse, with 27 rearing over the breast bar/ partition or on to the tack locker. 5 had fallen or got caught under the bars or central partition, with a further 3 ending up prone in some way.



Figure 5: Incidents in stationary vehicles

When a horse is standing in a stationary horsebox or trailer the survey suggests that there appears to be a greater risk of an incident within the first few minutes of being stationary, with equal numbers just after loading as just arriving at a venue.

However, there is a continuing risk of a horse becoming upset throughout any period where it is standing in a stationary horsebox or trailer, perhaps because of boredom or the need to move, but especially if a companion is taken away or there is some other stimulus to upset it.

Time (in minutes) for which horse reported to be standing on stationary transport	Humber of incidents
Momentary	4
1<10	17
10	5
15	3
20	1
30	1
45	1
70	1
120	1
Unknown	5
Total	39

Table 6: Time for which horse standing on stationary transport

Of the horses that had been stationary for 10 minutes or less (26), 9 incidents occurred almost immediately upon loading and 4 just as the horse was about to be unloaded. 3 incidents happened en route while the vehicle was temporarily stationary: at traffic lights, at a roundabout (where the vehicle was nudged by another) and at a service station (where a lorry's air brakes triggered the response). Accordingly the time close to loading and unloading appears to be when the horse is most likely to panic or attempt to escape.

There is an even spread across the year for incidents which occur when the vehicle is stationary so that it is not possible to attribute any of the incidents to possible seasonal increases in temperature.

Height of the horse

The survey sought to discover whether the height of the horse had any bearing on the likelihood of an incident occurring involving their behaviour.

Horses of all shapes and sizes were represented in the list of those horses that had an incident in a horsebox or trailer which involved their behaviour; every breed, from Thoroughbreds and Sports Horses, through to native ponies and draught horses, from 11.2 hh to 17.2 hh. However, taller horses, those 14.2 hh and over, accounted for 82 (83%) of the 98 incidents. Whilst more journeys probably involve the transport of taller horses, it seems that taller horses are more likely to have an incident in the transport and have a greater ability to jump over partitions as well as having a higher centre of gravity in the first place.

Height of horse in hands	No. involved in 'behavioural incidents'
11.2.	1
11.3	0
12.0	1
12.1	0
12.2.	0
12.3.	1
13.0	4
13.1	1
13.2	3
13.3	2
14.0	0
14.1	3
14.2	13
14.3	3
15.0	9
15.1	6
15.2	10
15.3	9
16.0	7
16.1	10
16.2	5
16.3	1
17.0	6
17.1	1
17.2	1
Unknown	1
Total	98

Table 7: Height of the horse

Ifor Williams trailers have a model number which indicates the height of horse for which they are felt to be suitable. In respect of the 400 series, and the 500 series, the manufacturer's recommendation is that horses should be no taller than 16.2hh and for the 510 series, no taller than 17.2 hh. Later models in the 500 series are now as tall as their 510 counterparts but still carry the same recommendation. In no cases were horses being transported in contravention of this stipulation.

In all trailer incidents, people said that they were travelling with the partition at the standard width, save for the horse that was loose, and one where the partition had been removed. In 8 cases, all involving horseboxes, the partition was set at wider than the normal width.

Very few people measured the height of their breast bars or partitions for the survey, many guessing, stating the 'standard height' (even when there were two possibilities) or saying unknown. One said that the setting of the bar "looked a good height in ratio to the pony". Actual measurements were generally way out with only two being very close. There were 6 horses of 15 to 16 hands, 3 of which were travelling with the breast bar at its highest setting and 3 at the lowest.



Figure 6: Breast bars at different heights for different horses.

Age of the horse

The authors wanted to find out whether the age of the horse had an bearing on the likelihood of an incident, for example, did the risk of an incident reduce with the growing maturity of the horse or was there a rise in the number of horses involved in incidents as they reached an age where age related physical problems might have an influence on their ability to balance?

Horses of all ages were also represented with a predictable, if sudden, rise in those aged 4 when horses are more likely to be transported for ridden as well as in hand events. There were no horses in the age bracket of 17 to 20, and only 3 above, which negates the premise that horses that are starting to have age related physical problems are more likely to struggle to travel. Less horses of this age may be transported if they are reaching the end of their working lives but many horses work well into their twenties.

Age	Number of horse involved in 'behavioural incidents'
1	2
2	1
3	7
4	13
5	7
6	5
7	7
8	8
9	5
10	8
11	8
12	6
13	3
14	4
15	7
16	7
17	0
18	0
19	0
20	0
21	1
22	1
23	1

Table 8: Age of the horse

Loading and travelling history

The survey questioned the frequency with which horses were travelled in order to see if there was a link between a lack of experience and the likelihood of a 'behavioural' type of incident. Respondents were also asked about their horse's loading and travelling history.

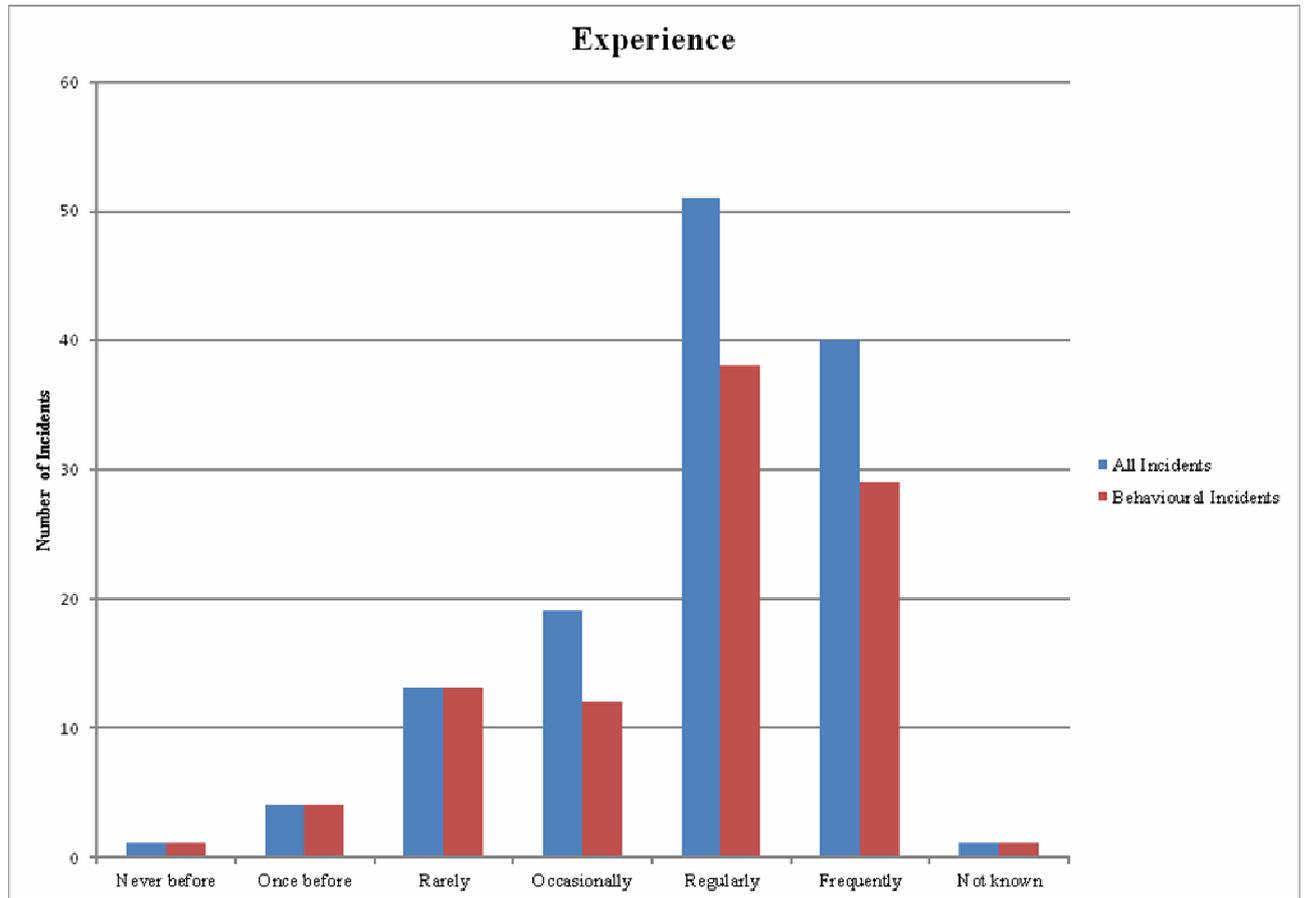


Table 9: Frequency of travel

The majority of horses involved in all types of incidents were travelled regularly or frequently reflecting a greater risk of an incident happening at some time. The same pattern occurred for horses involved in 'behavioural' incidents.

Frequency of travel	Behavioural incidents	Poor loaders involved in 'behavioural incidents'
Never before this occasion	1	
Once before this occasion	4	3
Rarely (once a year or less)	13	2
Occasionally (every few months)	12	1
Regularly (about once a month)	38	3
Frequently (more than once a week)	29	2
Not known	1	
Total	98	12

Table 10: Frequency of travel

Only 12 of the 98 horses that fell into the category of 'behavioural' incident were described as not being good loaders and travellers before the event. Those 12 horses showed correspondingly less frequency of travel.

Very few horses were said to have received any systematic form of training for loading and travelling. 1 person said that they had a behavioural expert out to assist, 4 said that they used natural horsemanship techniques to train their horse and 9 others described at least a basic level of systematic training to load and travel. The majority of owners pointed to the fact that their horses had travelled on many occasions, for a number of years and had travelled long distance, competed regularly or raced.

"I bred the horse and introduced her to the trailer as a foal. She had a lot of groundwork using natural horsemanship & loaded regularly without incident."

"Both have travelled regularly, no formal 'loading' practice as both regular and reliable travellers."

"He had been travelling regularly for 10 years with no issue."

7 of the 98 horses had experienced an incident on a previous occasion and indeed some of the horses went on to have more following the current incident.

"As I was parked up unloading my mare tried to jump over into the living area and got stuck under her chest. The next day she did it again as I was just leaving to come home, but it was much worse! The vets where there and they had to heavily sedate so I could get her and me home safely. We converted the box so she was forward face."

"This has since happened 3 more times...I now travel him with the bar on the setting which would normally be considered slightly too high."

Company

Respondents were asked whether their horse was travelling alone or with company in order to see if there could be a link between horses travelling alone and the likelihood of an incident. Anecdotally, the Hampshire Fire and Rescue Service expressed the theory that most of the incidents that they attended involved horses travelling alone.

74 out of the 98 'behavioural' incidents involved horses that were travelling alone which bears out the theory that most horses prefer to travel with company. However, of the 24 incidents in which the horse had company in the trailer or horsebox, 4 owners felt that the incident had been precipitated by the companion being taken away.

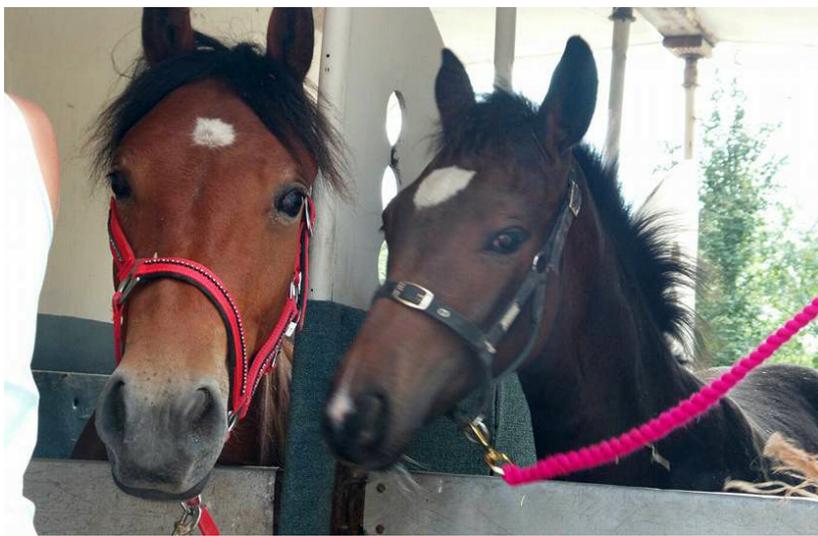


Figure 7: Young companions

Availability of forage

90 out of 98 horses had forage in the form of hay or haylage to keep them occupied while they were travelling or standing in the horsebox or trailer.

Tying up position

The survey asked people to describe the manner in which their horse was tied up in the trailer or horsebox in order to ascertain whether tying up position could have an influence on whether a horse engaged in behaviour such as rearing over the breast bar or partition, or whether it might prohibit the horse from doing so.

Owners reported that their horses were tied up as shown.

Tying up position	Number of horses involved in 'behavioural incidents' (Number rearing over the breast bar or partition)
Loosely tied at his head	64 (35)
Tied quite tightly at his head	20 (10)
Tied with the lead rein at his wither height coming forward to his head	7 (4)
Cross tied with two lead reins at his head	3 (2)
Entirely loose	2 (1)
Not known	2 (0)
Total	98

Table 11: Tying up position

The survey results showed that the majority of horses that reared over breast partitions or bars were apparently tied quite loosely at the head but that horses that were tied in all stated positions had been able to rear over the breast bar or partition. However, due to a weakness in the questionnaire, and the lack of an explanatory diagram, it is not certain whether people clearly understood what was meant by the lead rein being at his wither height coming forward to his head (pillar-style).

In any event, 72 out of 98 felt that their horse would have been able to lower his head to wither height or below. Whether, when coupled with a breast bar or partition a horse would have been able to adopt a 'normal stance' as described in this report is debatable at best, and unlikely at worst.

Advance signs of anxiety in the horse

The authors wanted to know how much warning the owners had that their horses was feeling anxious and therefore might express that through their behaviour.

In many cases it appears that the horses involved in ‘behaviour’ incidents gave very few, or obvious, visual or audible signs of distress. 38 out of 98 respondents said that their horses were quiet before the incident, describing their horses variously as: quiet, calm, settled, stood still or sleeping.

However, 23 people described their horse’s behaviour escalating using terms such as: moving around, fractious, restless, irritated, shuffling, agitated and in one case very stressed. 2 more mentioned that there horses were calling, and a further 22 described behaviour ranging through banging, kicking, thrashing, pawing, scrabbling, stamping and scrabbling.

Behaviour described	All ‘behaviour’ incidents	‘Behaviour’ incidents whilst stationary
Quiet	38	17
Calling	2	1
Moving around to v. stressed	23	9
Banging to Scrabbling	22	2

Table 12: Behaviour before the incident

“Was with a transporter. She said he was eating quietly up to the incident then he exploded”

“I would like to say because he did make the scrambling noise I always drove very carefully and it still would happen a bit.”

“The final part of the journey involves country lanes which are narrow, bendy and ill surfaced, however, he can ‘perform’ on straight roads at 45 mph.”

“As explained we saw her “disappearing” and the standing up again, in hindsight she must have fallen over a few times when trying to lean to the left for support. Otherwise she was quiet.”

Often owners still talked about their horses as if they are eccentric or naughty, rather than distressed, by travelling.

Owners' thoughts as to why their horse behaved in the way that he did

There were almost as many different reasons put forward by owners as to why incidents involving the horse's behaviour occurred as there are incidents; a few admitted that they had no idea.

The age and lack of experience of the horses headed the list with other reasons such as claustrophobia and the horse's ability to do it, all coming within a list of 'natural' reasons as well as not wanting to leave companions or being left by a companion. Several mentioned that there horse may have been spooked, some specifying lorries coming up behind the transport vehicle, or the sound of their air brakes, sirens from an ambulance, a dog, and other horses causing a commotion.

Others mentioned that their horse might have picked up on their own stress or didn't like being handled by strangers; some simply blamed the horse for having a 'temper tantrum', being impatient or bored or naughty. Two felt that their horse may have fallen asleep.

In 7 cases, owners felt that there horse had a medical problem which might affect their ability to travel. 1 of them was already injured before travelling and making her way to the vets. Owners mentioned physical discomfort ranging from navicular, sacro-iliac damage, and pain in the back and legs in a horse subsequently diagnosed to have 'kissing spines'.

A change in routine, such as standing on the opposite side of the trailer, or being backed out to unload when the horse normally goes forwards were highlighted.

In one case the protective gear had apparently slipped, panicking the horse.

The internal design of the horse transport was often mentioned including the positioning of tack boxes, the solidness of the partition, or the fact that it wasn't solid. The length of the space available was described as being too long in 1 case. The height of the breast bars was highlighted in 2 cases. The fact that a horse was loose, tied up too short, or the quick release lead stretched too far, were brought out in another 3 cases.

A few mentioned the fact that the floor had become wet usually because the horse had urinated.

One owner suggested an interesting theory that a horse that scrabbles it is because it has become disorientated and believes that the wall is the floor.

1.6.6 ALL INCIDENTS

Vehicle ‘activity’

Respondents were asked to describe what their vehicle was doing shortly before the incident so that the authors could determine whether there were any particular activities which were more likely to coincide with an incident occurring.

Vehicle ‘activity’	Number (%)
Stationary	39 (30)
‘Normal’/ smoothly – normal roads inc. motorway	32 (25)
Cornering	11(9)
Slowly on country lanes	7 (5)
Slowing	6 (5)
Going downhill	6 (5)
Slowly over uneven ground	5 (4)
Pulling away/accelerating	5 (4)
Negotiating roundabout	4 (3)
Queuing	2 (2)
Going uphill	2 (2)
Braking hard	1 (1)
Junction	1 (1)
Not stated/unknown	8
Totals	129

Table 13: Vehicle activity

As noted previously, many ‘behaviour’ incidents occur in stationary vehicles but 25% of all the incidents occurred when the vehicles was travelling at a steady speed on smooth straight roads and a further 5% when the vehicle was travelling slowly but steadily along country lanes.



Figure 8: Setting off at a steady speed

Driver ability

The survey questioned the manner of driving of the vehicle in order to ascertain whether driving style might have has an influence on the incident.

The vast majority of respondents replied that the vehicle was being driven “Well” or something similar and pointed out that the driver was driving responsibly, and sympathetically to the horse. Only four people expressed any doubts about the manner of driving although five felt that in hindsight the manner of driving could have been a contributing factor to the incident.

“Brilliantly (I was driving!).”

“I have towed horses for 25 years plus and never had an incident until last October. All the horses I have owned have travelled well, arrived in a fit state to compete and were happy to load/unload. I feel I drive well on all types of road including motorways, taking time to brake, accelerate and corner.”

“...not well enough! They should have slowed down considerably before the hill”

“Well but probably not being as considerate for a young pony.”

“Generally well. Possibly a bit quick on corners/rounderabouts.”

“yes but maybe a little quick”

14 incidents involved the actions of other road users. 11 involved poor driving by car or lorry drivers, 1 a motorbike and another 1 cyclist who ran into the back of a trailer. Two further incidents involved another road user causing a noise – in 1 case a siren on an emergency vehicle and in another the air brakes of a lorry.

One respondent commented, *“Poor education of how slowly trailers with livestock get towed, esp stopping & moving off. Also not keeping distance from the back of the trailer.”*

Incidents involving trailer instability

The authors suspected that a number of incidents would involve towing vehicles that were insufficiently powerful to tow the vehicle to which they were connected or that the trailer itself was overloaded. They also suspected that driver awareness and skill would be a factor.

There were ten reported incidents where the trailer either spun (1) or overturned. In no case does the towing vehicle appear to have been overloaded. However, the most common feature was travelling too quickly downhill, the vehicle beginning to snake, and the driver seeking to rectify this by braking.

Gradient of road	Speed	Trailer 'behaviour'	Action of driver	Cause to which attributed	Number of horses being carried	Trailer make and model	Towing vehicle make and model
Downhill	10 mph	Snaked	Touched brakes	Trailer brakes not working	1	Rice	Toyota Land Cruiser
Downhill	50 mph	Snaked	Tried to brake	Driver going too fast. Suction of passing lorry	1	IW 505	Landrover Discovery
Downhill	50 mph			Slipstream of lorry	2		Landrover Discovery
Downhill				Loose nails in the road	1	IW 510	Mitsubishi Shogun
Downhill	40 mph		Tried to brake	Horse moving about a bit.	1	IW 511	Kia Sorrento
Slight downhill	45-50 mph	Snaked		No apparent reason	2	IW 510	Landrover Defender
	40 mph	Snaked	Tried to slow		2	IW 510	Landrover Discovery
	22 mph	Snaked		One horse stepped back destabilising trailer	2	IW 510	Landrover Defender
	50 mph			Ruts in motorway	2	IW	Landrover Discovery
	40 mph	Collision		Overtaking driver	1	IW 510	Landrover Defender

Table 14: Incidents involving trailer instability



Figure 9: Overturned trailer on the motorway

Horses' injuries

The survey questioned people about the injuries their horses had received as a result of the incident given that this would have emotional and cost implications in terms of the value and utility of the horse, immediate and ongoing veterinary bills, insurance payouts and increased premiums.

65 % of the horses involved in an incident were injured.

Broad category	Number of incidents involving injury to the horse (%)
Incidents involving anxious behaviour by the horse	63 (49)
Design or maintenance failure	5 (4)
Driving incidents	14 (11)

Table 15: Horses injured as a result of all transport incidents

6 horses were euthanized as a result of severe injuries that they suffered as a result the incident in which they were involved and two were killed outright when they fell from the back of a moving trailer when the back ramp came down. Two had a broken leg and one a broken pelvis. Another had severed tendons, and another, a severed artery.

Injuries ranged from a fractured vertebrae, severe lacerations and loss of blood through to cuts and bruises and permanent injuries such as loss of part of an ear and capped hocks. Immediate veterinary treatment included sedation or anaesthesia to facilitate the extrication of the horse, along with topical treatment for wounds including stitching, antibiotics and anti-inflammatory drugs. In the long term some horses had to be kept on 2 to 6 months box rest with continued veterinary supervision including dressing changes. Some owners also sought the help of chiropractors and physiotherapists to aid their horse's recovery.

55 of the horses travelling in front facing trailers were injured out of 80 but their injuries tended to be minor including bruises, scrapes and cuts. However, 3 had to be euthanised and two were killed as noted above.

14 out of 21 horses travelling in rear facing horseboxes were injured. 1 of which was euthanised. There were more severe injuries including severe cuts and a knee joint exposed. Otherwise there were superficial cuts.

What could not be quantified was the number of horses that received unseen injuries such as bruising or even hidden fractures, muscle or tendon strain. We don't know how many horses lost condition, ability to perform, or were eventually retired as a result of their injuries in the long term.



Figure 10: Injuries to horses involved in transport incidents

Behavioural consequences

As one of the hidden costs of an incident, the survey authors wanted to assess whether there were behavioural consequences as a result of an incident in horse transport since this might have an implications in respect of the horse's value and utility after the event.

50 (39%) out of 129 horses involved in an incident exhibited behavioural problems in relation to loading and travelling afterwards. Of those, 36 had been injured during the incident.

“He used to be a brilliant loader, would load himself. Now he just spooks at any ramp and has fear in his eyes. I don't travel him anymore since the incident.”

Responses included statements such as *“The horse would go nowhere near a trailer or lorry”* and *“Now becomes stressed in confined spaces including stable, will try to jump out. I have major concerns over how I will ever travel this horse again if I need to”*.

With training it appears that some horses make a good recovery, one owner stating, *“He was ok to reload that day, but after recovery I spent some time each day loading and travelling him small journeys until his confidence was back. He now back to running up the ramp!”*

43 out of this group were described as good loaders and travellers before the incident.

72 horses experienced no behavioural problems in relation to loading and travelling after the event, one owner commenting, *“Amazingly enough, he has travelled well after the last incident.”*



Figure 11: Loading

Use of protective equipment on the horse

The survey questioned owners about whether they use protective equipment on their horse while it was travelling in order to find out what types they used.

Many owners sought to use protective equipment on their horse such as wrap around travelling boots and other types of boot designed to protect the leg from the knee downwards. 63 of the horses in the survey were wearing wrap around boots with 13 more using sports boots, brushing boots or leg bandages. In 3 cases wrap around boots were coupled with another form of boot underneath. 5 horses were wearing over-reach boots.



Figure 12: Full set of wrap around travelling boots

43 of the horses wearing wrap around boots were injured in the incident with 18 (29% of the total wearing wrap around boots) owners specifically reporting injuries to the leg from the knee or hock down. (Compared to 30 out of 47 horses which were wearing no boots, 10 specifically reporting injuries to the horse's lower limbs, i.e., 21% of the total wearing no boots.) Not all wrap around boots go over the knee or hock but most do. Wounds reported included 2 fractures, a wound to the hock and capped hocks, a swollen knee, and injuries ranging from a scratch to severe cuts to the lower leg. It is not possible to say whether these injuries would have been worse without the boots or whether those that reported no injuries (20) would have received injuries to the legs without the wrap around boots.

Certainly, 4 owners commented that they felt that the wrap around boots had protected their horse from worse injuries, one stating that her horse had “minor cuts and scrapes thanks to travelling boots being worn.” Another that the “travel boots took the worst of her kicking herself, she had lacerations on her legs.” 2 people reported that the boots had been ripped during the incident.

16 horses were wearing close fitting boots or bandages and of those ten were injured with 6 reporting damage specifically to the leg from the knee or hock downwards.



Figure 13: Full wrap around boots (left) and sports boots (right)

On the face of it, horses that are wearing boots are just as likely to sustain lower leg injuries as those that are not wearing them.



Figure 14: Poll guard

Very few horses were wearing a poll guard – 8 in total.

Furthermore 58 horses were wearing nylon head-collars or Western halters which do not break easily, and 4 were wearing nylon Duallys (which have rings both sides of the nose which can become caught on fittings therefore tightening the rope section of the noseband which could ultimately break the horse's nose). Only slightly more, 64, horses were wearing leather head-collars which are universally recommending for travelling horses because they will break (and can be cut) far more readily in an emergency.

Many horses were wearing a rug (46) which are claimed to regulate the horse's temperature and/or to keep him clean; they can also protect him from the cold surfaces of walls and partitions. Almost half were wearing a tail guard (63) which are designed to protect the horse's tail from rubbing and again to keep him clean. Neither really provides protection from injury during an incident. An over tight tail bandage can cause loss of blood flow to the tail over longer durations which resulted in gangrene and a pony having to have his tail amputated⁶.

Only a few horses were wearing their tack, namely a saddle (3) and a bridle (1).

⁶ www.horseandhound.co.uk/showing/welsh-mountain-pony-stallion-mutilated-316334, Horse and Hound, 22nd March, 2013

Method of fastening

The survey asked people what their horses were tied to in the transport vehicle since this has implications for the safety of the horse both in being able to restrain the horse whilst travelling but also in releasing the horse following an incident.

How fastened	Number
Directly to the tie ring	2
To a piece of baler twine fastened to the tie ring	91
To a quick- release device attached to the tie ring	32
Not stated	4
Totals	129

Table 16: Method of fastening

In all but 2 cases, the owners had endeavoured to ensure that the horse was tied to something breakable in the event of an incident (whether or not it would in fact break).



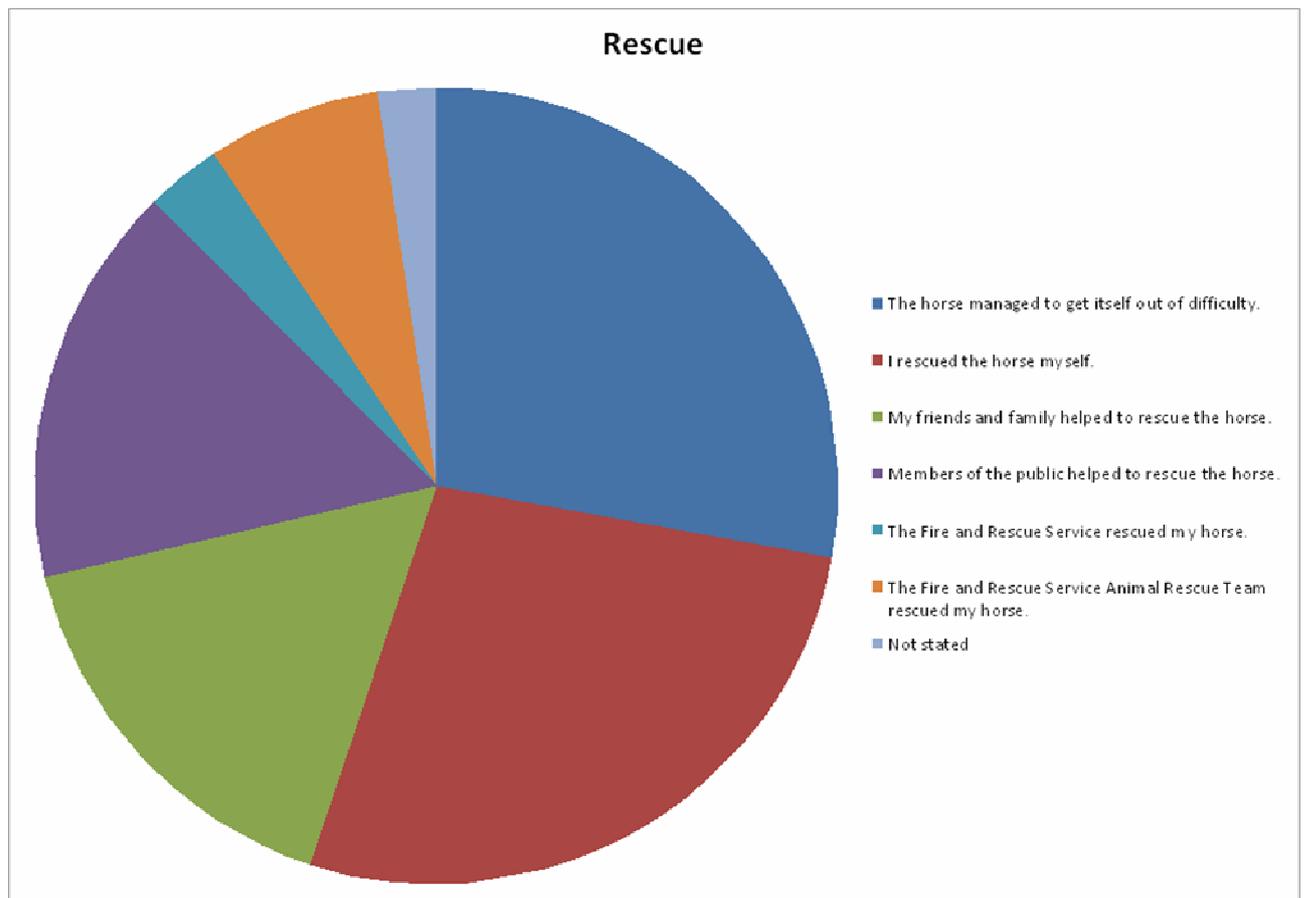
Figure 15: Quick release tie up device

Rescuing the horse

The authors wanted to ascertain how the horse had been rescued as this has a major impact on the safety of the people involved and the viability of the horse at the end of the rescue.

Human involvement in rescuing the horse	No (%)
The horse managed to get itself out of difficulty.	36 (28)
I rescued the horse myself.	35 (27)
My friends and family helped to rescue the horse.	21 (16)
Members of the public helped to rescue the horse.	21 (16)
The Fire and Rescue Service rescued my horse or FRS Animal Rescue Team rescued my horse.	13 (10)
Not stated	3 (2)
Total	129

Table 17: Human involvement in rescuing the horse



Only 10% of all incidents involved the Fire and Rescue Service in the rescue of the horse. A further 28% were incidents where the horse managed to get itself out of difficulty. However that leaves a further 59% or more where the owner, their friends, family or members of the general public have become involved in the rescue of the horse. Whilst this costs less money to the public purse, the risk of serious or fatal injuries to the public cannot be over-estimated.

The Fire and Rescue Service were called to 3 incidents involving rear facing horseboxes and 7 involving front facing trailers.

Medication used during the rescue	Number (%)
My horse had to be euthanized	3 (2)*
Anaesthesia	2 (2)
Sedation	23 (18)

Table 18: Medication used during the rescue

In 22% of all incidents, the vet was needed to administer chemical restraint or chemical euthanasia at the scene of the incident. * This figure is likely to be an underestimate since 6 people reported that their horse had to be euthanized as a result of the incident in answer to an earlier question. The survey did not ask whether the vet was asked to be present at the scene in order to administer any other treatment such as wound management, antibiotics or pain killers.

When talking about how their horses had been rescued, some people talked of the ‘super-human’ effort that had made it possible.

“The trailer ended up on its side with one horse standing on top of the other horse. Three gentlemen managed to open the rear ramp and physically lift the partition to enable one horse to get out then the other horse could get out. (Sorry if this sounds far fetched but it was a bit like Incredible Hulk!!)”

Unless the horse had righted himself, people were quick to go inside the horsebox or trailer to assist the horse with a very high risk of injury.

“Husband and I entered grooms area, got leg each tried to lift and push back.”

“During a lull in his efforts to free himself, I was able to go into the lorry reach underneath him and release the bolt holding the partition shut.”

“In her panic the older mare managed to knock my flying, I landed hard against one of the partitions, sustaining a crack in my spine.”

Before that, people may have tried to release bars from the outside where it was an option, mainly with Ifor Williams trailers. Older models had bars which could be released with an Allen key however people described not being able to find their Allen key or the socket being so rusted or seized that they were not able to turn it.

“The Allen key was taking too long on bolts which were jammed tight. He unfortunately broke his leg as we were making calls to the vet and the fire brigade.”

“We had to release the breast bar but the bolts had rusted on and the threads stripped.”

More recent models have a large eye which can be turned with a sturdy bar or small branch. However, these have not been fitted to the stock trailers which can be used for horses with a standard trailer layout inside. Some of the front facing trailers where it was described as difficult or impossible to release the bars and partitions are those for which an Allen key was required in order to do so. Under the category of “easy if you knew how” knowledge of the existence of an Allen key and how to use it to release the bars from outside would be critical.

Ease with which bars and partitions could be released (where needed) following the incident	All vehicles	Front facing trailers
Impossible	13	7
Difficult	36	11
Easy if you knew how	11	9
Very easy	20	9

Table 19: Ease with which bars and partitions could be released

It was clear that in many cases people would have had to enter the trailer or horsebox to release the bars.

Means by which bars and partitions were released	Number (%)
We didn't need to remove them	44 (34)
The bars and / or partitions were released mechanically from inside the trailer or horsebox.	39 (30)
We were unable to get them out	14 (11)
The bars were released from outside the trailer with an Allen key or bar.	11 (9)
The bars and / or partitions were removed using cutting equipment.	9 (7)

Table 20: Means by which bars and partitions were released

In some cases people recognised the danger that the incident represented to their own health or that of other members of the public.

“Horse stood up itself but facing wrong way. Decided safest to continue journey to a safe place like this.”

“Kept going - too unsafe to load him given his state of mind and felt he may injure himself or us if we opened up the box to enquire. He stopped rearing after 5-10mins and travelled quietly for the rest of the journey.”



Figure 16: Rescue involving the fire service animal rescue team



Figure 17: Horse still heavily sedated following rescue

Prevention of incidents

81 people felt that the incident in which their horse was involved was preventable, whilst 48 did not.

Of these, 11 were incidents that the respondent attributed to outside influences including poor driving on the part of car and lorry drivers, outside noises, something on the road and the box rocking as heavy vehicles went by. In each case the incident would have been preventable but probably not by the respondent themselves.

2 further incidents related to mechanical failure in the vehicle including the alternator burning out. Potentially these are preventable too.

16 people attributed the incident to the behaviour of their horse. In theory at least some of these could be preventable particularly where the horse is known to be unpredictable, 'claustrophobic', or has not received sufficient or effective training.

"Horse panicked in small space. Also did same thing in stables and jump out."

In 2 cases the horse was said to be physically uncomfortable but in 1 case the journey was unavoidable, *"We had to get our horse home and we did it as carefully as we could."*

In 1 case the saddle had slipped around the horse and in another a quick release tie up had stretched too far.

In only 9 cases did the respondent say that they did not know what had caused the incident and therefore, to that extent, those incidents would not be preventable.

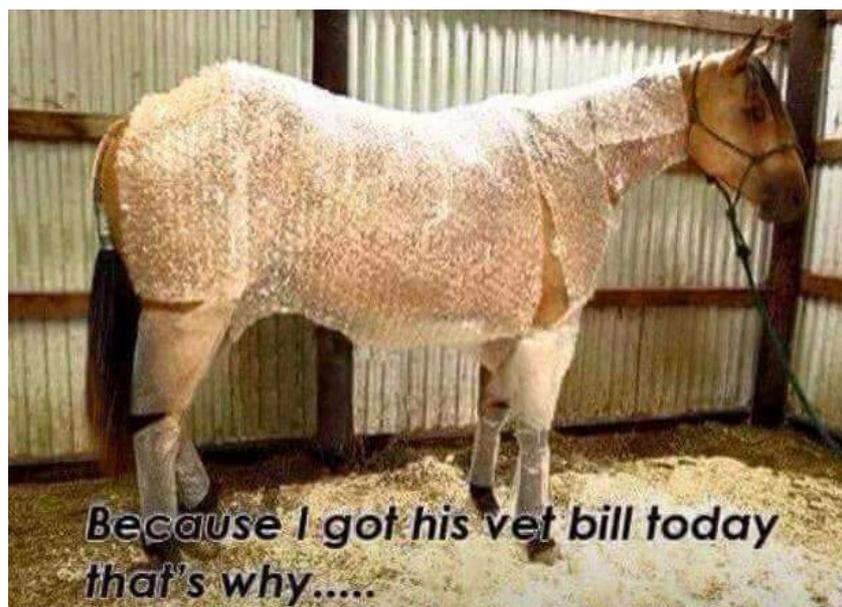


Figure 18: Because I got the vet bill....

Respondents offered some very positive suggestions as to how incidents could be prevented and many of them could be followed. These can be summarised as follows and will be taken forward:

1. Training the horse to load and travel;
2. Pay greater attention to the horse's general demeanour whilst loading and travelling;
3. Better positioning/ flexibility in the height of the breast bar or reconsider arrangement altogether;
4. Good external release systems for breast bars;
5. Consider the width of partitions and whether a horse prefers them to be wider or narrower;
6. Consider whether partitions are better if they are solid or half, with or without rubber;
7. Consider making it physically impossible for the horse to see or get into storage areas in front of the breast partition;
8. Make sure there are no sharp edges or things that can come unstuck in the horsebox or trailer;
9. Don't position tack lockers underneath a horse's head;
10. Consider whether and where windows are positioned so that the horse cannot see them as a way out.
11. Consider a better tying up position – possible lower; check tie ropes to make sure they are undamaged;
12. Consider shutting the top doors above the ramp at the back of front facing trailers;
13. Check all the doors and catches are done up before setting off;
14. Leave the CCTV camera on when the vehicle is stationary; always giving the horse a haynet when stationary;
15. Don't leave the horse on the horsebox/trailer when the vehicle is stationary;
16. Consider whether the horse is better travelling alone or with a companion;
17. Consider the surface of the floor and whether to put down wood chippings or similar;
18. More information to owners about horses and ponies that scrabble and how best to transport them;
19. Better driving by horsebox and trailer drivers and the public in general;
20. Better handling of the horse or pony by everyone coming into contact with it and greater appreciation of the signs when something is going wrong

21. Other riders should always walk their horses in the lorry park at shows and events;
- 22.. Better and more regular servicing of horseboxes and trailers making sure that items not normally covered in the MOT or plating are covered – such as the condition of the floor;
23. Making sure the towing vehicle is powerful enough to tow the trailer and its load;
24. Better hitching arrangements;
25. Making the emergency services aware of the need to switch sirens off when passing horse trailers/horseboxes;
26. Make the emergency services aware of the risk to and needs of horses and ponies in transport when traffic is forced to a halt for long periods of time. Consider giving them priority when redirecting traffic. Consider allowing vets through more readily if they are required;
27. Don't assume that just because a horse loads/ travels well in one type of vehicle, it will travel as well in another, or on the other side of the vehicle or in a different layout, or with a different driver.

The authors would like to thank everyone who took the time and effort to respond to the survey and for the detail and candour with which they answered the questions.

Section 2: The loading and training review

2.1 The impetus for the loading and training review

The next question would be whether there is any correlation between horses that are reluctant to load and those that go on to have accidents or incidents in the transport. No definite conclusion can be reached from the results of the transport survey itself.

The authors could have distributed a survey about incidents and accidents during the loading of horses but may have been inundated since observations at any major horse event reveal any number of horses refusing and being 'persuaded' to load. There are over 32,000 videos on how to train a horse to load on YouTube and of those many have been watched thousands of times.

The joint-author, Sarah Weston, conducted a review of her notes regarding 152 horses with which she had conducted some aspect of loading training during the last thirteen years as a Recommended Associate of Intelligent Horsemanship.

In each of these cases Weston's role was to re-train the horses to load, to work on their anxiety within the form of transport, and to address other issues such as rushing out, using behavioural techniques including pressure and release, positive reinforcement (i.e. clickered rewards) and the use of round pen panels in order to create an enclosed environment within which to work in the first place. Repetition and then regular practise seem to be the key requirement for success given that it helps both the horse and the handler to be calm. Many handlers made it clear that they also felt very anxious when loading and travelling their horses.

Weston noted the existing behaviour of the horse when asked to load and asked to stand in the transport vehicle, coupled with its history of loading and travelling with a view to making recommendations about the training of horses and the configuration of loading facilities in horse transport.

2.2 Key findings of the loading review

- Many horses exhibited behavioural problems and anxiety when asked to load
- Many horses showed clear signs of anxiety when asked to stand in the transport vehicle
- Some horses showed extreme signs of anxiety when travelling in a transport vehicle

2.3 Findings from the loading and training review

Of 152 to which she had been called, mainly within the counties of Hampshire, Dorset and Wiltshire, 26 were requests to train a horse to load in the first place or to practice loading with a fairly willing horse. However 108 bookings were for horses that were reluctant to load and expressed their feelings by refusing to move their feet ('planting'), escalating to rearing, and/or rushing backwards in some cases. There were also 4 cases where the horse had problems unloading. 2 were afraid of coming back down a moderately steep ramp on a horsebox and two had learned to violently rush out of the narrower front exit ramp of a front facing trailer.

In a number of cases the horses had travelled a long way overland and then by ferry from Europe or Ireland and were not keen to be loaded again. However, in many cases it was evident that horses had not been trained well in the first place, many were difficult to lead, and some had been subjected to some poor treatment in order to get them loaded previously. One set of ex-racehorses were rarely separated from each other and when one was taken away from the established herd the rest became extremely anxious and galloped around.

Many horses showed anxiety once loaded onto the horsebox or trailer which manifested itself through passing frequent runny droppings, trying to push their way out through the handler or the partitions, or moving on the spot ('piaffing'), pawing, kicking, and vocalisation, or displacement behaviours such as snatching at their food, grinding teeth, or being aggressive towards other travelling companions. 1 horse went berserk once the front bar was put up in front of her but notably she had suffered from sarcoids on her chest which had been surgically removed.

14 horses had previously had problems once travelling, ranging from high levels of anxiety to panicking, and in 7 cases horses were known to have collapsed against the partition ('scrambling'⁷), or laid down on the floor. Of these 7, 6 were travelling in a forward facing trailer and 1 in a herringbone horsebox.

⁷ Typically in 'scrambling' cases the horse leans its bottom into the partition and then begins to go into a trance-like state at the head, whilst the rest of the body collapses sideways onto the partition, but their legs scabble, often at a gallop, along the outer wall of the trailer. The horse seems barely conscious and yet is clearly very distressed.



Figure 19: Pony scrabbling in trailer

Another really worrying factor was the number of cases where the horse was being asked to load into a trailer or horsebox that was clearly not suitable for a horse of their physique or was in a poor state of repair. Insufficient head room was a common feature in cases where the horse was over 16.2 hands, and in one case a selection of racehorses, some of which were heavily pregnant, were being asked to load into a rear facing 3.5 tonne lorry which was not long enough or wide enough for them to travel comfortably – nor was it up to the weight of two. In one case there was a big hole in the floor of the horsebox which the owner intended to cover with rubber matting and in two cases there were defective catches on partitions. It was proposed that one horse was to load into a horsebox where the tack lockers under the horse's head had sharp edges when she had previously had an accident, catching her feet on the tack locker and sustaining a deep cut to her fetlock.



Figure 20: Teaching a horse to load

Section 3: Trends in current transport vehicles

The project authors wanted to document the development of the most popular forms of horse transportation vehicles. The two most common types are the self contained 3.5 tonne van conversion and, amongst twin axle front facing trailers, the Ifor Williams trailer range. 3.5T horsebox conversions are manufactured by a wide variety of manufacturers and are often bespoke, whereas Ifor Williams offer a functional and economical trailer in a range of sizes with some optional features. They are the market leaders in trailer manufacturing.⁸

3.1 Emergence of 3.5 tonne rear facing transport in the UK

The very first rear facing horseboxes were manufactured in the 1930's by British manufacturer Vincents. Alan Johnstone who worked for Vincents, stated that there were no instances of horses breaching the rear partition, something he attributes to better standards of driving by professional drivers.⁹ However, it must be borne in mind that modern traffic conditions are very different and the average speed on a British road is far greater than would ever have been expected before the Second World War.

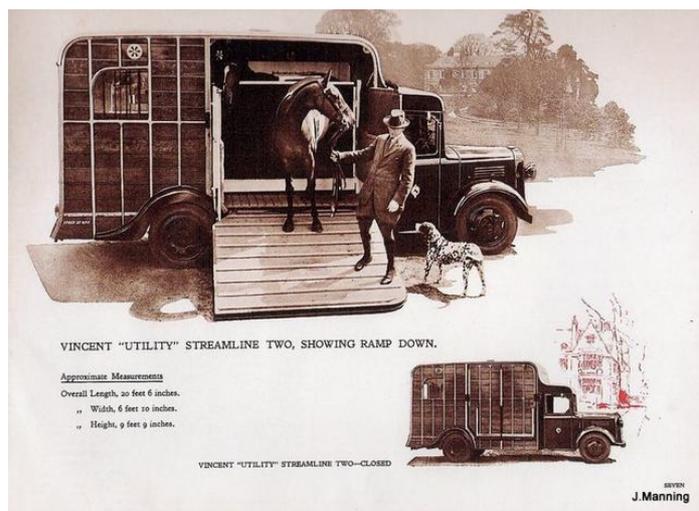


Figure 21: Vincents' rear-facing horsebox. Picture courtesy of Judge Manning Transport

⁸ At the first day of the New Forest Show, 2015, Ifor Williams front facing trailers outnumbered Rice Richardson (no longer trading) by a ratio of more than 5:1 and Equitrek trailers by 11:1. There were five times more Ifor Williams trailers at a local riding club show than all other makes put together.

⁹ Personal correspondence to Dr. Sharon Cregier October 27, 2014

There has been a significant rise in the availability and popularity of rear facing transport in the UK. Although the earliest experiments in orientation within horse transport were carried out in the late 1960's, it was not until the 1980's that more attention was given to the findings and more research carried out. Even then, it was some time before modern manufacturers in the UK began to design horseboxes that were rear facing. Although UK manufacturers seem to have embraced the headline news contained within the later research¹⁰, that horses seem to prefer to travel facing backwards, they do not seem to have taken into account other critical design changes that were envisaged by the originator, Holmes¹¹, i.e. the ability to adopt a 'natural stance' and the critical tying up position. Both the Equitrek (trailers and horseboxes) and Marlborough Horseboxes point to the research in their current marketing.

"...this configuration offers safer, easier and less stressful loading for the horse whilst also giving them more comfortable, rear-facing travel – the scientifically proven preferential direction of travel for horses..." Equitrek¹²

The screenshot shows the Marlborough Horseboxes website. At the top right, contact information is provided: Tel: 01772 812 780 and Email: ruffrees@aol.com. The main navigation menu includes HOME, SPORT, COLT, HUNTER, PREVIOUSLY OWNED, INFO/OPTIONS, GALLERY, and CONTACT US. The page title is "Rearwards or Forward Facing". Below the title, there are social media sharing buttons for Facebook (30 shares), Twitter (0 tweets), and Pinterest (0 pins). The main content area features a quote extracted from a paper by Dr. Natalie K. Waran at the Institute of Ecology and Resource Management, University of Edinburgh, published in The Veterinary Record, July 6th, 1996. A link is provided to "DOWNLOAD A PDF OF REARWARDS OR FORWARD FACING INFO". The text of the quote discusses the effects of transporting horses facing forwards or backwards, comparing heart rates and behavior. It notes that rear-facing transport is less stressful, as horses can lean over their forequarters and maintain a more natural stance, reducing the physical effort required during transport.

Figure 22: Marlborough horseboxes quote directly from the research of Dr. Natalie Waran^{13 14}

¹⁰ See page 71-79 for historical research

¹¹ See page 71 for Holmes' research

¹² www.equi-trek.com (as at 10.8.15)

¹³ Effects of Transporting Horses Facing Either Forwards or Backwards on their Behaviour and Heart Rate, Waran, N.K. et al, The Veterinary Record, 6th July, 1996

¹⁴ www.marlboroughhorseboxes.co.uk/rearwards-or-forwards.asp

It is more likely that radical changes in design were in fact inspired by changes in legislation which allowed 3.5 tonne horseboxes to be driven as a small commercial vehicle for which no special driving test had to be taken, or additional training costs incurred, unlike heavy goods vehicles or indeed trailers. The vehicles were covered by an ordinary MOT instead of a Plating Certificate as required for larger vehicles. MOT stations are more numerous than HGV Centres and MOTs are cheaper than a Plating Certificate; Vehicle Excise Duty was also cheaper. The vehicle itself was often cheaper to buy than a larger vehicle, cheaper to run and easier to store.



Figure 23: 3.5T conversion on a Renault Master chassis.

3.5 tonne vehicles are seen as suitable 'ladies' boxes' because of their manoeuvrability. They are often more aesthetically pleasing internally and externally than traditional, functional horse boxes. They have also proved to be very popular with commercial horse transporters, race-horse trainers, and those offering self-hire. As such they are highly marketable.



Figure 24: Marlborough Sport on a Renault Master or Vauxhall Movano chassis.

In order to make vehicles that were smaller and lighter, manufacturers had to choose either a front facing or a rear facing configuration rather than the more traditional herringbone. Some modern conversions, especially on a Ford chassis, are front facing, but many are rear facing (e.g. Marlborough). This has the benefit that the horse is placed between the two axles, with the 'living'/ storage space at the rear, and gives the horse a smoother ride than in front facing and herringbone vehicles where the living area is immediately behind the cab; this places the horse above or behind the rear axle where there is the most movement of the vehicle

It is extremely easy to overload a 3.5 tonne vehicle especially where there is a lack of understanding of what the weight limit mean, some people believing that the vehicle can *carry* a load of 3.5 tonnes, whereas it is the overall weight of the vehicle, and the load including horse(s), equipment and passengers that counts. Some vehicles are overloaded with just one horse on board and experience shows that those carrying two are frequently overweight. Overloading a vehicle can seriously affect the handling and the braking distance of the vehicle.

Vehicles with a higher weight limit, stalled for three or four horses, are less likely to be overweight because they are often used for only two horses; however they too can be overloaded if filled to capacity.

3.2 The Ifor Williams Front Facing Trailer

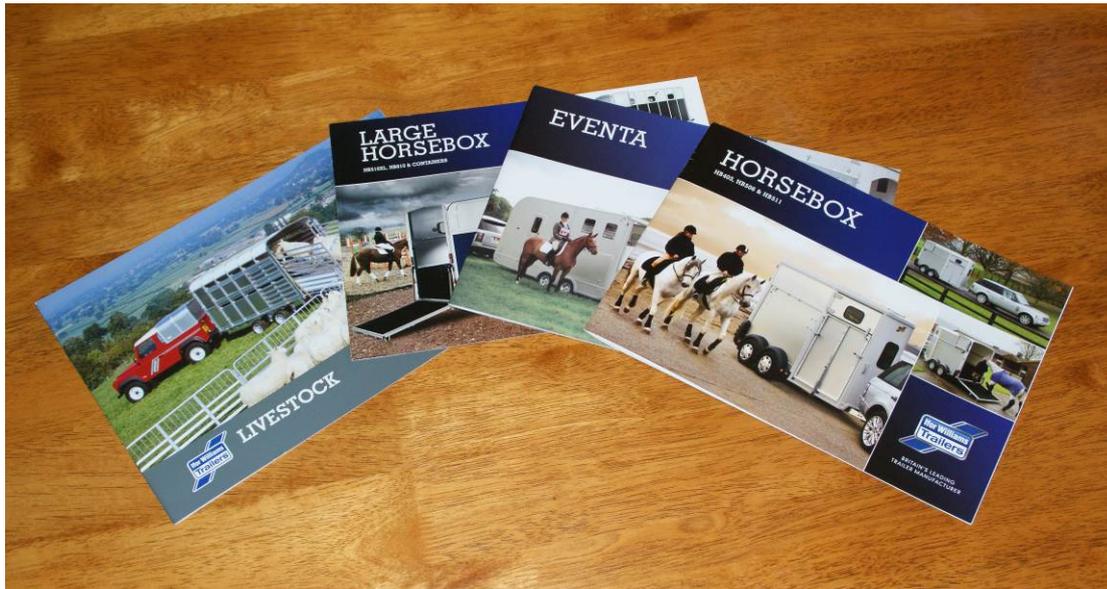


Figure 25: The Ifor Williams range

The Ifor Williams horse trailer could be described as ubiquitous. Ifor have captured the market by offering an economical and functional horse trailer. They claim to sell more than 30,000 per year. The trailer, which has been remodelled every few years, appeals to the mass market for horse trailers and is sold across Europe as well as the UK. There is a lively second hand market for them.

Ifor Williams had the advantage of already being embedded in the farming industry with livestock and flat bed trailers of all kinds; they filled a gap in the equine market by offering a practical, yet rugged trailer.

The trailers are promoted by reference to four key features: “quality, strength, value and ease of maintenance” which are said to be the “driving force behind everything we do”.

Ifor Williams put safety at the top of their priorities although there have been design problems with some of their partitions and fasteners in previous models and problems with breaking plastic fasteners on the latest models. The words safe, safest, safety and safer, are all used in their marketing brochure. They state that “Our trailers have undergone rigorous testing, not only within our own test facilities but also at independent test tracks”

Further enquiries to Ifor Williams Customer Care Manager reveal that the company uses the Mira Test Track¹⁵ to test their trailers for strength, durability, and stability. Impact testing is carried out on various components.

¹⁵ www.horiba-mira.com

In 2009, German Equestrian Magazine, Cavallo, rated the Ifor Williams 506 trailer as the “overall winner” in class in a test which looked at *comfort* as its priority. “They used an old runway close to Stuttgart as the setting for the tests and placed two 500kg weights inside the trailer to replicate the weight of the horses. Sensors recorded the effect of the vibrations on the trailer whilst driving over bumps.”¹⁶

John Mikisch, the journalist who wrote the Cavallo article, said: "The editorial team sought to find the trailer in which horses suffer the least from stress in a comprehensive test.

The judges were particularly impressed with the leaf spring suspension on the British horsebox, which they said, "gives the horse a particularly comfortable ride". They added that the horsebox from Ifor Williams Trailers "clearly compensates for lateral rocking very well" and "was the best in category". The judges also commented that some of the other horsebox suspension systems caused side to side movement which was not comfortable for the horse. In addition, the Ifor Williams horsebox performed well in relation to noise levels where it was the second quietest of all of the horseboxes when towed at 50mph.¹⁷

The HB506 was recommended ahead of six other manufacturers, four German and two French. They were the Top Master by Böckmann, the Pegasus from Humbaur, the Nevada Alu from WM Meyer and the Compact from Thien. The French contenders were the Provan E by Fautras and Grand Confort Gold by Cheval Liberté.

The Ifor Williams came second in the tests for noise and shock absorbency and fourth in the stopping distance test – 10.6m at 50 kph and 27.1 at 80 kph.

In the report it was noted that “noise can have a considerable effect on living creatures. Prolonged exposure to 80 decibels is considered enough to cause agitation.” All of the trailers tested exceeded 100 decibels when travelling at 80 kph (50 mph) even with the hatches and flaps closed.

Mikisch concluded his report by saying: “Manufacturers must produce trailers which are more horse-friendly and horse owners have a duty to purchase the best trailer for their horses. Regrettably, the horse is currently just a passenger.”

¹⁶ www.horseandhound.co.uk/news/ifor-williams-506-trailer-tops-german-magazine-test-289576

¹⁷ www.iwt.co.uk/customer-care/downloads/

The internal fittings are easy to use, maintain and dismantle, and for some years the breast bars have been able to be released externally in an emergency. At first this required a special Allen key which many people lost but more recently there has been a large eye which can be turned using a wheel brace or sturdy stick - unfortunately this makes the eyes very easy to steal. Not all owners will be aware what they are for and some use them as tie up rings for their horses even though there is a small notice forbidding this inside the groom's door which states: "No horse or pony to be tethered to the outside of the trailer..."



Figure 26: Quick release eyes on the exterior of IW trailer

The eyes are not fitted as standard to stock trailers with the option of using bars and partitions set up for two horses to stand side by side, which still relies on the Allen key system. The pins which fasten the bars to the central partition are easily bent on impact by the horse making it difficult to undo them but they tend to stay in place.



Figure 27: Pins for the IW breast bar

The breast and breech bars can be fitted at two different heights, according to the model purchased, which are meant to be appropriate for different heights of horse. Although still solid and cold to touch, they have a much wider circumference than those of many older trailers which tended to feature thin box section.



Figure 28: Interior of latest IW trailer and an old Rice Richardson trailer.

Ifor Williams also offer a double width breast and breech bar so that a horse can be travelled without a central partition. The central pole holding the partition is secured using a clevis pin and an R pin so that the central partition can be removed very easily. No advice is given about modifications to driving style or how the horse should be tied up in this configuration.



Figure 29: R pin and clevis pin for central bar.



Figure 30: Socket for central pole

Ifor Williams warn via a notice on the groom's door that horses should not be travelled adjacent to the groom's door which should ensure that people do not travel horses entirely loose and without any form of breast or breech bars in place.

ATTENTION
No horse or pony to be tethered to the outside of the trailer or transported in the area adjacent to this door

SAFETY & MAINTENANCE
Read owners handbook before using this trailer.

IMPORTANT WASHING & CLEANING INFORMATION
To preserve the appearance of the galvanized and aluminium surfaces prior to natural weathering, wash trailer chassis and body after every journey. Always clean out trailer thoroughly after use.

LIGHTING INSTALLATION
E4 48R-040206

TYRE PRESSURES
65 P.S.I.
4.5 bar
at 323kg (710kg/1600lb)
Cold R&R Prod
140R13C 8PR

INTERNATIONAL STANDARD WIRING DIAGRAM
For 13 pin plugs and sockets to ISO 11446

Front view of socket
Rear view of plug

Pin	Colour	Application
1	Yellow	LH Flasher
2	Blue (or grey)	Rear Fog
3	White	Earth
4	Green	RH Flasher
5	Brown	RH Tail/Wing
6	Red	LH and RH Stop
7	Black	LH Tail/Wing
8	Pink (or grey)	Reverse
9-13		(NOT USED)

PDI Pre-delivery Inspection. To be completed by Distributor.
Checked _____
Date _____
IWT © P/No: C70381-13 Issue 3

Figure 31: Warning inside groom's door

The partition is lighter to use than in more traditional trailers where the partition was in one full length section. The Ifor partition features two separate rectangular sections worth a rubber skirt which are fastened to the central post by hinges. This makes it possible to swing each one back individually making a wider entrance or exit for the horse to load/ unload making it more inviting and easier to negotiate.

Protection bars on the windows are offered as optional, as are sliding windows, and the windows include a large window at the front of the trailer – allowing the owner to check the horse visually.

Floors are non-slip with fixed rubber matting to absorb vibration. There is a ventilation flap in the roof.

External fasteners and catches have continued to be modernised for ease of use, reduction of noise and vibration, and safety of the horse.



Figure 32: Coupling system

The front ramp was positioned on the right hand side, which in the UK meant that in an emergency the horse would be unloaded into the road-side rather than the kerb-side of the trailer. More recently Ifor have offered the option of a left hand side front ramp.

Parts and servicing are easy to obtain and reasonably economical (Full Service: £125 + VAT at a registered Ifor Williams dealership). Vehicles are serviced according to a list issued by Ifor Williams which includes brakes, coupling, doors, ramps and catches, as well as the floor.

Brand new Ifor Williams come with an information pack containing the User Manual, User Instructions on the Rubber Mat Retainer allowing people to check and wash their trailer floors, User Instructions on Fitting and Removal of Centre Partition & Optional Full Width Breast and Breeching Bars, User Instructions on the Avonride ball coupling, a copy of the Society of

Motor Manufacturers and Traders publication on Towing and the Law (7th Edition)¹⁸, and a copy of Towing Horse Trailers¹⁹

It also includes the bar which can be used to undo wheel nuts and the eyes on the quick release system for the breast bars.



Figure 33: The evolution of the IW trailer

¹⁸ Towing and the Law (Seventh Edition), SMMT, www.smmt.co.uk, 2014

¹⁹ Towing Horse Trailers (Allen Photographic Guides), John Henderson, 2012



Figure 34: Information sent out with a new IW trailer

Section 4: Video evidence

There are a great number of videos available through youtube.com which illustrate various aspects of horse transport including the debate about orientation and stance.

Equi Balance Horse Trailers Ltd²⁰ are the only known company making horse trailers according to the model envisaged by Holmes and their video illustrates the original Kiwi Safety Trailer that Holmes designed as well as the raise loading platform, loading horse backwards, the pillar-style tying up position that was advocated. (NB. In this video the narrator mistakenly says that the horse is shifting its weight to the forequarters when front facing when the horse is actually shown to be shifting her weight to the hindquarters.)

Your Horse Magazine²¹, with equine scientist, Dr David Marlin, conducted an experiment with a horse called Chocolate, illustrating front, herringbone and rear-facing transport. The horse appears to be the most relaxed in the rear facing transport. In all three configurations the transport vehicle is noisy. This experiment was also written up for the magazine.²²



Figure 35: Your Horse Magazine article

A private video²³ shows a horse apparently travelling on a straight road at 30 mph in a herringbone configuration and highlights the noise levels and mobility of the travelling horse.

²⁰ www.youtube.com/watch?v=j2O_ItTcR9M, Sharon Cregier

²¹ www.youtube.com/watch?v=oPpd1-QpzhQ, Your Horse Magazine

²² Moving in the Right Direction, Your Horse Magazine, p.64, November 2014

²³ www.youtube.com/watch?v=XFbLwqV6yvg&feature=youtu.be, 11blizz

There are also many videos about loading a horse including one showing the latest Ifor Williams model²⁴ This shows several unsafe practices including the fact that there is no vehicle attached to the trailer to balance it, the front ramp and jockey door are wide open, giving the horse somewhere to go, there is a water container bungeed into the front of the trailer, the handler is wearing no protective clothing and is wearing shorts, and the horse is tied up (albeit to a quick release tie) before the breech bar is put up. It is interesting to observe that the horse is apparently leaning into the side wall very shortly after he is loaded.

Cavallo magazine have a number of videos on their website about stress in transport, as well as one explaining the background and methodology to their tests in 2009²⁵.

²⁴ www.youtube.com/watch?v=q2uz3lyDbng, Charlie Gethin

²⁵ www.cavallo.de/test/cavallo-haenger-test-7-modelle-im-vergleich.314875.233219.htm

Section 5: Information from Insurance Companies

Insurance companies such as NFU are exposed to all risks in the case of a transport incident since they cover horseboxes, trailers and horses and therefore may have to pay out in respect of personal injury, injury of loss of the horse, and damage to or loss of the vehicle. Even where they only cover the transport vehicle, they may be responsible for losses in respect of a horse that is being transported within it.

Strictly speaking, owners need to notify their insurance company of any changes they make to the configuration of their horsebox as it could affect the level of risk for that vehicle. The concept of *uberrima fides* (utmost good faith) applies so that the insured is obliged to inform the insurance company of anything that would affect their risk. However, it would appear that insurance companies ask for very little detail in the first place about the configuration of the horsebox or what safety features are in place.

In any incident, especially one where the horse has to be cut out of the vehicle, the vehicle is likely to be a write off.

Section 6: The cost of an incident

It is difficult to quantify the exact cost of an incident since the involvement of the public, the professional emergency services, Highways Agency, veterinary surgeons, and insurance companies in both the short and long term vary from case to case.

The co-author, Jim Green, estimates the rough cost of fire service provision at the scene of an incident as £1,000 per hour but this escalates considerably where there is a major road involved and other road users, hauliers and so on, diverted or delayed.

The potential emotional and physical cost to the humans and horses involved in the incident and in any rescue are not quantifiable.



Figure 36: Considerable resources are deployed to an incident



Figure 37: Animal Rescue Team practical training



Figure 38: Demonstrating rescue techniques at the New Forest Show

Section 7: Regulation of horse transport in the UK

The European and United Kingdom legislation on standards and requirements for the design and manufacture of horseboxes and trailer is hard to find and there is no codifying Directive, Act of Parliament, or Regulations.

Vehicles and trailers for use on all journeys must comply with Part 1, EC Regulation 1/2005, Annex I, Chapter II. The protection of animals during transport and related operations.²⁶ This is now embodied in The Welfare of Animals (Transport) (England) Order 2006²⁷ and the parallel legislation for others parts of the U.K.

This covers minimum space requirements (space for animals to stand in a natural position with head raised), floor covering, ramp angles, ramp ‘battens’ to prevent slipping, prohibition of suspending animals, ventilation, lighting (internal), temperature monitoring, vehicle tracking systems, strength of partitions, free of sharp edges, barriers to prevent escape when load door opened, access for care (jockey door), markings to indicate animals on board, horses in individual stalls (except unhandled).

DEFRA (The Department for Farming and Rural Affairs) have issued advice on The Welfare of Animals During Transport²⁸ and point out that the regulations do not apply to transport of animals not in connection with an economic activity or transport to or from veterinary practices or clinics under veterinary advice. Nevertheless manufacturers and designers are likely to comply with the regulations in order to keep the market for their vehicles as wide as possible.

EC regulation1/2005, Part1, Annexe 1, Chapter III, paragraph 1.8, Handling states: It shall be prohibited to: (a) strike or kick the animals; (b) apply pressure to any particularly sensitive part of the body in such a way as to cause them unnecessary pain or suffering; (c) suspend the animals themselves by mechanical means; (d) lift or drag the animals by head, ears, horns, legs, tail or fleece, or handle them in such a way as to cause them unnecessary pain or suffering; (e) use prods or other implements with pointed ends; (f) knowingly obstruct any animal which is being driven or led through any part where animals are handled. As transportation is part of handling then these regulations should apply to animals that are being transported and has implications for loading techniques.

The Farm Animal Welfare Council (FAWC) developed the principle of Five Freedoms for animals which are now embodied in the Animal Welfare Act, 2006.²⁹

- a suitable environment (place to live)
- a suitable diet
- to exhibit normal behaviour patterns
- to be housed with or apart from other animals (if applicable)
- to be protected from pain, suffering, injury and disease

²⁶ www.gov.uk/government/uploads/system/uploads/attachment_data/file/193680/pb13550-wato-guidance.pdf

²⁷ Statutory Instrument 2006, No. 3260 Animals, England; Scottish Statutory Instrument 2006, No. 606 Animals, Animal Health; Welsh Statutory Instrument 2007, No. 1047 (W.105) Animals, Wales ; Statutory Rules of Northern Ireland 2006, No.538 Animals, Animal Health.

²⁸ www.gov.uk/government/uploads/system/uploads/attachment_data/file/69376/pb12544c-horses-080711.pdf

²⁹ <https://www.gov.uk/guidance/animal-welfare>

EC Directive 71/320 covers braking systems (service and secondary/parking brakes). This is referenced from The Road Vehicles (Construction and Use) Regulations 1986, which covers things like suspension, wheels, tyres, maximum width, mudguards, breakaway cable.

Road Vehicle Lighting Regulations which covers lights and reflectives.
EC 94/20 covers coupling.

Since 2010 it has been mandatory for trailers to be approved under European Community Whole Vehicle Type Approval, which means they have been checked by the Vehicle Certification Agency³⁰. Vehicle Type Approval is the confirmation that production samples of a design will meet specified performance standards. Even if a horsebox or trailer is home made it would have to be checked for compliance. However, there is no further requirement for an equivalent of an MOT once the trailer has been approved.^{31 32}

The VCA checks which are relevant to horse transport vehicles include, braking, statutory plates as to weight/load, insulation of lighting, heating systems, spray suppression (mud guards), safety glazing, tyres, masses and dimensions, couplings and transport of dangerous goods under the applicable EU Regulations.

Whilst Vehicle Type Approval is meant to provide some measure of road safety, it thwarts and suppresses innovation, since every invention and modification has to be re-certified at a cost of just under £2,000. Manufacturers intending to produce less than 500 vehicles per annum can opt for a UK Only Standard under the National Small Series Type Approval which has eased technical requirements and costs less. Neither covers anything concerning the welfare of the horse.



Figure 39: Fastener within a horsebox

³⁰ www.dft.gov.uk/vca

³¹ www.horseandhound.co.uk/exclusive/trailer-mots-could-become-law-413912 1.12.13

³² www.horseandhound.co.uk/news/could-trailer-mots-become-law-2-512062 1.10.15

Some trailer manufacturers, for example, Equitrek, refer to products built in ISO9001 accredited factories – this means that they have a quality management process. Once again, the Vehicle Certification Agency provides certification for quality management standards such as ISO 9001.

Plating Certificates (MOTs), issued by the Driver and Vehicle Standards (which has replaced the Vehicle and Operators Services Agency), focus on safety and roadworthiness rather than the safety and welfare of the horse.³³ Their guidance gives a suggested ‘walkaround’ check for horseboxes and trailers but these again concentrate on the mechanical condition of the vehicle and do not consider the needs of the horse or even the condition of the floor.³⁴

It should be noted that there is apparently no legislation requiring crash/ impact testing for the whole vehicle.

The speed limit when towing a trailer is 60 mph on motorways and dual carriageways and 50 mph on other roads, provided that lower limits are not in operation. Trailers must not be towed in the outside lane of a three or more lane motorway unless unavoidable.

Everyone who passed their UK driving test on or after 1st January, 1997, has been required to take an additional driving skills test if they wished to tow a horse trailer. There are many companies offering this training which is open to anyone whether it is compulsory for them or not. However, it should be noted that the trailer test does not involve a laden horse trailer. The trailer used for the test is braked and must have 1000kgs Maximum Authorised Mass with an unspecified load of 600kgs.

There are a rising number of young drivers who are taking advantage of lower insurance premiums by having ‘black boxes’ fitted within their cars. It is expected that these telematic devices will become compulsory for all new vehicles in 2018 under EU regulations. They monitor and record the manner of a person’s driving including speed, braking and cornering.

The authors noted that at present there is no formal or robust record keeping of the number and nature of incidents and accidents concerning horse transport even where emergency services or a vet has been involved. The national incident recording system for professional emergency services tends to categorise incidents according to criteria which do not give much attention to the nature and causes of incidents involving animals. A horse can die in an incident without their being a record of it.

The British Horse Society keeps a record of the location of many types of horse related accidents on their website³⁵ but there are very few incidents actually recorded and very sparse details available.

³³ www.gov.uk/government/uploads/system/uploads/attachment_data/file/453281/heavy-goods-vehicle-hgv-inspection-manual-oct-2015.pdf

³⁴ A Guide for Horsebox and Trailer Owners, DVSA, www.gov.uk/government/uploads/system/uploads/attachment_data/file/193236/A_guide_for_horsebox_and_trailer_owners.pdf 2012

³⁵ www.bhs.org.uk/safety-and-accidents/report-an-incident

Insurance companies, such as the National Farmers Union, keep records about the number of claims for injuries to horses as a result of transport incidents and indeed both the NFU and the BHS have been instrumental in encouraging people to maintain and service their vehicles and to become more aware of their driving standards. Organisations such as Tyresafe also have regular campaigns urging people to fit appropriate tyres and to maintain them correctly.³⁶



Figure 40: Floor failure

Safe tyres save lives

Figure 41: Tyresafe Logo

³⁶ www.tyresafe.org/campaigns/tyre-safety-month-2014/get-involved/case-studies/661-nfu-mutual

Section 8: Historical resources

8.1. Historical research on horse transport

8.1.1. Orientation within the vehicle

Doctor Sharon Cregier, Ph.D., F.I.A.S.H. (Hon., Edin.), has collated and reviewed a great number of research papers on horse transport and states:

“The standard horse trailer requiring the horse to face the direction of travel contradicts the horses’ behavioural, physiological, and physical needs. It limits the horse’s ability to maintain its balance off its forequarters, lower its head to clear its respiratory tract, avoid activity in its hind area, and for certain male horses, urinate at will.”³⁷

This follows her earlier review of the literature and research into equine transport in which she describes in greater detail those needs as well as the advantages of well designed, by which she means allowing a natural stance (as described below), rear facing transport.³⁸

She quotes: “Standard horse trailers are built with the same concept used to transport dead weight. The live cargo, like any solid equipment, is expected to remain stationary in transit. Live weight cannot remain stationary during transport.”³⁹

She explains how in the 1960’s David J. Holmes, an automotive engineer, horseman, and haulier in New Zealand, began to study and experiment with the layout of horse transport taking into account the anatomy and balancing mechanisms of the horse following a serious accident transporting two racehorses.⁴⁰

He observed that the horse’s natural relaxed stance involved 60% or more of the horse’s body weight being ahead of the girth, requiring a forward lean. This gave it “automatic balance” and allowed it to sleep while standing. When travelling unfettered, the horse was shown to voluntarily face the rear, over the axles of the vehicle where it could balance naturally, dropping the head **below** the withers, resting its hip and hind leg.⁴¹ In this way it could keep its forward lean and not fight the motion of travel.

He found that “horses could not maintain a natural stance when facing the direction of travel and would resist the forward motion of the trailer, adopt a high head carriage and transfer its weight to the rear and sacroiliac joint or toss its head up and down or side to side, continually trying to look behind itself, and spreading its hind-legs and sometimes forelegs outside of its

³⁷ The Welfare of Horses During Transit, Cregier, S. and Holmes, O. International Equine Science Meeting 2008, University of Regensburg, Germany.

³⁸ Reducing Equine Hauling Stress: A Review, Cregier S., Equine Veterinary Science, November/December, 1982.

³⁹ Emergencies on The Road, Sellnow, L. 1998. The Horse. April 15:4, pp.51-56

⁴⁰ The Welfare of Horses During Transit, Cregier, S. and Holmes, O. International Equine Science Meeting 2008, University of Regensburg, Germany.

⁴¹ Caution: Taken in isolation there is some conjecture (especially by the author, Sarah Weston) as to whether a “resting foot” is actually a “running foot”, a sign of ambivalence in the horse rather than relaxation. As with all body language it is open to informed interpretation and would benefit from further experimentation and should always be read in context.

ribcage in an effort not to fall. At its destination, height increases at the withers due to the tension of transport were noted.”

In 1967 Holmes designed a trailer that fulfilled his requirements but only twenty or so were apparently made. Cregier reports that “no harm has come to either horse or handler... [in] forty-one years of incident-free transport.” However, very few horseboxes or trailers have been designed taking into account the key elements that Holmes highlighted even though later research seems to confirm and expand upon his experience.

In an article in 1990, T.D.M. Roberts, a specialist in human and animal balance, confirmed this view concluding that “in the forward facing position the horse will have no defence against deceleration, or even against the sudden cessation of forward acceleration for a gear change... The rear-facing mode thus gives better protection against accelerations...”⁴² He went on to endorse rear facing transport.

Natalie Waran, Jeanne Marchig Professor of Animal Welfare Education at Edinburgh University, has conducted a thorough review of horse transportation in the context of the welfare of horses.⁴³

As with Cregier, Waran looks at the orientation of vehicles as well as the horse’s body posture, finding that horses were induced to adopt a ‘bracing’ position in a moving vehicle.⁴⁴ Her own research in 1996 on the subject of front or rear facing transportation found that “horses seemed to find being transported less physically stressful when they were facing backwards than when they were facing forwards” as measured by heart rate and behaviour.⁴⁵ This was in spite of the fact that the horses used in the experiment were all accustomed to travelling facing forwards normally.

She also examined a number of research papers which actually found inconsistent results in preferred orientation, which she felt might be related to differences in the design of trailers and horse boxes, some horses showing a strong preference to face forwards and no differences in heart rates.⁴⁶ In 1999, Gibbs and Friend⁴⁷ found that the balancing ability of the horse was not meaningfully affected by orientation.

Waran concluded that “the strong preference that some horse owners have observed for horses to voluntarily face away from the direction of travel may be due to various factors. These include; an improved ability to maintain balance in some individuals, avoidance of saddle compartments/racks that may restrict the movement of the head and neck, preference to avoid the dark-cave effect associated with the forward end of most smaller horse trailers and a strong desire to face the more open rear of a trailer that often has a large opening between the top of the rear doors and the roof of the trailer”.

⁴² Staying Upright in a Moving Trailer, Roberts, T.D.M., *The Equine Athlete*, Vol 3, No 3, May/June 1990

⁴³ The Effects of Transportation on the Welfare of Horses, Waran, N et al. *The Welfare Of Horses*, Ch. 6 pp.125-147, Springer, 2007.

⁴⁴ Effects of Loading and Transport on the Heart Rate and Behaviour of Horses, Waran, N.K. et al. *Applied Animal Behaviour Science* 43 (1995), pp. 71-81

⁴⁵ Effects of Transporting Horses Facing Either Forwards or Backwards on their Behaviour and Heart Rate, Waran, N.K. et al, *The Veterinary Record*, 6th July, 1996

⁴⁶ Effect of Body Direction on Heart Rate in Trailered Horses, Smith, B.L. et al, *Equine Veterinary Journal* 26 (1994), pp. 374-377

⁴⁷ Horse Preferences for Orientation During Transport and The Effect of Orientation on Balancing Ability, Gibbs, A.E. et al, *Applied Animal Behaviour Science* 63 (1999), pp. 1-9

In 2012, Padolino, et al,⁴⁸ found that horses facing away from the direction of travel record lower heart rates and cortisol levels which would indicate a diminished fear response compared to horses facing the direction of travel or tied parallel to the direction of travel.

In respect of ‘herringbone’ transportation, Cregier asserts that “Trailers, vans or trucks which transport the horse parallel or angled to the direction of travel rarely allow the horse enough room to extend its head. As well, the horse is least secure in balance when standing cross ways to the forces of acceleration and deceleration.”⁴⁹

The final option for travelling a horse is to travel them entirely loose and in one experiment it was found that Thoroughbreds transported 1000 miles in a stock trailer arrived “considerably fresher” than those standing in stalls.⁵⁰

Cregier points out that horses travelling entirely loose tended to face the back diagonally. “It is postulated that by taking this position, the horse is adjusting to road crown, or minimizing even further movement on its sacrolumbar articulation.”⁵¹



Figure 42: The Equi Balance Trailer

Travelling horses and ponies without a partition may have an advantage in that the animal will naturally find a comfortable travelling position.

⁴⁸ Effects of different positions during transport on physiological and behavioral changes of horses., Padolino,B., et al, Vol. 7, Journal of Veterinary Behavior, 7, 135-141, 2012

⁴⁹ Best Practices: Surface Transport of the Horse, Cregier, S.E. Animal Transport Association, AATA Education Committee, 14.12.09

⁵⁰ Nutrition: The Moveable Feast, Briggs, K. TheHorse.com April 1998

⁵¹ Hauling to Survive, Holmes, D.H. Horsemen 1982

However, Green cautions that “this presents the issue of a live load which has the ability to shift during the journey thus redistributing weight and potentially affecting the behaviour of a trailer or lorry. This is unlikely to have a bearing at slow speeds, however may have serious implications on vehicle control when travelling at speed, especially during acceleration, braking, cornering and manoeuvring. Even on normal roads general good practise is for horses travelling alone in a two horse box to be loaded on the right hand side ensuring they are at the top of the road camber for best weight distribution and stability.

Other fluid loads such as water or fuels are known to have a dramatic affect on the way a vehicle behaves when being driven. However, steps are taken to reduce the effects of moving fluid influencing weight distribution by the addition of baffles internally which limit the movement. In effect, this is the purpose of a partition, bars, and tying the horse.”⁵²

8.1.2. Tying up position

Less documented but no less vehemently argued, Cregier, talks about the importance of the tying up position in horse transport which not only influences the horse’s ability to lower its head and clear its respiratory system but prevents horses from being able to breach the partition in front of them. Instead of tying horses up at their head, she explains that Holmes advocated tying the horse up from a ring at the withers and at wither height, as if the horse were tied to pillars but just on one side.⁵³ Cregier adds that, “If [a horse] tried to rise to jump or surge ahead, it was working against its own strength. This tie up also meant that even if the ramp fell off, the horse was in no danger of surging ahead and escaping.”

This position is clearly shown in the YouTube video about Equi Balance Trailers⁵⁴

Research has found that a standing position in which the horse could clear its respiratory tract reduced the risk of shipping fever.^{55 56 57}

Dr. Carolyn Stull, highlighted the combined risks posed by to the respiratory system by transportation where typically the horse’s head was positioned above the withers with very little allowance for lateral or horizontal movement. This prevented the horse from clearing his respiratory tract at the very time when raised cortisol levels due to stress, “dramatically decreases the ability of the macrophages to kill bacteria”. The use of hay-nets which liberate mold and dust, the potentially higher concentration of micro-organisms and dust particles, with a higher temperature and humidity supporting the growth of bacteria and fungi, all combine to challenge this compromised respiratory system.⁵⁸

⁵² Email to co-author, Green, J. 16.9.15

⁵³ Email to author, Cregier, S.

⁵⁴ www.youtube.com/watch?v=j2O_IfTcR9M, Sharon Cregier

⁵⁵ A Review of Recent Research on the Transport of Horses, Friend.T 2001, Journal of Animal Science. Vol 79, pp. E32-E40 (www.jas.fass.org)

⁵⁶ Trailer Problems and Solutions, Cregier, S. 1987 Current Therapy in Equine Medicine, Philadelphia: W.B. Saunders. Pp.135-138

⁵⁷ Influence of the Head Posture on the Respiratory Tract of Healthy Horses, Racklyeft, D.J. and Love, D.N, 1990, Australian Veterinary Journal. Vol 67, pp. 402-405

⁵⁸ Physiology, Balance, and Management of Horses During Transportation, Stull, Carolyn, Horse Breeders and Owners Conference, Alberta, Canada 1997

Shipping fever is rarely reported in the UK, where journeys tend to be shorter. Recently Tina Cook's eventing horse contracted the disease on the way back from Poland to the UK.⁵⁹

In 2004 it was reported by Derksen, that horses that were unable to lower their heads suffer an immediate 50 percent loss in their ability to clear their respiratory system.⁶⁰

8.1.3. The Design of the Interior

Considering the interior of the trailer, Cregier notes that "The original rear-facing [trailer as designed by Holmes] had a featureless interior requiring no rump restraint and therefore no one behind the horse. Nor were there windows to entice the horse or fill the horsebox with fluttering shadow and flickery lights either beside it, in front of it, or behind it. At night, the horses avoided following headlights when the upper doors were open by lowering their heads below the top of the tailgate, which is how they normally traveled in any case."⁶¹

Stull highlights stress that can be caused by the internal design of horse transport: thermal stress including dehydration, environmental stress from flooring, bedding, feeders and space allocation, lighting, and gases.⁶²

Waran points out all those areas which have not been so well researched such as the position of any windows, the type and positioning of partitions, ventilation, temperature and humidity.

Cregier notes design faults in even the most expensive horse lorries where "feed bins and storage cabinets [were] directly beneath the horses' heads" and "the horses were tethered high during transit" and the resultant "scramble and kick marks, bent stall supports, chewed fittings, and bloody leg bandages" after just two weeks of use.

⁵⁹ www.horseandhound.co.uk/news/tina-cook-de-novo-news-british-silver-medal-horse-fights-for-life-508686
17.9.15

⁶⁰ Pulmonary Defence Mechanisms and Equine Transport, Derksen, F., *Veterinary Journal*. 168.pp. 194-205, 2004

⁶¹ Email to the author, Cregier, S.

⁶² Physiology, Balance, and Management of Horses During Transportation, Stull, Carolyn, Horse Breeders and Owners Conference, Alberta, Canada 1997



Figure 43: Tack locker exterior view

8.1.4. The Stress of Transportation

Stull describes transportation as an “athletic endeavour”. She describes how a horse’s performance depends on his ability to transform chemical energy into mechanical energy and in short, how calm, quiet horses will do this better than those that are struggling to maintain their balance leading to depletion of their glycogen stores and/or the production of lactic acid. Not only could this affect a horse’s performance at an event, but in the co-author, Sarah Weston’s view, it might go some way to explain why some horses that load easily at home are reluctant to load to come home when their recent work effort at an event and the easy recollection of a recent journey is enough to put them off.

This was reinforced in 2002 when research using electromyographic feedback found that horses expend nervous and muscular energy in maintain their balance in horse transport.⁶³

Stull, pointed out that “there are numerous...examples of common stressors in the management and transportation of horses.”⁶⁴ including “social isolation from stable mates, aggressive interaction of other horses..., lack of security in novel environments and interrupted feed schedules.”

⁶³ Transport stress in horses: an electromyographic study on balance preservation, G. Giovagnoli, et al, Livestock Production Science Volume 73, Issue 2 , Pages 247-254, 2002

⁶⁴ Physiology, Balance, and Management of Horses During Transportation, Stull, Carolyn, Horse Breeders and Owners Conference, Alberta, Canada 1997

Waran has also carried out research on food intake which is particularly relevant to longer journeys since she found that the movement of a vehicle inhibits feeding.⁶⁵ Other research by Smith et al and Mars et al attributed weight loss to dehydration, and highlighted a horse's well known reluctance to drink from an unaccustomed source as a factor.^{66 67}

Stull states that “the reaction of the animal to stressors depends on the duration of the stressors, the animal's previous experience to the stressors, its psychological status, and the immediate environmental restraints. An animal may react either by a behavioural or a physiological response, but most often a combination of both.” She points out that whilst a normal behavioural response to acute stress is to flee, abnormal responses, categorised as stereotypies, “sequences of movements which are repeated over and over without apparent functions [include behaviour] such as weaving, pawing, shifting, and repetitive licking and/or scraping of objects.”

Waran explains that “experience will influence the extent to which a horse is affected by being transported. Horses used for sporting/recreational purposes that have had a number of relatively positive experiences of being loaded and transported are less likely to be adversely affected than those with no experience and those who have had a negative previous experience (such as a fall, over-crowding etc.).”⁶⁸

At Regensburg in 2008 Cregier concluded: “The investment in high tech protective devices to reduce injury in transit continues with little consideration to the transport system itself. Some prefer to insist that the problem is with the horse.”⁶⁹

In 2010, researchers at The Graf Lehndorff Institute found that whilst heart rates increased but then reduced during transportation, cortisol levels continued to rise throughout the journey, reaching a peak at the end of the journey. Co-author, Christiane Wehnert, quoted in the Cavallo article, said: “The results were unambiguous. The longer the transport takes the more stress a horse suffers.”⁷⁰

⁶⁵ Effects of Loading and Transport on the Heart Rate and Behaviour of Horses, Waran, N.K. et al. *Applied Animal Behaviour Science* 43 (1995), pp. 71-81

⁶⁶ Effects of Road Transport on Indices of Stress in Horses, Smith, B.L. et al, *Equine Veterinary Journal*, 28 (1996) pp.446-454

⁶⁷ Water Acceptance and Intake in Horses under Shipping Stress, Mars, L.A. et al, *Equine Veterinary Science* 12 (1992), pp. 17-21

⁶⁸ The Effects of Transportation on the Welfare of Horses, Warren, N et al. *The Welfare Of Horses*, Ch. 6 pp.125-147, Springer, 2007.

⁶⁹ The Psychology and Ethics of Humane Equine Treatment, Cregier, S. 1987 *Advances in Animal Welfare Science*.

⁷⁰ Cortisol release and heart rate variability in horses during road transport, Schmidt, A. et al, www.ncbi.nlm.nih.gov/pubmed/19944105, 2010



8.1.5. The Stress of Loading

As well as looking at different aspects associated with travelling, Waran highlights the great impact of loading on animals to be transported starting with the angle of the ramp and stepping up into some makes of trailer. She describes evasive behaviour including refusing to move, swinging to one side, pulling back as well as investigative behaviour such as sniffing and pawing at the ramp. “Horses tend to be neophobic, and as such it is not surprising that they will tend to avoid placing themselves in a novel situation in which they are unable to escape easily.”⁷¹

Later she adds that “horses are instinctively afraid of confinement due to their having evolved for life on the open-plain where being able to run away/escape was important for their survival.”

⁷¹ The Effects of Transportation on the Welfare of Horses, Warren, N et al. *The Welfare Of Horses*, Ch. 6 pp.125-147, Springer, 2007.

Her research found that horses' heart rates increased when loading and unloading.⁷²

She recommends that all horses should be accustomed to loading as foals. As to the vehicles she recommends reducing the step up into vehicle or the angle of the ramp and the creation of a more solid ramp as well as rubber matting to buffer the sound of the ramp. Where there are gates at the sides of the ramp she recommends making sure that there is sufficient gap to ensure that the horse cannot get trapped if it steps back sideways off the ramp. In many cases gates slot into the ramp so that there is no gap at all. Lighting, Waran states, is important when loading too.

It should be noted that in Holmes' vehicle, the horses were backed into the trailer from a flat square loading platform and were reported to accept this very well and avoided therefore the need to load head first into a dark cavern.⁷³ ⁷⁴ Culturally, for British horse owners, this may literally be a step too far.

Waran lists a plethora of loading devices from electric prodders through to specialist halters which she describes as inhumane because they rely on force or which have not been properly tested and states that "The use of sedatives to aid loading has become common place...although no learning about loading will have taken place".

There is no research as to whether reluctance to load is indicative of the horse's concern about travelling or just the process of loading itself. For first time loaders it is simply fear of the unknown and not knowing what is required. However, since any reluctance is often met with increasing force and sometimes violence to counteract it, the horse will ultimately be responding to its apprehension about being loaded.

Many horses ostensibly travel very well once they are loaded despite being reluctant loaders but that may be an assertion that is simply based on a lack of movement of the feet and a lack of noise rather than a complete observation of all of the reactions and body language of the horse.

⁷² Effects of Transporting Horses Facing Either Forwards or Backwards on their Behaviour and Heart Rate, Waran, N.K. et al, The Veterinary Record, 6th July, 1996

⁷³ Reducing Equine Hauling Stress: A Review, Cregier S., Equine Veterinary Science, November/December, 1982.

⁷⁴ www.youtube.com/watch?v=j2O_IiTcR9M, Sharon Cregier

PHASE TWO: Assessing the Evidence

Summary of Purpose

Phase Two of the review analyses the weight of the evidence and forms conclusions. It looks forward to see what further information is required and how best that can be obtained.

Section 1: Weighing up the evidence – a cautionary note

The authors were struck by how little research has actually taken place on the transportation of horses, and how small the sample of horses involved in each. Any experiment with horses is costly and largely under-funded since there is very little money to be made from horses unless they are competing at the top level. Thus formal scientific research tends to focus on the performance of race-horses and sports horses. Whilst there is some research on front and rear facing orientation authors could not identify any concerning herringbone or sideways.

Furthermore, it is difficult to come to an overall fixed conclusion when by their very nature horses are all different and therefore challenge the scientist trying to change only one factor at a time. Horses learn from their past experiences and present situations and behave according to their expectations; nature as well as nurture could also have a big role to play. Not only that but the evidence from many of the early experiments and product development changed several variables (such as orientation, partition height and tying up position) at the same time and therefore cause and effect is hard to discern. Modern scientific rigour would demand that experiments be carried out using a more systematic approach and evaluated against a control.

Our own survey on horse transport was not scientific, and relied on people self-reporting with the inherent risk that they might underestimate some factors and overestimate others, and still be entirely wrong. People like to think that they were doing the right thing. We must also remind ourselves that the survey does not reveal the rate of incidents in different vehicle types per hours travelled.

Accordingly we have to be very careful about making undue claims and stretching the implications of our research. Whilst we cannot say that “this type of horsebox or trailer is good/bad” there is good evidence to suggest that loading and travelling is mentally and physically stressful for horses. We can also see that there are a significant number of cases where a horse was not safe within the confines of a horsebox or trailer. We can then go on to look at the way that designs and practices can be changed to make horses more comfortable and safe, even if that means repeating some of the previous experiments. It may be that Holmes’ design would be a good place to start.

Section 2: Conclusions and narrative

2.1 Introduction

The evidence from scientific research and anecdotal information together suggest that a fundamental review of the design of horseboxes and trailers in the UK is needed from the ground up. At the same time horse owners and transporters need to have a greater understanding of the mental and psychological stresses on horses in transport.

Better designs, driving and awareness, coupled with training for the horse, will help to make transport safer for horses and the humans around them, and also ensure that horses are viable and able to perform at the end of their journey.

Are designers and manufacturers ready to reinvent everything including the wheel? Otherwise, we are in danger of maintaining transport vehicles which can only mitigate the discomfort of the horse; what is clear is that we are not doing enough at present to keep horses safe and comfortable unlike the driver and passengers who are insulated from the sensation of travelling.

“Hoof prints on the ceiling are not a good advert.”⁷⁵

As in most health and safety scenarios, most accidents can be prevented.

The historical research shows that travelling is an athletic endeavour for a horse which may compromise them both physically and mentally.

2.2 Conclusions about behaviour

Over 75% of incidents in horse transport involve the behaviour of the horse with over 50% rearing inside the transport vehicle.

Horses are just as likely to rear over the breast bar or partition in a front facing vehicle as a rear facing one.

An anxious or upset horse is instinctively driven to move forwards, and, when unable to do so, will expend that energy elsewhere, usually by rearing. It is possible that this pattern of behaviour starts when a horse pulls back on the lead rope and meets a firm resistance precipitating an ‘into-pressure’ response⁷⁶ which triggers the horse to rear.

When panicking, horses will pay little heed to their own bodily safety and instead will blindly try to escape. They may be drawn towards any area of light in front of them, and go over or even under whatever is in their way.

⁷⁵ Email to co-author, Green, J.

⁷⁶ The Into-Pressure Syndrome, Roberts, M. From My Hands to Yours, Ch.9. p.159.

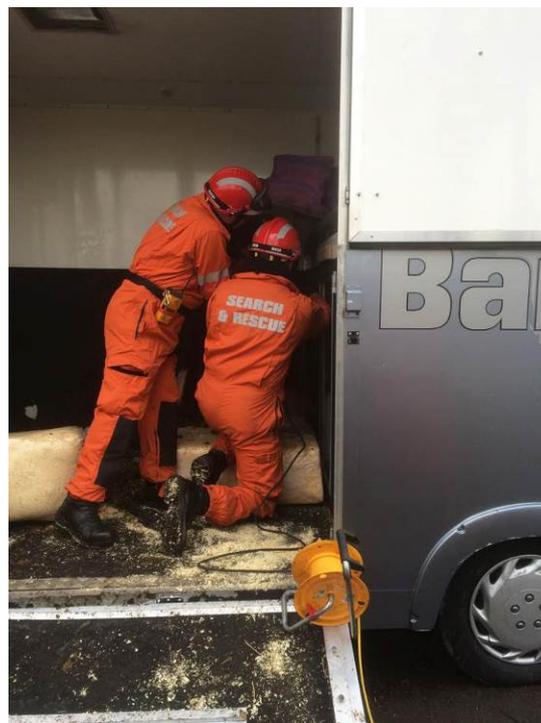


Figure 44: Once a horse has breached the breast bar or partition, ease of release is the next priority.

People need to be aware of the need to train their horse to load calmly.

Some horses, particularly those changing home, changing owner, going to the vet, or to an event, are given no opportunity to become accustomed to their mode of transport. Even basic training on leading, leaving other horses, and being tied up is missing. Thus horses may be going into a confined space, being restrained in a novel environment, isolated and abruptly leaving their friends for the first time. In many cases the ramp is hastily closed on a worried horse. This was echoed in the transport survey.

Any one of those factors may be sufficient to cause a horse to react badly but then add to that the sensation and discomfort of travelling perhaps it is more surprising that so many horses apparently travel well.

It could be argued that horses would load, travel and unload better, reducing the risk of incidents, if they were trained more thoroughly in leading, leaving other horses, loading and travelling itself using calm, incremental techniques. People's idea of what constitutes training is different. Harsh methods of loading are commonplace, and rarely take into account the horse's level of fear, which is simply overridden.

The training needs to consider not only what the horse does but how he feels about it. However, many people do not have a vehicle with which to practise and are faced with pressure from transporters and bystanders to get their horse loaded quickly; a horse that is reluctant to load seems to attract all the 'have-a-go heroes' at an event.

Many owners do not appreciate the mental and physical discomfort that horses experience when loading and travelling and often talk of 'making' their horses load as if it is something

they should automatically do. There is little understanding that going into a horsebox or trailer is completely counter-intuitive to a horse. There is little appreciation of the work it takes for a horse to balance and none for the assault on the horse's body caused by the positioning of bars and orientation within the vehicle; most presume that the horse is simply a comfortable passenger.

In general people expect horses to load and travel fine until they have had one with a problem. People often don't know what their horse's background is on loading unless it is home-bred.

In an ideal world, every horse that was asked to travel in any form of horse transport would be carefully and kindly trained to do so before hand. Such training would be incremental and would cover everything from leaving his friends, leading, loading and standing in a confined space tied up. Repetition, without going anywhere, helps horses to relax about loading and being enclosed, and it also helps the owner to relax too.

The more incremental the training technique, the less pressure should be needed to train him and techniques biased towards positive reinforcement could be employed. However, it is well known that a horse will not give up his safety for food. Food may well be a prime motivator for the horse that has never loaded or travelled before, and is to that extent innocent. Horses that have travelled, particularly if the experience of that or loading was poor, may be less inclined to be persuaded by food alone.

Until horse transport is safe and comfortable, and sufficiently flexible to suit the needs of an individual horse, there will always be horses that refuse, or subsequently refuse to load, and are at risk of an incident in the horsebox whilst they are travelling. Ultimately horses know that they are most vulnerable when they are isolated, restricted and restrained, and their instinct will tell them that travelling is not a good idea. In which case it may be that all designers and manufacturers can do is to mitigate the effects of this instinctive knowledge.

Horses will continue to be forced to travel no matter how they feel about it, and no matter how they express their feelings. In those cases the horses will be loaded using pressure of some sort – in the form of negative reinforcement, or even punishment and violence. It can be argued that horses that are trained using these methods eventually learn that there is nothing to be afraid of, or simply learn that there is no choice. Whether it is the former or the latter may depend on just how much pressure or violence is used. Pressure in itself does not have to be a bad thing, it depends what form it takes and how much is used, whether there is discomfort or pain, and whether the pressure is released the instant the horse is doing as asked.

Not many owners, particularly those that are competitive or involved in business with their horses, would be prepared to stop travelling their horses, even when they are very fond of them; most, at the moment, don't see the problem. In the same way, many owners can see nothing wrong with various different techniques commonly used to get horses to load.

Training the horse to travel is more difficult since people should not be travelling with their horses. Schools of thought range from taking the horse for very short journeys at first, to making sure that the journey is at least twenty minutes long to ensure that adrenalin levels in the horse have come down, to just getting on with it.

Where a horse has developed a specific pattern of behaviour, a change of vehicle or configuration may resolve the problem. Scrabbling seems to be precipitated by right hand turns

especially around roundabouts, where the horse seems to have stopped relying on its own balance or the support of the partition and has become so worried that they can't stand up any more. This strong 'into-pressure response'⁷⁷ is reflexive in an animal facing a predator from which it cannot escape.

Making significant changes to the style and speed of driving seems to make no difference since it seems to be the beginning of the turn that triggers the behaviour which becomes automatic. Travelling the horse with no central partition, but cross tied with full width breast and breech bars may occasionally solve the problem; travelling the horse on the opposite side to which it normally travels does not. This suggests that it may be the design, width or security of the central partition which triggers the into-pressure reaction. It is questionable whether it is ethical to travel the horse at all once if it has reached this level of anxiety.

2.3 Conclusions about owner/driver awareness and skills

2.3.1. Horse awareness

People will put their lives and that of others at risk in order to rescue their horse.



Figure 45: Young woman injured endeavouring to rescue her horse

“The young woman above was returning home in an unfamiliar, rented, rear facing horsebox. She was alerted by CCTV as the pony reared over the partition. She pulled over, and entered the rear of the vehicle and was struck over the eye by the pony. Her boyfriend entered the horsebox to rescue her and as he left he was struck on the back of the head. I could see the hoof print on his neck! Pony self recovered.”⁷⁸

⁷⁷ The Into-Pressure Syndrome, Roberts, M. From My Hands to Yours, Ch.9. p.159.

⁷⁸ Jim Green in his role as Animal Rescue Specialist

People will fiercely defend their choice of horsebox or trailer UNTIL something goes wrong, for example, one contributor to the survey said:

“The 3.5 ton type horse boxes should be banned as they offer no protection at all in the event of an impact.”

Consumers are wooed by the aesthetics of vehicles rather than their safety features.

Many competitors leave their horses alone to register with the show secretary, deal with paperwork, to take refreshment, use the facilities, to watch other events or compete with their other horse(s).

Since almost one third of incidents occur while the vehicle is stationary it is questionable whether it is ever safe to leave a horse alone in a horsebox or tied up to it.



Figure 46: Horse standing on a stationary vehicle

Horses tied to the outside of a lorry are at risk of getting caught up in their own lead rope. Others may pull back and either hurt themselves if the string does not break, or get loose amongst other horses and members of the public. There are also plenty of catches and sharp objects for them to injure themselves on.



Figure 47: Horse tied up outside a stationary vehicle

Some shows insist that people don't leave horses unattended in the horsebox or when tied up outside. Most shows do not provide stabling or corrals for horses attending for just one day, and where stabling is provided, the owner has to pay for it. At other events there is nowhere safe to leave a horse by itself. Therefore in an ideal world travelling horses would always be accompanied by two people or more, one of whom could stay with the horse when necessary.

Some owners have put up mirrors in their horseboxes (not made of glass) in order to convince the horse that they have company. This is supposed to help reduce the risk of stereotypical behaviour in stabled horses. More research needs to take place as to the efficacy of this, and the horse's perception of what it sees, since it could be argued that a horse that is terrified in a horsebox may not be calmed by the sight of another 'horse' that is terrified. It could also be perceived as another area of light towards which the horse may be attracted.



Figure 48: Horse with mirror in the corner of the box

There appears to be a small but growing trend for people to travel their horse with the front top door open which needs to be discouraged. There is a high risk of the horse being hit by a branch, stone, or an insect.



Figure 49: Horse travelling with head out of top door

2.3.2. Driver awareness

Vehicles need to be subjected to periodic checks, but also a diligent daily check when being used.

Snaking is usually caused by a combination of incorrect loading, excess speed, a downward incline and the effect of passing heavy goods vehicles. HGV produce turbulence and then a vacuum as they go by another vehicle. This can have a severe effect on both the towing vehicle and the trailer.

2.4 Conclusions about vehicle design and maintenance

Manufacturers and designers will be concerned that a radical change in design, especially if it means removing convenient facilities for owners such as tack lockers, and reducing living space, might prove unpalatable to the UK market.

No trailers have been crash tested in any way nor have horseboxes in respect of any aspect other than that of the people they might carry.

Horses are likely to be seriously injured in any form of incident in a transport vehicle.

Whilst companies like Ifor Williams place great emphasis on the safety aspects of their trailers and the greater ability to release a horse safely following an incident, there are still a significant number of transport incidents in all types of trailer.

There are new trailers coming onto the market that offer only one way in and out for the horse.

In the meantime rear facing horseboxes continue to be made which have inherent safety problems.

At present, absent owners would only be alerted to the fact that there horse was in trouble in a stationary vehicle if they had left contact details in their vehicle or, if someone else alerts an official at a showground and a tannoy system is available; this all takes considerable time during which the horse's situation may have escalated.

Devices such as the one being developed by Landrover^{79 80} may alert drivers of certain makes of vehicles and trailers (or those to which it has been retro-fitted) to problems much earlier and also when the vehicle is stationary by way of telephone app. At present an owner might only be alerted to a problem with their horse by someone contacting the information centre at a show and a message being relayed over the tannoy system.



Figure 50: The expanse of a county show (lorry park top right)

⁷⁹ www.youtube.com/watch?v=Q9HmdIh6AYw and Auto News, 2.9.15

⁸⁰ www.horseandhound.co.uk/news/prototypes-designed-to-make-towing-safer-509850#WD2ME8D03UcvqeFk.99

This device, currently at the proto-type stage is being developed and is due to go into production imminently. It will allow owners to monitor the horse's comfort during the journey, use floor-mounted sensors to alert them if the weight of the transport vehicle has become unbalanced, and even check the temperature to ensure it remains within safe levels for their animals. Care needs to be taken to ensure that the CCTV device (and other CCTV) is only monitored by a passenger in the vehicle rather than the driver. To ensure that this is the case, Landrover have angled the monitoring device towards the passenger, with the driver only able to see a particular 'cargo alert' warning on another. This is designed to enable a driver to pull over and then check the horse.



Figure 51: CCTV device

CCTV devices (some of which have sound) can alert owners to distress signals such as stamping, kicking, pawing and moving. A camera might at least encourage people to take appropriate action earlier, such as telephoning the emergency services.

Section 3: Further research

Emma Punt, McTimoney Sports Therapist and Animal Physiologist Researcher, is the Research Lead for BARTA. She intends to carry out a robust research project into the effects of horse transport.⁸¹ Such a project needs to receive ethical approval. The potential scope for such research is huge and could lead in many directions.

It would be extremely worthwhile to carry out a full set of experiments to re-examine the separate and then accumulated effects of: orientation, tying up position, breast bar height or existence in relation to the horse's ability to adopt a 'natural stance', along with platform loading. In an ideal world the experiments would include rear facing transport in exactly the layout envisaged by Holmes. As far as the authors know, there is no Equi Balance Trailer in the UK although their design is still championed by Odessa Holmes, daughter of David Holmes and owner of Equi Balance Ltd, Sharon Cregier, and Rebecca Giminez⁸² Therefore one would either have to be imported, or the model recreated and type approved which could be very costly. Nevertheless, the arguments about orientation and the best layout for the comfort and welfare of the horse cannot be resolved without doing so.

There is little research about travelling horses herringbone style or sideways, and it would be worth finding out whether those travelled habitually at angle suffer any physiological problems as a result.

Further investigation also needs to take place as to what motivates horses to escape the vehicles that they are travelling in or to express their feeling in the way that they do. The highest prevalence of such incidents occurs when the vehicle is stationary or going slowly, straight and smoothly. This suggests that the time when a horse is most able to express its feelings or desire to escape is when the vehicle is at its most still and the horse is able to use the biomechanics of its body to move.

Research would be merited to discover whether horses learn to balance themselves better if they are travelled in a larger space to begin with, perhaps cross-tied, before being confined within narrower partitions on later journeys.

Where applicable in the UK, results from research carried out elsewhere can be assessed and utilised readily. For instance, The University of Massachusetts is currently setting up a full study of rear-facing transport utilising the Equi Balance rear facing trailer. We can also learn from air and sea shipping practises.

Technological advances allow researchers (and therefore designers and manufacturers) to record responses throughout using good quality cameras and to measure the stress responses of horses in a variety of ways. These include blood tests which can measure hormone levels, monitoring of heart and respiratory rates, salivary cortisol tests, and instrumented data on balance and weight placement.

⁸¹ <http://horsetalk.co.nz/2015/10/02/hands-on-research-into-horse-transportation-tech/#ixzz3nRbjPh2j> 2.10.15

⁸² Are Rear-Facing Trailers the Future of Equine Transport?, Giminez, R., The Horse, <http://cs.thehorse.com/blogs/horse-911-whats-your-emergency/archive/2012/03/22/are-rear-facing-trailers-the-future-of-equine-transport.aspx> , 2012

Furthermore, electronic sensors (load cells) could be attached to the breast and breech bars, the partition, the tie up ring and the tow bar to establish the load and frequency of that load upon them and for different sizes and shapes of horse. This could help to define the best setting and design of internal features in a transport vehicle such as breast bars and partitions. At present, a veterinary surgeon might be able to indicate the best setting for a bar from an anatomical point of you, for example, but there has been no scientific research.

The horses used in any experiments should represent a cross section of breeds, heights, ages and build.

In the future, all of the devices used to measure relevant data for the purposes of an experiment may eventually be incorporated into devices for monitoring horses in transit on a day-to-day basis. This could include for example, an intelligent camera, programmed to monitor facial expression in a horse in order to recognise the subtlest signs of discomfort whilst travelling, developing from recent research into the horse's grimace as an indication of pain⁸³ and The Equine Facial Action Coding System⁸⁴ Alternatively it might be possible to monitor a thermal image of the eye.

It would be useful to conduct research into different colours of flooring, and whether differentiating the colour of the floor from the colour of the lower walls helps horses to load and then balance.

It would also be beneficial to assess the design and true worth of protective equipment worn by the horse in transit, for example poll guards, and to ensure that boots, such as wraparound boots do not increase the likelihood of an incident because they impede the movement of the horse, cause him to over heat, or cause irritation.

Past experiments with questionable ethics can be avoided. For example, in 1990 T.D.M. Roberts, refers to film shot by Raymond Rice (Rice Trailers Ltd) where a blindfolded horse was cross tied on a flat bed trailer, allowing it's head to move the full width of the trailer, and driven along narrow, winding, country roads!⁸⁵

Section 4: Funding for research

Funding needs to be sought in order to pursue further research.

⁸³ Development of the Horse Grimace Scale (HGS) as a Pain Assessment Tool in Horses Undergoing Routine Castration, Dalla Costa, et al, DOI: 10.1371/journal.pone.0092281, March 19, 2014

⁸⁴ The Equine Facial Action Coding System, Wathan J et al, DOI: 10.1371/journal.pone.0131738, August 5, 2015

⁸⁵ Staying Upright in a Moving Trailer, Roberts, T.D.M., The Equine Athlete, Vol 3, No 3, May/June 1990

PHASE THREE: A case for change

Summary of Purpose

Phase Three sets out those areas where changes need to be made to make horse transport safer for horses and humans, at the same time as improving the welfare and comfort of the horses being carried. At this interim stage, before the authors have conclusive evidence, the recommendations made, simply cover those things that people can do to improve the situation as it stands.

Section 1: Areas for Change

1.1 General

“The UK Fire and Rescue Service attend many equine and livestock transportation incidents each year. Prevention is a key part of the work of the fire and rescue service and we welcome likeminded initiatives. I hope this study will be a catalyst, in not just reducing the numbers of incidents, but improving safety of the public and wellbeing of horses when situations do occur”. Steve Foye⁸⁶

There are three major areas where changes need to be considered as a matter of urgency. These reflect the same categories as reflected in the primary nature of incidents that emerged from the survey. In addition consideration needs to be given to setting industry standards for best practice, central record keeping, and greater public awareness of the issues surrounding the transportation of horses.

- ✓ Behavioural training for the horse
- ✓ Owner/ driver preparation, skills and awareness
- ✓ Design and maintenance of transport vehicles

However, none of these categories would be sufficient in isolation since they are co-dependent on each other and will overlap. An uncomfortable horse, through the design of the vehicle or the manner of driving, is likely to express his feelings through escalating his behaviour, and a vehicle that is driven badly needs to remain intact following an accident. A horse that has received no training is likely to challenge even the best designed trailer. Furthermore, an owner/ driver of a vehicle is more likely to maintain a vehicle that is easy to inspect.

“Lack of full scientific certainty should not be used as a reason for postponing measures to mitigate transport hazards. Where there are obvious, accepted or newly observed conditions contributing to better horse handling, automotive dynamics or equipment that increase human or animal safety and welfare, the Precautionary Principle applies.” Cregier and Giminez⁸⁷

⁸⁶ Chair of the Chief Fire Officers Association, Animal Rescue Practitioners' Forum

⁸⁷ Non-commercial Horse Transport, New Standards for Trailers in Canada, www.researchgate.net/publication/281587421, Cregier, S, and Giminez, R., March 2015, p.184

The impetus for change should come from consumers, who need to give greater priority to the safety features of the transport that they use and need to push manufacturers to listen to them. It needs to come also from agencies concerned with vehicle and horse safety – the British Horse Society, Intelligent Horsemanship, insurance companies such as the National Farmers Union, and the professional emergency services of which the Fire and Rescue Service are the prime mover in this context. However it should also be industry led with companies competing to provide the safest horseboxes and trailers.

Change needs to be pursued with a sense of urgency; whilst this report was being written, accidents continued to occur.^{88 89 90} It is not enough to develop policy and strategy. Action is required.

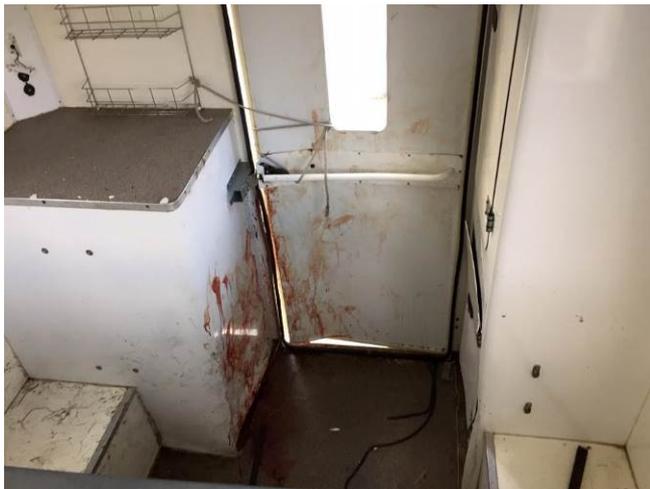


Figure 52: Horse reared over breast partition in 3.5T vehicle. September, 2015



⁸⁸ www.horseandhound.co.uk/news/motorway-horsebox-accident-a1-509347 10.9.15

⁸⁹ m.dailyecho.co.uk/news/13716537.Fire_crews_rush_to_Romsey_Show/ 12.9.15

⁹⁰ www.westerndailypress.co.uk/M5-drivers-swore-carried-dead-horse/story-27801820-detail/story.html

Detailed recommendations will be issued at the conclusion of this project which will expand and develop. Initial recommendations follow.

1.2 Behavioural training for the horse: training horses to load, travel and unload (for owners and handlers)

1.2.1 Key initial recommendations

- ✓ Train your horse to lead, tie up, leave other horses, and to load while he is young and well before his first journey
- ✓ Always check that your horse is good and calm to load
- ✓ Practice loading on a regular basis when the pressure is off
- ✓ Use gentle, incremental, and ethical techniques to train your horse to load
- ✓ Arrange for professional help if your horse is a difficult loader/ traveller
- ✓ Carefully consider the type and condition of the transport vehicle in which you travel your horse and make sure he is familiar with it

1.2.2 Detailed recommendations

“Waiting until the day of the show to discover that the horse is nervous, difficult or will not go in the box will not do anyone’s nerves any good.”⁹¹

Make sure that your horse is calm to load by practising loading on a regular basis and familiarising him with the vehicle in which he will be travelling. Practising will also mean that you, and the people that help you, are more likely to be calm and therefore reassuring to the horse, when you are actually going somewhere.

Practise loading your horse in different places and away from home as well as in the dark (with appropriate lighting).

Don’t rely on someone else’s word that your horse, which you may have just purchased, is good and calm to load or travel, as this is often not the case⁹²

Loading training needs to include every aspect of the loading process: leaving other horses, leading nicely, standing still when asked, confinement, and being tied up, as well as actually loading and turning in the lorry or trailer. This training is best undertaken while the horse is still young and in any event, well before their first journey.

⁹¹ Stage Three Riding and Stable Management, Hazel Reed, British Horse Society, p. 205

⁹² www.westerndailynews.co.uk/M5-drivers-swore-carried-dead-horse/story-27801820-detail/story.html

Gentle, incremental methods, with appropriate rewards, are most likely to have a positive long term effect and to ensure that your horse travels without being stressed from the outset. Your training needs to consider not only what your horse does but how he feels about it.

Be wary of advice and help from others about loading your horse; unfortunately some people can be forceful and a bad experience can put your horse off loading for a long time and make it more likely that he will be upset when travelling.

Choose the vehicle in to which you load your horse carefully, giving priority to safety features as well as the comfort of your horse.

Where your horse has developed a particular problem about loading, or travelling, consider getting the advice of an expert in behavioural techniques. Also consider modifications which you can make to your vehicle to make him feel more comfortable and safe.

Be aware that travelling is an ‘athletic endeavour’ for a horse and they are not simply a passenger.

1.3 Owner/ driver preparation, skills and awareness

1.3.1 Key initial recommendations

- ✓ Make detailed decisions about how you will travel your horse. Make an informed choice about the transport you opt for
- ✓ Make sure that your trailer is serviced regularly and that you carry out a monthly maintenance check
- ✓ Check key areas of your trailer before each journey
- ✓ Prepare a checklist for your journey and always have an emergency plan
- ✓ Pay attention to the needs of your horse when loading, unloading, at any rest stops and at the venue itself
- ✓ Hone your driving skills and knowledge of your vehicle (and towing vehicle where applicable)

1.3.2 Detailed recommendations

There are a number of books and publications available about horse training, towing and the maintenance of vehicles. A list could be drawn up for horse owners and transport drivers. In addition, interested agencies could have a dedicated page on social media to draw people's attention to credible information and to urge them, perhaps once a month, to address one safety aspect of their vehicle, or the training of their horse.

The following recommendations are for the benefit of horse owners and vehicle drivers:

Horse awareness

Consider the needs of your horse whilst travelling in terms of what he wears, the position of bars and partitions, and whether he has a companion or not. It is recommended that horses are always travelled in a leather, rather than a nylon, headcollar and attached to something that will break in an emergency. Modern baler twine will not always break easily under strong pressure.



Figure 53: Companions loaded together

You need to consider the length of the journey and how you are going to monitor your horse and help him to remain comfortable. A CCTV can be helpful providing that it is monitored by a passenger and not the driver.

Since breast bars seem to be a particular problem in forward facing transport, you can pad out the bars using pipe insulation and very strong tape in order to minimise the potential for bruising. Make sure he has sufficient forage to keep him happy throughout the journey.

You may need to become much more aware of the smaller warning signs that your horse is in trouble so that you can react quickly and calmly to help him in an appropriate way.



Figure 54: On loading, this mare shows every sign of bracing

Bars, ramps and doors need to be closed quickly but quietly and gently to prevent the horse ‘following’ the owner back out. At the venue a horse may need to be unloaded and walked around to alleviate the effects of cortisol in the body and to allow the horse to relax, drink, and stale.

Be aware that the most critical moment when a horse is most likely to rear and attempt to jump over the breast bar or partition in a lorry or trailer is when the vehicle is stationary so think very carefully about leaving someone with the horse if you need to go away from him for even a short time.

In any event, always leave an emergency mobile telephone number clearly visible to anyone wanting to contact you because your horse is in difficulties.



Figure 55: Emergency details left in the cab of a horse lorry

Choosing a vehicle

When choosing a vehicle in which to transport your horse make yourself aware of the pitfalls of various makes and configurations of vehicle, and choose wisely. Many hire vehicles are rear facing 3.5 tonne van conversions and therefore it is a good idea to ask about the height of the breast partition and what there is to stop the horse breaching it⁹³. For intended purchases, it would be a good idea to ensure that your horse is happy to travel in that type of vehicle.

Be much more concerned about the safety of a given vehicles rather than the overall look of it. It is worth sacrificing some of the convenience features that are used to market vehicles in order to make more provision for the comfort of your horse.

Know the weight of your horses and the equipment you tend to take with you so that you can be sure that your horsebox is capable of towing/carrying the load intended. Some leeway is always a good idea.

⁹³ www.horseandhound.co.uk/features/horsebox-hire-what-you-need-to-know-392930?utm_source=facebook&utm_medium=social

Vehicle maintenance

Make yourself aware of what is and is not covered in a standard service and plating of a vehicle to make sure that those features which are designed to keep your horse safe are checked and maintained regularly, for example, the condition of the floor.

As well as monthly checks, a standard walk-around check before each journey is well advised.

Many vehicles stand outdoors, unused, for many months at a time, particularly in the winter. After a long winter lay off, check the condition of your wheel nuts, tyres, lights, brakes, floors, ramps, and doors.

Emergency checklist

You need to know what to do in the event of an emergency. Note the following:

Often by remaining calm, keeping potential escape routes closed, and allowing the horse to settle, the situation will resolve itself. If this is unlikely to happen it is still imperative to remain calm, keep ramps and doors closed, and summon professional assistance from the Fire and Rescue Service Animal Rescue Team and vet. The FRS Animal Rescue Team have specialist equipment and expertise which will help to extricate your horse without risking human lives and offer him a better chance of survival at the end.

Describe the situation clearly and give details of your location. Various mobile phone applications are available which can track your location.

If you are close to home, call your own vet, alternatively the Animal Rescue Team or the emergency control room will be able to contact one on your behalf through the BEVA Emergency Services Directory.⁹⁴ Outline the problem clearly so that the vet is aware that they will need to bring suitable anaesthesia and sedative drugs with them.

If you are on a major road then do not attempt to unload the horse(s) before managing the traffic. The police should be called at the earliest opportunity. Traffic will need to be halted and the road closed while the horse(s) are unloaded and re-loaded. If in doubt, summon assistance from animal rescue trained responders.

Do not enter the box with a horse that has become trapped over or under a breast bar or partition.

Do not travel in the box with any horse no matter how calm they are normally.

Before the journey make sure that you have an emergency plan for problems or breakdown.

Emergency kit for both the owner/driver and the horse needs to be kept in the cab or in the towing vehicle so that it is easily accessible in case of an emergency. This includes a hard hat and gloves.

⁹⁴ British Equine Veterinary Association

Ensure that you have full breakdown safety equipment such as hi-vis for you and your horse, a warning triangle, torch with spare bulbs and a first aid kit for both of you.



Driver awareness

Consider training or refresher training to transport your horse even if you are not legally obliged to.

Make sure you have a thorough understanding of the weight limit for your horsebox or trailer and towing vehicle, including train weight, nose weight and axle limits.

Make sure you understand the tyre requirements for your horsebox or trailer and the need to fit appropriate tyres for the purpose for which they are intended.

Adapt your driving style to take account of the needs of your horse in terms of balance and comfort. For example, approach all junctions as if you will have to stop, and avoid abrupt braking. Go round roundabouts steadily and always slow down in anticipation of a down hill so that you don't have to suddenly brake as you descend it.

Travel steadily and never exceed the speed limit for a trailer.

Be aware of the likely effect of the slipstream of heavy goods vehicles.

1.4 Design and maintenance

1.4.1 Key initial recommendations

- ✓ Designers, manufacturers and coach builders need to work together with the Fire and Rescue Service, commercial transporters, and other agencies to continue to improve the safety and welfare standards of all horse transport vehicles.
- ✓ To work towards the adoption of industry standards in order to promote high quality horse transport vehicles

1.4.2 Detailed recommendations

In order to ensure that the safety and welfare of horses is given top priority when designing and manufacturing horse transport vehicles the following areas may warrant consideration.

Item	Considerations
Dimensions	Headroom. Room to straddle/ balance. Containment. Security. Effect in emergency.
Orientation	Facilitating the adoption of a natural stance.
Tying up position/ tying up equipment	Position. Withers height and opposite the withers? Facilitating the adoption of a natural stance. Preventing the horse surging forward/rearing. Allowing limited give to avoid 'into-pressure' response. Break-away under given amount of stress.
Breast and breech bars and partitions	Need for. Adoption of a natural stance. Avoiding damage/limitation of respiratory tract. Minimising shock/ impact/bruising during sudden or normal braking, and gear changes. Elasticity. Materials – warmth and padding. Height. Adjustability. Quick release from outside the vehicle in case of emergency. Controlled but guaranteed release when under stress of horse's weight. Minimising the risk of injury to the horse. To give clear advice to owners as to the appropriate positioning of all bars and partitions. Consider need for full bulkhead in front of horse if necessary to prevent the horse jumping over the breast partition. Best design.
Central partitions	Height. Ensuring the horse cannot rear over. Full height or half height? Half partition – the horse can fall underneath – half rubber – may irritate upset the horse if it swings. Full height – horse may feel it cannot straddle sufficiently. Materials – warmth and padding. Adjustability. Strength. Impact proof during accident or assault by horse. Controlled release. Minimising the risk of injury to the horse.
Head dividers	Materials. Fastenings. Noise reduction.
Flooring	Materials. Depth. Strength with high margins across whole floor and under each foot. Support by cross members. Non-slip. Non-rotting. Secure. Quiet. Colour, Hygiene. Drainage. Easy to inspect every layer. Replacement. Sealed or not sealed. Cleats. Recommendations re: 'bedding'.

Ramps and loading	Height. Width. Constitution. Support. Angle of ramp. Colour of ramp. How ramp goes up. Noise. Outer gates. Safety of horse when negotiating ramp – springs and gaps. Surface in different weather conditions. Reduction of debris/gaps. Safety of humans loading the horse. Platform loading? Fasteners and locking devices. Protection from deterioration on top and underneath. Frame.
Internal fittings. Latches etc.	Smooth. Quiet. Noise/vibration reduction - sleeving. Non-catching. Appropriate strength with wide margins. Free of sharp edges and points. Recessing. Easy operation in every day and emergency use.
Ventilation/temperature control	Type. Draught free. Insulation. For travelling and when stationary. Avoiding having to leave doors and ramps down when stationary. Avoiding need for a rug.
Windows	Existence. Placement. Materials. Strength. Protection from breaking. Frames. Screening when open. Not to act as a draw.
Lighting	Purpose. Placement. Luminance. Form. Materials. Protection from damage and corrosion. Emergency lighting internal and external.
Carcass and chassis.	Strength in ordinary use and emergency. Protection of the integrity of the vehicle. Durability. Noise reduction. Inspection.
Suspension	Balance and stability. Implications of 'downplating'. Air-ride suspension.
Brakes	System. Electronic braking. Breakaway cable.
Electrics	Rating. Insulation. Prevention from damage and corrosion. Securing.
Axles	Attachment. Noise/vibration reduction. Resistance to corrosion.
Tyres	Rating. Suitability. Durability. Pressures. Margins. Spares (x2?)
Wheels	Hubs and nuts – Strength. Integrity. Ease of changing wheel. Mudguards. Prevention of corrosion. Ease of inspection.
Tow ball	Permanent (not detachable). Strength/ rating. Margins. Shape. Secondary safety connections. Use of chains.
Tow hitch	Support. Protect horse from injury. Anti-snaking devices.
Spoilers and fins	Lessen drag.
Cameras and Monitors	Operation. Safety. Reliability. Placement. Monitoring what?
Towing vehicles	Towing capacity. High margins.
Visibility	Reflective material. Use. Placement.
Additional considerations	Access points for remote injections

Table 21: Items that warrant consideration

It is anticipated that a substantial report and set of recommendations by Cregier and Giminez will shortly be published⁹⁵ to the international community, and that this will cover every aspect of the design and construction of horse transport vehicles. This is likely to provide a wealth of information which can be used as a framework for changes within the United Kingdom, insofar as it is applicable, without having to literally re-invent the wheel.

With regard to brakes, careful consideration needs to be given to the adequacy of trailer braking systems and whether anti-snaking devices should be fitted as standard. There are pros and cons to such devices since they minimise the effect of low levels of snaking which may mask the problem. However, driver education is also of key importance, since the natural reaction to snaking is to try to brake.

In America and Australia, snaking is not a significant problem since they have electronic trailer braking as opposed to European over-braking systems. Electronic braking systems sense the driver braking through the operation of the brake lights, but in addition they can be manually operated and adjusted by the driver of the towing vehicle in order to take account of road conditions including incline, variable speeds and loads. Over-braking systems on the other hand, putting it simply, involve the trailer ‘running’ into the back of the towing vehicle in order to activate the trailer brakes which can in turn unbalance the towing vehicle.

Until recently electronic braking systems were illegal in the UK as European regulations required over-braking systems. There is still a restriction on their use because UK regulations forbid the manual operation of the trailer brakes by the driver.

The alternative is to use an inertia switch mounted on the trailer which senses deceleration in order to activate the electronic trailer brakes. This can be problematic, as it can cause the brakes to be activated when going over speed bumps or rumble strips.



Figure 56: This upmarket lorry seems to offer good ventilation

⁹⁵ Non-commercial Horse Transport, New Standards for Trailers in Canada, Cregier, S, and Giminez, R., March 2015.



Figure 57: Detachable tow bar

In 2014 there were a number of incidents reported involving the apparent failure of detachable tow bars, in one case resulting in a trailer falling down an embankment with a horse on board⁹⁶ However this could be due to people failing to fit them correctly, failure to inspect and maintain, failure to remove between usages or failure to observe the applicable nose weight for the specific tow bar. Landrover issued a service action as a result⁹⁷

NCA/2014/022	Q393	Land Rover, Discovery 3, Discovery 4 & Range Rover Sport	SALLAAA545A000002 to SALLAAA549A510177 SALLAAD4AA510178 to SALLAAG5FA744273 26/11/2002 – 25/07/2014 SALLSFB845A000500 to SALLSAA137A999983 08/09/2003 to 03/05/2013	ultimately engine damage Owners have unknowingly exceeded the trailer hitch nose weight specification or are not removing the quick release tow ball from their vehicle when not in use. This either causes prematurely wear of the quick release tow ball system or increases the risk of the self-adjusting mechanism not operating correctly. This can result in the tow ball rattling and becoming loose. In extreme cases, the trailers could detach from the vehicle and cause a collision	be replaced Recall the affected vehicles to check the tow bar and identify the type of use. If found to be damaged or the wrong type of tow bar then it will be replaced with the correct type
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Figure 58: DVSA Vehicle manufacturers' non code actions

⁹⁶ www.horseandhound.co.uk/news/horse-trailer-detachable-towbars-452406, Horse owners warned to get detachable tow bars checked, Horse and Hound Magazine, 14th August, 2014

⁹⁷ www.gov.uk/government/uploads/system/uploads/attachment_data/file/403839/non-code-action-bulletin-5.pdf

Pressure is bound to come from both commercial and private purchasers, and users, of horse transport vehicles as people become more aware of the issues surrounding various layouts and types of transport. Already conversion companies are developing interior designs which aim to stop or discourage horses from jumping over the breast partition and make it easier to remove a horse from a stricken vehicle.



Figure 59: Hatches in a very high rear partition.



Figure 60: Ollie jumped these

Manufacturers and designers need to be aware that some solutions may not be as suitable as they may seem. This picture appeared on Facebook with this caption, suggesting that height may not make much difference to a determined horse. Anti-weave grills proved to be no deterrent either. Furthermore, anti-weave bars can make extrication following an incident more difficult and dangerous. During every day use when the handler is managing the horse in the horsebox, there is more risk of injury, particularly to the handler's arms, when anti-weave bars are used as a barrier.

One commercial transporter in the South of England, now no longer operating, used to secure a chain over horses' backs in order to discourage and prevent them from rearing.



Figure 61: Home-made anti-rearing device

This picture appeared on the Horse and Hound Magazine's Forum, apparently this arrangement was used to prevent the horse from rearing on to the top of the tack locker.

Two loose horses cause chaos on M25

10:44, 8 AUGUST 2015 | BY BECCA TAYLOR

Surrey Police had to close parts of the motorway to secure the animals, resulting in delays for motorists



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The horses escaped after the box they were in was involved in a road traffic collision, police said.

Figure 62: Two horses escaped from this vehicle following a collision

1.5 Standards, enforcement and record keeping

1.5.1 Key initial recommendations

Enforceable standards would significantly improve safety for horses in transportation and reduce the impact on emergency services and insurance companies. These might include:

- ✓ Mandatory annual MOT inspections for all trailers used to transport horses.
- ✓ MOTs and plating certificates should check items relating to the safety and comfort of the horse.
- ✓ Records need to be kept in respect of all incidents involving horse transport in public places.

1.5.2 Detailed recommendations

It is suggested that standards and regulations concerning horse transport in the United Kingdom need to be updated and upgraded.

One of the biggest challenges with horseboxes as opposed to trailers will be establishing a connection with the hundreds, possibly thousands of manufacturers involved in converting lorry chassis into horseboxes. The makers of the chassis have little role to play in taking forward the findings of this report. Responsibility for the design, quality and suitability of horseboxes lies with the independent company designing the body which sits on the chassis. The adoption of industry standards for best practice will help to address this problem in the futures by ensuring that there are consistent guidelines to follow.



Figure 63: Horse awaiting rescue from a van conversion

Consideration needs to be given to making it compulsory for a trailer to undergo an annual MOT inspection and that components conform to set standards and regulations.

Better recording of incidents would improve risk awareness and provide essential information which will contribute to future development of horse transport. A national database could be considered, recording standard and detailed information about every incident involving horse transport in public places, and should be monitored to ensure that the relevant agencies are aware of emerging patterns and problems. This needs to be pro-active and to attract respondents using modern social media and to be followed up perhaps by interview or questionnaire so that it provides accurate and meaningful information.

1.6 Public Awareness

1.6.1 Key initial recommendations

- ✓ People in general could be made more aware of the issues surrounding the transport of horses, particularly the need to be considerate when in proximity to horse transport vehicles.
- ✓ The professional emergency services and events management companies could be made aware of the specific needs of horses in transport when considering traffic management in emergencies.

1.6.2 Detailed recommendations

People in general could be made more aware of the need for care and consideration when driving or moving in proximity to horse transport vehicles.

Other riders should always walk their horses in the lorry park at shows and events.

The emergency services should to be made aware of the need to switch sirens off when passing horse transport vehicles.

The professional emergency services and events management companies should be made aware of the risk to and needs of horses and ponies in transport when traffic is forced to a halt for long periods of time. They should consider giving them priority when redirecting traffic and consider allowing vets access more readily if they are required.

PHASE FOUR: Looking Forwards

Summary of Purpose

Phase Four describes the collaboration process by which changes can be brought about. To date the project authors have worked in consultation with Emma Punt (BARTA Research Lead), Sheila Hardy (BHS), and Nicki Whittaker (NFU).

4.1. Future Developments

4.1.1 Working forum

“In my mind in order to intelligently address horse transportation issues there needs to be dialogue between like minded horse people, transporters and horse box designers and builders.” Colin Bunting, Commercial Transporter, Newbury Equine.

In order to press for change in all aspects of horse transport, the authors would suggest the importance of setting up a working group which may fall under the Equine Sector Council⁹⁸ with representation from all areas of the transport and horse industry. It would be within the remit of this group to set standards and continue to make improvements to vehicle design, to develop horse training, and owner/driver awareness. Accordingly experts in horse behaviour, manufacture and design of horse transport, and driving instruction could be invited to join the panel.

⁹⁸ www.newc.co.uk/law/equine-health-welfare-strategy

ACKNOWLEDGEMENTS AND INFORMATION

Our grateful thanks go to Dr. Sharon Cregier, without whom we wouldn't have known where to start, who provided a wealth of information and research; generous and patient beyond the call. Also, thanks to Laura Newton for the graphics and counting horseboxes.

Photograph credits: Sarah Weston, Tracey Parnell, Julie Noviss, Sheila Jones, Hampshire Fire and Rescue Service, Judge Manning Transport, Toller Trailers.

Key organisations:

BARTA was founded in 2012. Key roles are to provide advice, direction, training and accreditation for those involved in the rescue and trauma care of animals, from small domestic animals to livestock and horses. For more information visit www.bartacic.org

Intelligent Horsemanship was founded in 1997 by Kelly Marks. The organisation is dedicated to bringing the best of horsemanship ideas together to promote understanding and fair treatment of horses, through courses, demonstrations and educational materials.

FURTHER COPIES

Further copies of this report can be obtained from Jim Green at jim.green@bartacic.org

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