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Horse welfare within Traveller/ Gypsy communities; ethnic groups under-represented in horse welfare research

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Declaration

I declare that this thesis and the research findings presented here is entirely my own. No part of this thesis has been submitted to any other University for any other degree or professional qualification.

Signature:

Date: 30/9/2021

Abstract

Travellers/Gypsies are recognised ethnic groups in the UK and Ireland. Horses are significant to their lives, with horse ownership seen as a last link to their nomadic way of life. While horse welfare issues can be found throughout the horse industry, Traveller/Gypsy horse owners are often identified by stakeholders and the public as the main contributors to reduced horse welfare. Fly-grazing (unauthorised grazing on private land), tethering and abandoned horses are often linked with Traveller/Gypsy horse ownership. However, their perspective and approach to horse ownership is rarely examined. Using a mixed-method approach, this PhD thesis aimed to investigate public and stakeholder perceptions of Traveller/Gypsy horse culture and horse welfare, Traveller/Gypsy horse owners' attitudes to, and knowledge of horse care and management practices and the current welfare status of Traveller/Gypsy horses in the UK and Ireland.

Stakeholders included veterinary professionals, animal welfare officers, council/local authority employees and farriers. Data were collected at horse fairs, horse health clinics and at owners' homes. A questionnaire was used to assess public (n = 397) and stakeholders' (n = 103) knowledge and perceptions of Traveller/Gypsy horse culture using Likert-type scales. Traveller/Gypsy horse owners' (n = 71) views and knowledge of horse care and management were examined using face-to-face semi-structured interviews. To determine the health and welfare status of Traveller/Gypsy horses, 104 horses were assessed using a horse welfare protocol developed specifically for this study. Analysis revealed that the public had little knowledge of Traveller/Gypsy horse culture although there was some awareness of their tradition of horse ownership. Most had a negative perception of Traveller/Gypsy horse owners, with prejudices and stereotypes cited as the most common reason for these perceptions. A large number of participants were concerned for the welfare of Traveller/Gypsy horses. Most stakeholders believed that Traveller/Gypsy horse owners did not comply with the 'Control of Horses Act', were largely unaware of the concept of welfare

and believed that Traveller/Gypsy horse owners were unlikely to request the advice of their stakeholder occupation. The majority also stated that their occupation had a negative perception of Traveller/Gypsy horse owners. Parasites (internal and external) and being underweight were rated as highly prevalent health issues in Traveller/Gypsy horses. Thematic analysis revealed that most Traveller/Gypsy horse owners had a good understanding of horse health and welfare, understood the natural behaviour and natural environment of the horse and applied it in their management practices. Most horse owners were aware of the meaning of the animal welfare concept. Traveller/Gypsy horse owners experienced many challenges to horse ownership, with most citing land availability as one of the main difficulties. The health and welfare assessment of Traveller/Gypsy horses reported most horses as having an optimal body condition score, an absence of skin and limb conditions, and a friendly response when approached. Hoof neglect and the presence of hoof cracks/breakages were the most prevalent welfare issues present. It is evident from this study that there was an inconsistency between perceptions and the reality of Traveller/Gypsy horse ownership and welfare. This research provides novel data in the under-researched area of Traveller/Gypsy horse welfare. Therefore, there is a continuing need for the inclusion of marginalised communities in research prior to assumptions being made, so that their voices are heard.

Lay Summary

Travellers and Gypsies are recognised ethnic groups in the UK and Ireland. Horse ownership is an important part of their lives and is seen as a last link to their nomadic way of life. While there are welfare issues throughout the equine industry, Traveller/Gypsy horse owners are often viewed by the public and equine stakeholders as the main contributors to poor horse welfare. Horse management practices such as fly-grazing (unauthorised grazing on private land), tethering and abandoning horses are often linked with Traveller/Gypsy horse owners. Nevertheless, Traveller/Gypsy horse owners have never been asked about their approach to managing their horses or their views on horse care and welfare. This study was based in the UK and Ireland and aimed to investigate public and stakeholder views of Traveller/Gypsy horse culture and horse welfare. Stakeholders included veterinary professionals, animal welfare officers, council/local authority employees and farriers. It also examined Traveller/Gypsy horse owners' viewpoints and their knowledge of horse care and management; and in addition, the welfare status of their horses was assessed. A questionnaire was used to assess the knowledge and views of 397 members of the public and 103 horse stakeholders on Traveller/Gypsy horse culture and horse welfare. Seventy-one Traveller/Gypsy horse owners were interviewed regarding their attitudes to, and knowledge of horse care and management. Interview questions were semi structured so that horse owners were able to expand on their answers to the questions asked. The welfare of 104 horses was also evaluated using a horse welfare assessment tool that was created for this study. This tool assessed body and coat condition, the presence or absence of skin, joint and hoof problems and whether any problematic behaviours were present. It also included the type of housing and whether shelter and water was available for horses. Horses were assessed at horse fairs, at horse health clinics and at horse owners' homes. The findings of the study showed that the public knew very little about Traveller/Gypsy horse

culture, although some were aware that horse keeping was a tradition in the Traveller/Gypsy community. Most public participants had a negative view of Traveller/Gypsy horse ownership. These views were often based on prejudices and stereotypes. Many participants stated that they were concerned for the welfare of the horses in these communities. The majority of stakeholders stated that they believed that Traveller/Gypsy horse owners did not comply with the 'Control of Horses Act' which was brought in to prevent illegal grazing and abandonment of horses on private or public land. Most stakeholders believed that Traveller/Gypsy horse owners did not understand the meaning of animal welfare although findings in this study did not support this viewpoint. Most stakeholders stated that these horse owners were unlikely to ask for their professional advice on horse welfare issues and declared that their own profession had a negative view of Traveller/Gypsy horse owners. Horse health issues such as parasites and being underweight were the main issues that stakeholders believed Traveller/Gypsy horses suffered from. They also stated that Traveller/Gypsy horse owners were less likely to vaccinate their horses against tetanus and flu. From the interviews, most Traveller/Gypsy horse owners showed that they had a good understanding of horse health and welfare. They also had a good understanding of the natural behaviour and natural environment of the horse such as keeping their horses in groups outdoors and using natural shelter such as trees and hedges. Most Traveller/Gypsy horse owners used this natural approach in the management of their horses. However, Traveller/Gypsy owners also stated that they experienced difficulties in maintaining their cultural tradition of horse ownership with most claiming that leasing land for their horses was often problematic. From the horse welfare assessment, the majority of horses had a good body and coat condition. Few horses had any skin problems (such as body lesions or skin irritation) or joint issues. These findings did not support stakeholder perceptions that parasitism and being underweight are highly prevalent welfare concerns in Traveller/Gypsy horses. When horses were approached, most showed a friendly response. However, hoof neglect and the presence of hoof

cracks/breakages were the most common health/welfare issues in the horses assessed. The findings of this study revealed that public and stakeholder views of Traveller/Gypsy horse ownership are at odds with the reality of horse welfare, and the views and opinions of Traveller/Gypsy horse owners. Therefore, this study is very valuable as there is little known about Traveller horse ownership and horse welfare and evidence relies on non-scientific subjective evaluation of this horse owning community. Including Traveller/Gypsy horse owners in the study created evidence that is based on information originating from this group rather than on information assumed to be related to this group.

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List of Abbreviations

AITHS	All-Ireland Traveller Health Study
AWIN	Animal Welfare Indicators
AWO	Animal Welfare Officer
BBC	British Broadcasting Corporation
BHS	British Horse Society
COHA	Control of Horses Act
CSO	Central Statistics Office
DEFRA	Department for Environment, Food and Rural Affairs
ECRI	European Commission against Racism and Intolerance
EHRC	Equality and Human Rights Commission
EHV	Equine herpesvirus
FAWC	Farm Animal Welfare Council
IHRC	Irish Harness Racing Sector
ITM	Irish Traveller Movement
ISPCA	Irish Society for the Prevention of Cruelty to Animals
NEHS	National Equine Health Study
NEWC	National Equine Welfare Council
QBA	Qualitative Behaviour Assessment
RSPCA	The Royal Society for the Prevention of Cruelty to Animals
SSPCA	Scottish Society for the Prevention of Cruelty to Animals
SEBWAT	Standardised Equine-Based Welfare Assessment Tool
VAS	Visual analogue scale
WHO	World Health Organisation

Glossary of terms

Dáil Éireann	House of representatives (Ireland).
Gardaí	Police (Ireland).
Site	Private or council owned and managed places of residence (Authorised sites have planning permission, while unauthorised sites do not).
Trailers	Caravans

Conference Proceedings

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Chapter 1: General introduction and literature review

1.1 Introduction

This chapter provides a framework for this thesis and includes an examination of the literature for significance regarding the research subject. While the extant body of literature on Traveller/Gypsy horse ownership and horse welfare is limited, this review will focus on other aspects of Traveller/Gypsy culture. This will include reviewing the literature to uncover the history of this culture, identifying the challenges experienced, determining the significance of horse ownership, and explaining how the present study explored the viewpoint of Travellers/Gypsies themselves in the context of horse ownership and horse welfare. Furthermore, the subject of horse health and welfare within the Traveller/Gypsy horse owning community is examined.

1.2 Defining Travellers and Gypsies

To define the term 'Traveller and Gypsy' is problematic as it does not relate to a single, homogenous group. Instead, it incorporates a number of groups with their own cultures, values, histories, traditions and languages (Cromarty, 2019). However, these cultural groups have often been clustered together, perhaps because of their practices and nomadic lifestyle (Greenfields, 2007).

The Traveller Movement declares that:

'Irish Travellers and Romany Gypsies are an indigenous minority ethnic group, documented as being part of Irish and British society for centuries. Their distinctive way of life, values, culture and traditions manifest themselves in Traveller 'nomadism', the centrality of the extended family, their own language and the entrepreneurial nature of their economy. Travellers traditionally travelled to seek work to survive' (The Traveller Movement, Our Background, 6/9/ 2015)

This definition does not include other Traveller groups living in the UK such as Roma from Central and Easter Europe, 'New' (Age) Travellers and occupational travellers, i.e., show people and waterway travellers. While

acknowledging the existence of all Traveller/Gypsy groups, this research thesis focuses on the following four main groups of Gypsies and Travellers in the UK and Ireland, (i) English Gypsies, (ii) Welsh Gypsies/Travellers, (iii) Scottish Traveller/Gypsies, (iv) Irish Travellers.

1.3 Traveller/Gypsy groups

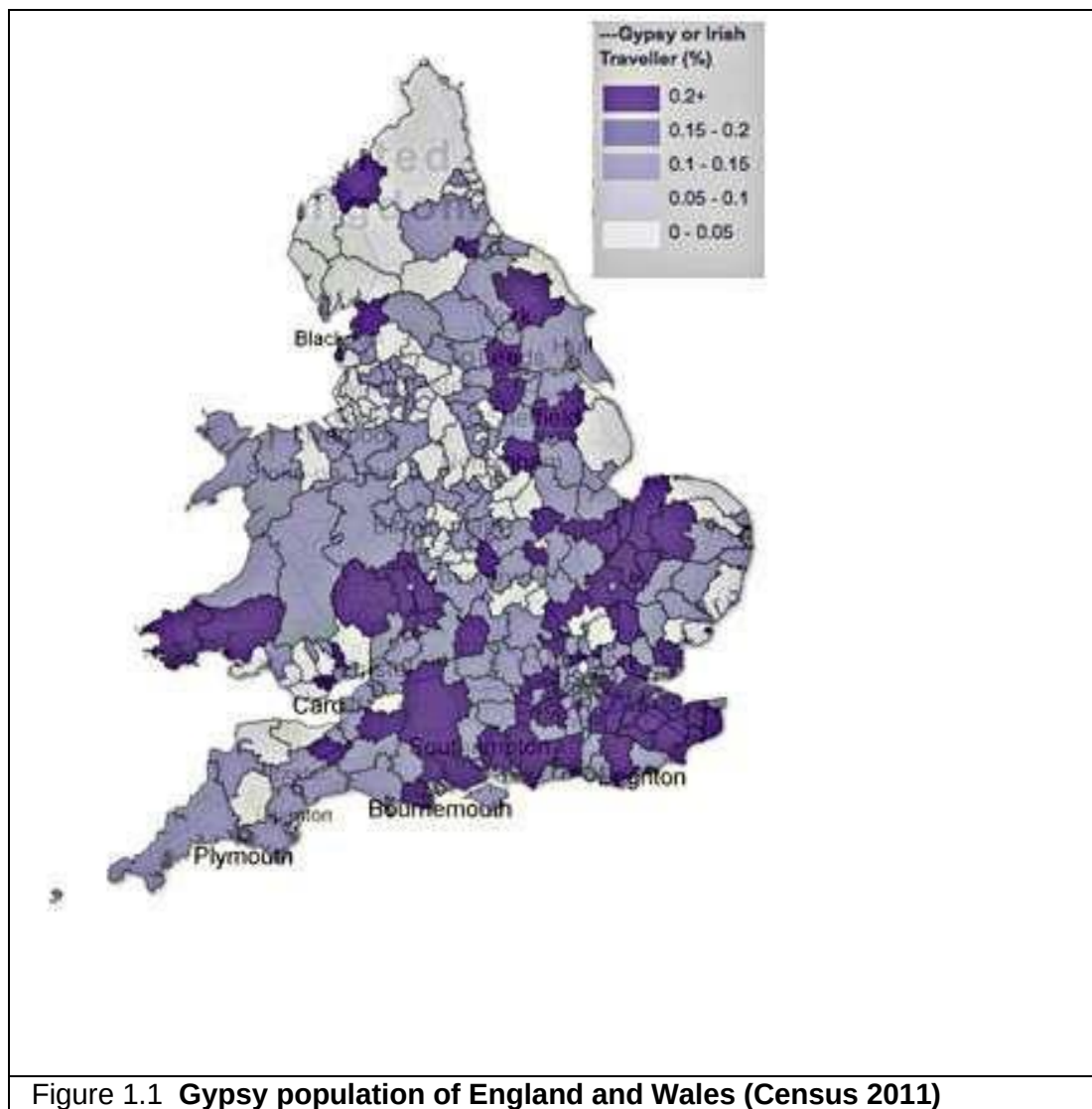
English and Welsh Gypsies (*Romanichal and Kale*) were first recorded in England in 1514 (Bancroft, 2005). Originating from the Indian diaspora and belonging to the same ethno-social group as Roma populations, the migration process of British Gypsies ensued later than their Central and Eastern European Roma counterparts (Kenrick, 2004). Welsh Gypsies are believed to have migrated to Wales from the Southwest of England circa 17th Century (Jarman and Jarman, 1991) and may have married into or out of Romani Gypsy and Irish Traveller families (The Traveller Movement, n.d.).

Scottish Travellers (*Nachins*) can be traced back to the nomadic gatherers of ancient Scotland (Williamson, 1994) and, therefore, existed prior to the arrival of Romanies in the 1500s. Today, the Traveller population is of mixed descent, the result of intermarriages between Romani Gypsies and Travellers and social/trading networks over time. According to Clark (2006), current Scottish Gypsy/Travellers in Scotland belong to a nomadic community that has prevailed for centuries. Common surnames of Scottish Gypsy/Traveller are linked to some of the greatest clans of Scotland such as McPhee, MacDonald and Stewart.

Irish Travellers (*Minceir*) are unique in that they are a distinct nomadic group in addition to being indigenous to Ireland (Helleiner, 2003). Irish Travellers are Celtic or pre-Celtic in origin, with no connections to Roma/Gypsies (McVeigh, 2007). During the 16th Century, Irish Travellers are believed to have started nomadising between Ireland and England and have continued to travel to and within the UK (Niner, 2002).

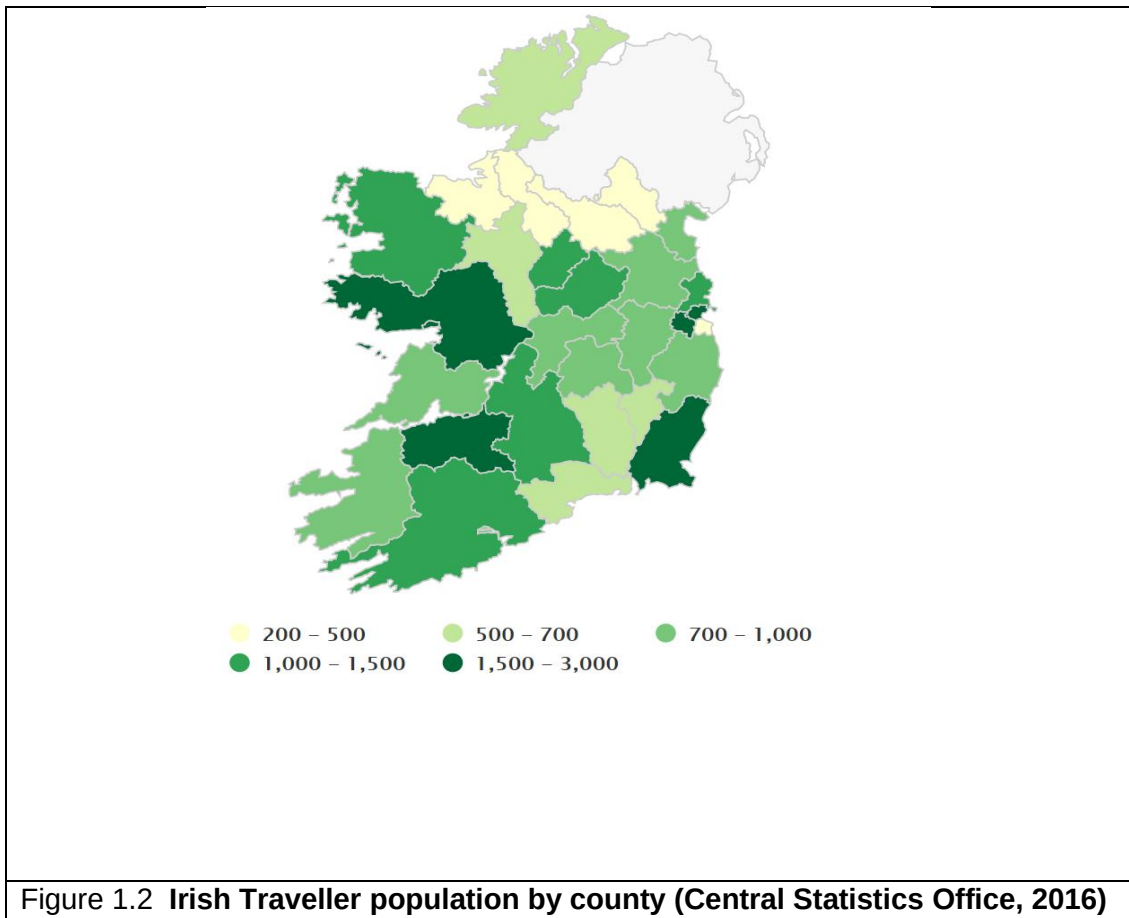
1.4 Traveller/Gypsy population

The UK Census (Office for National Statistics, 2011) included an ethnic category for the first time to collect data on Gypsy, Traveller and Irish Traveller communities. Approximately, 63,000 people considered themselves as members of these groups. Of these, 57,680 were living in England and Wales (0.1% of the English/Welsh population), *Figure 1.1*, 4,000 Travellers/Gypsies in Scotland (0.1% of the Scottish population) and Northern Ireland recorded 1,000 Travellers (0.05% of the Northern Irish population) in the last census (2011). In England and Wales, the highest number of Gypsy and Irish Travellers were living in the Southeast of England (Office for National Statistics, 2011).



Travellers and Gypsy populations are, on average, younger than the wider national population. The median age of Travellers and Gypsies in England/Wales was 26 years, while the wider national population's median age was 39 years. Thirty nine percent of Gypsies/Travellers were under 20 years of age, this compares to 24% in the same age group for the population in England/Wales. Furthermore, 82% of Gypsies and Irish Travellers living in England and Wales were born in England. In Scotland, the age profile indicated that 28% were aged 45 or over; this compared with 44% of the general population, while 4% were aged 70 or over compared to 12% of the whole population (Office for National Statistics, 2014). The country of birth for the majority (76%) of Travellers/Gypsies residing in Scotland, was Scotland followed by England (11%). Scottish Councils with the highest number of Travellers/Gypsies were Perth and Kinross, followed by Glasgow City and City of Edinburgh. Thirty five percent of Travellers/Gypsies resided in large urban areas and 21% in rural areas of Scotland.

In 2016, according to the Central Statistics Office (CSO, 2016), the Irish Traveller population comprised of 30,987 people representing 0.7 % of the total Irish population, *Figure 1.2*. Over half (58.1%) of Irish Travellers were under 25 years of age; this contrasts with that of the general population where 33.4% were under 25 years of age. Irish Traveller males, aged 65 and over, represented 2.9% of the total Traveller population which is considerably lower than the general population at 12.6%. Irish Traveller females, aged 65 years and over, accounted for 3.1% of the total Traveller population, this compared to the general population at 14.1%. The highest number of Travellers were in Galway County (2,647 persons) followed by South Dublin (2,208 persons). The majority of Travellers lived in an urbanised area (78.6%) compared with 62.4% of the total population (CSO, 2016).



1.5 Culture

While Travellers and Gypsies have different origins, there are many similarities between these two groups. One of the main influences in Traveller/Gypsy culture and fundamental to Traveller/Gypsy identity is their nomadic lifestyle. Today, this lifestyle is now more likely to alternate between nomadic and static (Brown and Scullion, 2009). Traveller and Gypsy cultural groups have their own languages, traditions, skills and customs that influence their way of life. They are a close-knit community, with the extended family and family networks being of great importance. Births, weddings and deaths are observed by large family or community religious ceremonial events (The Traveller Movement, n.d.). Further cultural norms include strict rituals around cleanliness and attendance at social gatherings, fairs or festivals and

traditional crafts often practised by Travellers/Gypsies included tin-smithing and coopering (The Traveller Movement, n.d.). While English is widely spoken within the Traveller/Gypsy community in the UK and Ireland, Anglo-Romani spoken by Gypsies and Cant or Gammon by Irish and Scottish Travellers are also common languages (Bowers, 2013). Today, Traveller/Gypsy culture is adapting to the use of technology with both the younger and older generations increasingly relying on social network platforms to communicate with others (The Traveller Movement, n.d.).

1.6 Stereotypes, discrimination and inequality

The perception of Travellers/Gypsies is entrenched in romanticism, prejudices and ignorance (Bowers, 2013). Occultism, such as fortune-telling and magical healing powers have long been associated with Gypsy culture, attributes viewed as an antithesis to the teachings of the Church, with the Church considering these practices as a distracting technique to allow a child to pickpocket (Clark et al., 2002). These medieval stereotypes are still a feature of modern thought in the UK and Ireland, with Travellers /Gypsies labelled as `criminals`, `asocial` and `deviants` (Fraser, 1995: 260-261). Of all the minority groups in Northern Europe, Travellers and Gypsies were found to be the least accepted with an unfavourable view of Travellers, Gypsies and Roma voiced by 58% of the public across Northern Europe (Dahlgreen, 2015). The media is often responsible for disseminating prejudice against Travellers/Gypsies (Morris, 2000) with negative television images and inflammatory newspaper headlines influencing how the settled community view Travellers/Gypsies (Bowers, 2013). In an Amnesty International (2012) study on the portrayal of Scottish Travellers in the media, 48% of newspaper articles were classed as negative, with these articles associating Travellers with criminal behaviour and poor hygiene. Only 28% of articles were classed as positive. However, Richardson (2007) found that “reality was not as bad as the myth” for residents who lived in the same vicinity as Travellers, thus illustrating the lack of knowledge and understanding of Traveller/Gypsy cultural lives.

The Roma community were fleeing India in the 1500s from persecution and harassment (Fraser 1995, Liegeois and Gheorghe 1995) and since their arrival in Europe; they have continued to face persecution. Today, while considered one of the oldest ethnic minority groups in the UK, Travellers and Gypsies are also regrettably one of the most excluded from society (Lally, 2015) and one of the most discriminated against (Cemlyn et al., 2009). Irish Travellers too have endured a long history of discrimination and hostility with Cemlyn et al. (2009) defining their experiences as one of social and cultural exclusion. McElwee et al. (2003) claimed that Travellers are deemed as second-class Irish citizens by many of the 'settled' population. More recently, the European Commission against Racism and Intolerance (ECRI, 2019) found that 'significant discrimination' towards Travellers in Ireland is still evident today with Travellers stating that they were 22 times more likely to be discriminated against in shops, restaurants and pubs than that of the general population (McGinnity et al., 2017). Irish Travellers were only acknowledged as a minority ethnic group in Ireland in 2017, with this identification key to progressing towards possible solutions to Travellers experiences of discrimination and racism (Pavee Point, 2017).

In a House of Commons Committee Library briefing paper on Gypsies and Travellers in the UK (2019), the Equality and Human Rights Commission (EHRC, 2015) was quoted in stating that Travellers/Gypsies were also still found to be actively discriminated against. As ethnic minority groups, Travellers and Gypsies are legally protected under the Race Relations Act (1976, amended 2000), however despite legislation, these ethnic groups remain one of the only groups where discrimination against members of the group is still tolerated (Lally, 2014). This acceptance of discrimination considered to be the 'last bastion of racism' (Coxhead, 2007).

While 'The Equality Act 2010' sets out to protect Romani Gypsies, Scottish Travellers and Irish Travellers, these groups continue to experience high levels of racial discrimination, thus adding to and worsening the inequalities they encounter. A study by Save the Children Fund in Scotland (2000), found

that two-thirds of health professionals deemed colleagues 'racist' and claimed that 'intolerant' attitudes are responsible for Scottish Travellers not accessing health services. Experiences of hostility and discrimination were also identified by Travellers in the All-Ireland Traveller Health Study (AITHS) (2010). The EHRC (2015) states that Travellers and Gypsies experience some of the greatest inequalities across a number of social indicators in the UK with Hester (2004) claiming that many services within the UK fail to target Travellers and Gypsies. This results in inequality in services provision with evidence of inequalities in accommodation, employment, health and education.

In England and Wales, the majority (76%) of Gypsies and Irish Travellers live in bricks-and-mortar accommodation with the remaining (24%) living in a caravan or transitory structure (Census, 2011). It must be noted that those who live in bricks-and-mortar dwellings still preserve a deep commitment to the Traveller/Gypsy culture, traditions and lifestyle, with the idea of 'the travelling way' emerging as a key concept by Traveller/Gypsy respondents in a study of health-related beliefs and experiences of Gypsies and Travellers, regardless of their accommodation status (Van Cleemput et al., 2007). In July 2019, there were 23,125 Traveller caravans in England, an increase of 33% since July 2009 with the majority (58%) on private sites, the remaining (29%) on local authority and registered providers of social housing sites and 13% on unauthorised sites according to the 'Count of Traveller Caravans' report (Ministry of Housing, Communities and Local government 2019). Unauthorised encampments often result from lack of permanent and transient sites. The UK Government is currently consulting on making unauthorised encampments and trespass a criminal offence, with the police to be given increased powers to seize the vehicle/s of those they suspect to be trespassing on land with the intention of living on it (Government UK, 2019). Currently, there is a significant shortage of Traveller/Gypsy sites, therefore, this proposed legislation would have a major impact on both Traveller/Gypsy lives and their nomadic way of life. In Ireland, the majority of

Travellers live in private dwellings with a small number living in shared establishments (Census 2016). A further major point is that the provision of residential and transit accommodation for Travellers/Gypsies is often opposed by local residents in both the UK and Ireland. Therefore, there is a significant accommodation shortfall available to these cultural groups. Public sites are often built on poor quality land, close to sewage works and motorways with inadequate fire safety, resources and services (Niner, 2003, Crawley, 2004, Richardson, 2007).

Historically, occupations amongst Travellers and Romani Gypsies have been based upon traditions of nomadism and mobile economies that address niche markets such as livestock trade, hawking, travelling workers and crafts (Bancroft, 2005). However, government policies such as the `*Criminal Justice and Public Order Act`* (1994) have been held responsible for the Traveller/Gypsy population discontinuing their nomadic lifestyle (McCagg, 1991; Bancroft, 2005), with few opportunities currently available for employment. Economic activity for Travellers/Gypsies in England and Wales was lower (47%) than that of the general population at 63% (Census, 2011), whereas in Ireland it was 57% for Travellers compared with 61.4% for the general population (CSO, 2016).

According to the 1948 Constitution of the World Health Organisation (WHO, 2006), health is 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'. The health status of Travellers/Gypsies compares with that of Developing World levels of health quality (Brown, 2010) as there is a higher incidence of various medical conditions when compared to the settled community. These include cardiovascular disease (Parry et al., 2007), depression (Vivian and Dundes, 2004), higher maternal death rates (Lynch, 2006) and respiratory problems (Rhodes, 2005). Furthermore, life expectancy for Travellers/Gypsies in the UK is 10 to 12 years lower than that of the wider community (EHRC, 2009), while in Ireland, life expectancy for male Travellers is 15 years lower than the general population and 11 years lower for women (CSO, 2011). Suicide rates

within the Traveller/Gypsy community are high, especially amongst men. The suicide rate of Irish Traveller men was found to be three to five times higher than the wider population (AITHS, 2010b). This point is significant to this research project as Traveller/Gypsy horse ownership is primarily a male-dominated activity (Pavee Point, 2019). In a recent study, Traveller men's connection to horses was found to be a positive channel for their mental well-being (Rowland et al., 2019); therefore, horse ownership plays a multi-faceted role in Traveller/Gypsy culture.

While there is an improvement in educational achievement of Traveller/Gypsy children in England since educational concerns were first recognised for these cultural groups in the 1960s (EHRC, 2012). Children from Traveller/Gypsy communities still attain significantly less than the national average during compulsory education and are less likely to progress to Higher Education. In Ireland, 13.3% of Traveller females were educated to higher secondary or Further Education, a figure significantly lower than the wider female population at 69.1%. The equivalent figure for male Travellers in Ireland, was 10%, compared to 63.8% of the wider male population. For Traveller males in Ireland, 57.2% were only educated to Primary school level which compares to 13.6% of the general population. Twelve percent of female Travellers in Ireland were educated to only Primary school level which compares to 54% of the general population. Further, less than 1% of Travellers progress to Third-level education (CSO, 2016). A similar situation applies in the UK, with Gypsy, Romani and Traveller pupils achieving some of the lowest educational outcomes with only 19% of Gypsy/Roma pupils attaining the expected standard in reading, writing and mathematics (Department of Education, 2019). Greater levels of school exclusions and incidents of bullying and racial abuse are also experienced by pupils from these communities (Cromarty, 2018) and discrimination from staff and students is often cited as a reason for early school leaving (Cemlyn et al., 2009). A key problem with poor education is that Travellers/Gypsies often have difficulties engaging with services because of low literacy levels. While

it is well established that education and training on horse welfare is necessary for horse welfare to be improved (Collins et al., 2012), education programmes may require adaption to address the low literacy levels of Traveller/Gypsy horse owners.

1.7 Traveller/Gypsy horse culture

The significance of the horse to human culture was first found in faunal remains and cave paintings circa 15,000 years ago in France and Spain (Clutton-Brock, 1992). While the earliest evidence of horse domestication was 6000 years ago in the Ukraine, Western Europe and Asia, current mitochondrial DNA (mDNA) sequencing data indicates that a number of diverse populations were instrumental in horse domestication (Jansen et al., 2002). There is evidence of a clear connectedness between nomadic societies and their horses (Lawrence, 1988), with nomadic cultures such as the Mongols and North American Plains Indians regarding their lives to be interconnected with their horses (Robinson, 1999). Lawrence (1985) also described the horse as a significant member of the Crow Indian society, a native American nomadic tribe. Further, the horse's bloodline was found to be highly regarded within nomadic cultures and this was emphasised in Gypsy, Basque and Bedouin sources (Bennett, 1992).

The Traveller/Gypsy relationship with horses is age old. Coloured cobs and Vanners were the original Traveller/Gypsy horses and these horses were used to pull their bow top wagons. Bow top wagons were the traditional Traveller/Gypsy accommodation, *Figure 1.3*.



(Credit: John S. Hockensmith)

Figure 1.3 Coloured Cob and traditional bow-top wagon

Horses also had a strong economic importance for Travellers/Gypsies as they enabled the nomadic nature of their economy (Pavee Point, 2019). Traditional skills and trades such as blacksmithing, coopering, field labouring and entertainment were all reliant on horse drawn accommodation throughout rural communities. The horse drawn days came to an end in the 1960s when motorised vehicles became more common, and trailers were transported around the country by vans and cars rather than horses (Conway, 2004). Further, with industrialisation, the migration of people from rural to urban areas also included the movement of Travellers/Gypsies to cities and towns. Nevertheless, horse ownership remained commonplace within the Traveller/Gypsy culture following this growth in modernisation and urbanisation (McCarthy, 1974) and was viewed as one of the last links to their nomadic way of life. However, the role of the horse has evolved in Traveller/Gypsy culture. Today, Travellers/Gypsies keep, breed and sell horses with horse dealing considered an important Traveller/Gypsy activity

(Okely, 1983, Crowley and Irwin, 2019). Traditional recreational activities include trotting and sulky racing (Irish Traveller Movement (ITM), 2002). Sulky racing is equivalent to harness racing, where a cart or sulky is pulled by the horse and controlled by a driver. Horses race at a specific gait (a trot or a pace). The coloured cobs, referred to as piebald and skewbald are still associated with Travellers/Gypsies. To the best of the author's knowledge, there is no definitive statistics on the size of the Traveller/Gypsy horse population in either the UK or Ireland.

At traditional horse fairs, Traveller/Gypsy horse owners trade and show horses. Some of the most well know fairs include Appleby and Stowe in England and Ballinasloe in Ireland. Horse fairs date back centuries and are considered one of the most important occasions in the Traveller/Gypsy calendar (Traveller Times, 2018). These events are annual gatherings where Travellers and Gypsies celebrate their history and folklore, meet with other members of the Traveller/Gypsy community to socialise, buy traditional wares and goods, and most importantly trade and barter in horses (Hockensmith, 2006).

While there are few scientific studies on Traveller/Gypsy horse culture, a recent study on Traveller horse owners' attitudes to horse care and welfare provides a brief snapshot of horse care management within this culture (Rowland et al., 2019). Traveller horse owners were found to adopt management practices that were based on the principles of the horse's natural behaviour and natural environment. As such, practices such as group and outdoor housing, constant access to grazing and seasonal feeding patterns were applied. However, this information was from a relatively small-scale study and findings cannot therefore be generalised to the wider population of Traveller/Gypsy horse owners.

1.8 Perceptions of Traveller/Gypsy horse owners and horse welfare

There is a lack of robust information on Traveller/Gypsy horse ownership and horse welfare, however, on the other hand, there are various perceptions held by the public, the media and stakeholders on this horse owning culture. From the viewpoint of the public, trespassing horses, abandonment and fly-grazing are some of the strongest images correlated with Traveller horse ownership (Gmelch, 1975) and these have often led to tensions between these communities.

The media's preference for negative stereotyping and reporting of Travellers and Gypsies extends to that of Traveller/Gypsy horse owners and horse welfare (Cork Traveller Visibility Group, 2013). Sensational headlines such as 'They abandon horses, don't they?' was a report by Rowley (The Telegraph, 1/8/2013) claiming that an abandoned pony was 'probably' dumped by Travellers because another Traveller's pony was found in the same area the previous year. Media reports scanned for this thesis research uncovered similar unfounded negative representations. Such accounts include 'Appleby residents liken preparing for the annual gypsy and traveller horse fair to getting ready for WAR - and call for the Army to be brought in' (Richardson, Mail Online, 13/8/2010) and Horse Fair Carnage, (Burrows, The Sun, 9/6/2019). However, a minority of reports were found to have a positive slant to their articles on Traveller/Gypsy horse culture such as 'Charity 'aware' of incidents but says Appleby 2019 was 'positive' (Murray, Horse and Hound, 11/6/2019) and 'Land is a challenge to Traveller horse welfare' (Murray, Horse and Hound, 15/8/2019). Local Councils were also cited to be discriminatory by Travellers and Gypsies in a study on Self-Directed Support and Gypsy/Travellers (Minority Ethnic Carers of People Project, 2015) with respondents of the view that Councils actively discriminate against Travellers/Gypsies in the provision of accommodation and services. This in itself is a significant issue for Traveller/Gypsy horse ownership with councils

that have enabled Travellers to keep their horses having better relationships with this cultural group (Pavee Point, 2013).

Stakeholder perceptions of Traveller/Gypsy horse welfare were also found to be negative, with Travellers singled out as one of the main contributors to poor horse welfare. (Horseman et al., 2016). In the Horseman et al. 2016 study, Traveller horse welfare concerns varied from tethering, lack of food and water to inadequate routine health care. Further, indiscriminate breeding, neglect and abandonment have also been documented as welfare concerns in a report 'Left On The Verge: In the grip of a horse crisis in England and Wales' (The Royal Society for the Protection of Animals (RSPCA) et al., 2013). However, it is not known to what extent, if at all, such practices are exclusive to Traveller/Gypsy horse owners. In Ireland, stakeholders also identified Travellers as responsible for reduced horse welfare (Collins et al., 2010). However, these studies failed to investigate the basis of these perceptions and illustrate how Travellers/Gypsies continue to be judged by the society and community in which they reside. However, Rioja-Lang et al. (2020) did not find that Traveller/Gypsy horses were prioritised as a welfare concern in their study on 'Determining a Welfare Prioritization for Horses Using a Delphi Method' with equine welfare experts.

1.9 Horse welfare issues assigned to Traveller/Gypsy horse ownership

Whereas horse welfare issues can be found in all sectors of the horse industry, it is evident that Traveller horse owners have been identified as the one of the main horse-owning groups, where horse welfare is comprised (Collins et al., 2010, 2012; Horseman et al., 2016). The limited literature available specifies that practices such as fly-grazing, tethering, abandoning animals and indiscriminate breeding (Cullinane et al., 2014) may result in reduced Traveller/Gypsy horse welfare.

Horse breeding is commonplace in Traveller/Gypsy culture, with the Gypsy cob the most common type of horse bred by this community. However, in

their study on the identification of solutions to selected equine welfare problems in Ireland, of which Traveller horse owners were included, Collins et al. (2012) found that young Traveller horse owners are now introducing Thoroughbred blood lines into the traditional cob for the benefit of speed. As a result, the horse's stoical nature and robustness may be affected with this lighter and more sensitive horse less likely to be adaptable to Traveller horse owners' traditional management approaches (Collins et al., 2012). Indiscriminate breeding was identified as one of the main contributors to the over population of horses in the UK and consequently, increased fly-grazing, abandonment and poor horse welfare are likely outcomes of the over population of horses (RSPCA et al., 2013). To some extent, indiscriminate breeding was acknowledged as a concern by Traveller interviewees in a research study on Traveller Horse Ownership. However, castration costs of colts and the difficulty of culling horses because of the strong bonds between owner and horse were cited as challenges to the management of indiscriminate breeding (Pavee Point, 2019).

Traveller/Gypsy horse breeders, buyers and sellers converge at annual horse fairs to trade in horses. The "flashing" lane is an iconic part of Appleby Horse Fair (*Figure 1.4*) the largest horse fair in Europe, and to a lesser extent, Ballinasloe in Ireland. The purpose of the `Flash` is to showcase horses with horse dealers, buyers, sellers and spectators having the opportunity to assess a horse's speed, health, temperament and beauty (Traveller Times, 2017). However, the riding and driving practices on the `Flashing Lane` at Appleby horse fair have raised concerns for the horse's welfare (Rogers, 2017) although there is a lack of robust information on the extent of these concerns.



Figure 1.4 The `Flash` at Appleby Horse Fair

As stated, Sulky racing is a common recreational activity in Traveller/Gypsy culture (ITM, 2002). The prevalence of illegal road racing, which is typically unauthorised harness racing that occurs on a public road is greater in Ireland and to a lesser extent in the UK, than in any other European country. The reason for this may be linked to the provision of facilities across other European countries which allow specific communities the opportunity to race professionally. Unfortunately, these resources are limited in both England and Ireland, with sulky racing referred to as an `anti-social` activity by the Irish Harness Racing Sector (IHRC) (Department of Agriculture, Food and the Marine, Review of the Irish Harness Racing sector, 2017). Lack of access to a harness racing tracks, was cited by Traveller horse owners in a report on Traveller Horse ownership as a reason for partaking in on-road racing. While Travellers do utilise some of the tracks in Ireland, there are few such tracks available. Reports that some links have been established between Travellers and the IHRC is promising though (Pavee Point, 2019). In fact, an educational programme has been designed and developed in Ireland

with the aim of increasing both sulky drivers and trotter horse owners' participation in racing on tracks rather than on road. In addition, improved engagement with the regulated sport of harness racing on tracks is encouraged (Deputy Michael Creed, the Minister for Agriculture, Food and the Marine (2018). In a British Broadcasting Corporation (BBC) TV programme on 'The secret world of trotting' (2002), trotter owners interviewed claimed that 'Travellers are socially excluded from more prestigious, legal tracks' in England, while in Wales, farmers and tradesmen are the highest representatives at harness racing events with Travellers only representing approximately 25% of participants (Smith, The Times, 2017). However, in Scotland, there are various harness racing fields and harness racing events throughout the year that Traveller/Gypsy harness racers attend and participate in. It is my understanding that the prevalence of illegal road racing is low or non-existent in Scotland. However, significant studies on Traveller/Gypsy road-racing are lacking.

In Ireland, The Control of Horses Act (COHA) (1996) was introduced as a consequence of public concerns about roaming and neglected horses and subsequent property damage. Under the Act, a horse must be microchipped, have a passport and licence. Further, this legislation prevents the unauthorised keeping of horses on public or private property. The enforcement of the act is the responsibility of the Local Authorities, and it often results in horse impoundment. In England and Wales, the Control of Horses Act (COHA, 2015, 2014) was introduced to combat fly-grazing, straying and abandonment. Additional legislation requires horses to be microchipped and passported (The Equine Identification (England) Regulations 2018 and The Equine Identification (Wales) Regulations 2019). The COHA does not exist in Scotland or Northern Ireland although The Equine Identification Regulations (Northern Ireland) 2019 and the Equine Animal (Identification) (Scotland) Regulations 2019 requires that all horses should be microchipped and have a passport. According to the Blue Cross,

the COHA facilitates a quick and easy way for both landowners and authorities to help protect against poor horse welfare (Blue Cross, 2019).

While governmental statistics relating to the COHA in England and Wales are unavailable, the Control of Horses statistics, from the Irish Department of Agriculture are published each year. In accordance with the Control of Horses statistics (Department of Agriculture, Food and the Marine, 2018), 1460 horses were seized in Ireland in 2018, with Limerick City and County having the greatest number at 206. Of the 1460 seized, 133 were reclaimed by their owners, 271 were rehomed and 1052 were euthanased and four horses were unaccounted for. Dublin City and South Dublin also saw the higher levels of horse impoundment in 2018. Cullinane et al. (2014) found that horses in poor body condition were more likely to be euthanased. With horses often impounded in groups, owners were more likely to reclaim horses in good body condition, therefore, of monetary value. In addition, the Farm Animal Welfare Advisory Council advised that the humane euthanasia of impounded horses would help prevent continuing horse welfare problems in Ireland (Department of Agriculture, Food and the Marine, 2010).

Even though statistics on impoundment do not identify specific horse owners, a study on horse impoundment in the Munster region of Ireland found that over 50% of horses impounded in their study were either piebald or skewbald, a colouring often associated with Traveller horses (Cullinane et al., 2015). Therefore, Traveller horse owners appear to be more vulnerable to the COHA regulations and horse impoundment (Pavee Point, 2019). A possible explanation for this is the lack of land ownership within this horse owning community, hence the need to fly-graze horses. The availability of land has been cited as one of the major barriers to Traveller horse ownership (Lynam and Dowdall, 2008; Rowland et al., 2019). Therefore, it is challenging for Travellers/Gypsies to maintain their tradition of horse ownership because of their difficulty in accessing land (ITM, 2002). The availability of suitable land is a prerequisite to horse ownership, providing food, shelter, safety and

the opportunity to exhibit normal behaviour patterns (grazing), with welfare compromised if these resources are not available.

According to the Control of Horses Statistics (Department of Agriculture, Food and the Marine, 2018), there was a significant decrease in horse impoundment in Ireland from 2014 when 4,923 horses were seized (4,231 euthanised) to the figures of 2018 (1460 seized, 1052 euthanised). Questioned on the success of the COHA, Deputy Michael Creed, the Minister for Agriculture, Food and the Marine (2018) stated that the COHA has worked well because horse exports have increased, therefore a greater balance is achieved between supply and demand. However, where or what the horses were exported for, was not stated. Minister Michael Creed (2018) further stated that animal welfare charities have also re-homed more horses abroad with this rehoming strategy supported through funding from the Department of Agriculture, Food and the Marine to animal welfare organisations. However, there were only 271 of 1460 horses impounded in 2018 rehomed, with the majority of horses still euthanised. As discussed, the practice of euthanasia was promoted in 2010 and remains a common practice in horse pounds today, in addition to rehoming.

A report on Traveller horse ownership in Ireland stated that there were enhanced levels of compliance with the COHA in areas where horse projects were in place (Pavee Point, 2019) which may explain the decrease in horse impoundment. Horse Projects are unique to Ireland. They are initiatives set up to support vulnerable horse owners with structures varying according to the needs of the community, for example, land and/or stable provision (*Figure 1.5*), and education and training programmes. Such projects include Shannon Horse Project and Travellers of North Cork Horse Project (TNC). Equine education, training and support programmes currently focusing on vulnerable horse owners and communities, include Health and Education clinics (BHS in collaboration with other agencies), an educational stand at Appleby Horse Fair (Redwings in collaboration with other agencies) and Animal Welfare Education programmes (TNC). Through the development of

skills, knowledge and support with resources, the key impact of these programmes is responsible horse ownership, resulting in improved horse welfare (Pavee Point, 2019).



Figure 1.5 Stables and land at a Traveller specific horse project, Ireland

1.10 Horse health and welfare

The horse's health and welfare is dependent on a number and combination of different factors. The absence of thirst, hunger, malnutrition, fear, distress, discomfort, pain and injury have all been identified as important elements of good equine health and welfare (Farm Animal Welfare Council (FAWC), 1993). In addition to the removal of these negative factors, an animals' subjective feelings (Dawkins, 2008; Mendl et al., 2009), production and reproduction (Dawkins, 1998) and natural behaviours (Spinka, 2006) are central to a horse's wellbeing. With limited, if any, studies on horse welfare within Traveller/Gypsy culture, knowledge of current welfare concerns in the wider horse industry will allow for a comparison of Traveller/Gypsy horse welfare with a reference population. Therefore, the final section of this chapter examines selected issues that have impacted upon the health and welfare in the general horse population.

Several studies have outlined horse health and welfare issues in the general horse population. For example, in a study on welfare priorities for

racehorses, participants with experience of the industry identified health issues as the most important concern for horse welfare (Butler et al., 2019). Horseman et al. (2016) identified welfare issues that were perceived to affect horse welfare and more recently, a study by Rioja-Lang et al. (2020) categorised the most prevalent horse welfare issues in the UK. The National Equine Health Survey (NEHS), established in 2010 by the Blue Cross (Shephard, 2011) outlined horse health issues in the UK with results remaining largely consistent over the years. In these equine health studies, horse health issues were reported by horse owners for each horse under their care, with nearly half of the respondents keeping or owning a single horse (48.9%) and the majority of horses kept in livery yards (49.9%). In the eighth and final NEHS (Blue Cross, 2018), the leading health conditions in UK horses were skin problems (33% of all conditions recorded) followed by lameness including laminitis (29%), metabolic diseases (7.4%), respiratory disease (7%) and eye problems (6%). The most common individual disease syndromes documented were proximal limb (non-foot) lameness (18.5% of all syndromes recorded), laminitis (5.4%), mud fever (6.7%), sweet itch (7.3%) and Pituitary Pars Intermedia Dysfunction (PPID or Equine Cushing's Disease) (5.3%).

The aforementioned issues can have adverse effects for the horse's health and welfare. Mud fever is often a result of an animal's exposure to cold, wet and muddy conditions. It causes skin irritation with significant hair loss and inflamed skin (Shearer, 2009). Sweet itch is an equine hypersensitivity reaction to insect bites such as that from the black fly (*Simulium*) and the midge (*Culicoides*). Horses that are severely affected by sweet itch are sometimes euthanized (Anderson et al., 1988; Gortel, 1998). Without appropriate specific treatment, these disorders of the skin can impact negatively on a horse's health and welfare. The consequence of ongoing lameness is chronic arthritis and tendonitis which results in chronic pain (Swann, 2006). Equine PPID has been linked to muscle wasting, weight loss, chronic infections (Love, 1993; McGowan 2003) and an increase in acute

laminitis in horses (Bailey et al., 2008). Laminitis, a critical hoof disease caused by an inflammation of the laminae within the hoof, produces extreme pain and lameness (Pollitt, 2004).

While respiratory diseases are common in horses, infectious respiratory diseases such as *Streptococcus equi* var. *equi* infection (Strangles) can increase the risk of serious or life-threatening complications (Taylor et al., 2006). Equine influenza virus produces nasal discharge, coughing, fever and lethargy and is highly contagious and a major cause of respiratory diseases worldwide. (Myers and Wilson, 2006). Prevention of equine influenza is multifaceted and includes careful monitoring for clinical signs of equine influenza, separation of horses that are susceptible to the disease, cautious introductions of new horses to the herd and equine influenza vaccinations (Myers and Wilson, 2006). Equine vaccinations are an effective method of preventing equine infectious diseases, diseases, which are a key horse welfare concern. Therefore, poor or non- vaccination practices amongst horse owners can be problematic, both at the individual and herd level for equine infectious disease control (Paillot et al., 2016). A recent survey in the UK found that 87% of horse owners vaccinated their horses against influenza and tetanus while more than half of respondents were unaware of the vaccine that is available for equine herpesvirus (EHV), (Zoetis Inc, 2019). Wilson et al. (2020) found that EHV1,4 vaccination is only performed in less than 10% of competing horses. Possible reasons for the limited uptake of equine herpesvirus vaccinations include cost of vaccination, lack of awareness of the risks caused by equine herpesvirus and absence of compulsory vaccination by regulatory bodies (Ivens et al. 2019). Two surveys conducted by Horseman et al. (2016) and Rioja-Lang et al. (2020) identified horse health and welfare issues in the wider horse population, the first is based on perceptions of the welfare issues while the latter centres on actual prevalence of issues. From 31 in-depth interviews with a range of equine stakeholders, Horseman et al. (2016) identified 52 welfare issues that were perceived to affect horse welfare and with expert input prioritising the most

significant of these. These included unresolved stress/pain; unsuitable diet; inappropriate stabling/turnout and delayed euthanasia. More recently and by using Delphi methodology with horse welfare experts, Rioja-Lang et al. (2020) categorised the most prevalent horse welfare issues in the UK. Overall, issues identified included the consequence of a lack of biosecurity, which is a risk to welfare due to the risk of disease rather than a welfare issue, and lack of knowledge of horse welfare needs, delayed euthanasia, obesity and fear and stress from utilisation. Issues perceived to create the most suffering in individual horses included delayed euthanasia, owners not recognising pain behaviour, considerable worm burdens, obesity and unsuitable diet according to horse feeding behaviour.

Obesity is a growing welfare problem with obese ponies found to be more vulnerable to painful medical problems such as laminitis (Trieber et al., 2006). The presence of parasites can affect a horse's welfare often contributing to weight loss, increased risk of ulcers and colic, and even death (Hamm et al., 2015). Further, a lack of knowledge and understanding of a horse's welfare needs was considered to be at the root cause of poor welfare (Horseman et al., 2016; Rioja-Lang et al., 2020). Owner's insufficient knowledge may have an influence on horse management practices, often leading to issues such as inappropriate feeding, poor training methods and delayed euthanasia. Inappropriate feeding can result in obesity or malnutrition whereas delayed euthanasia can cause unnecessary suffering and pain (Rioja-Lang et al., 2020). Therefore, horse owner knowledge and understanding of a horse's needs is at the core of improved horse welfare.

Stress in horses can be caused by various environmental and social factors such as a horse's training regime, housing conditions, transportation and social isolation (Mal et al. 1991; Visser et al. 2008; Tateo et al. 2012; Rogers 2018). While horses differ in their ability to cope with stress, long term stress can lead to both health and behaviour problems. Prolonged stabling, in addition to management of horses in unsuitable environments limits the horse's opportunity for social contact, with these practices reported as poor horse

welfare (McGreevy et al. 2018). Horses are social animals in their natural environment. Therefore, horses develop stereotypies such as weaving, cribbing and box-walking as a coping mechanism for stress caused by these management factors. McGreevy et al. (1995) found that the incidence of stereotypies was high amongst dressage horses. While both surveys identified a number of equine health and behaviour concerns, it is important to note that Horseman et al. (2016) recognised that survey stakeholders in their study had a propensity to associate welfare concerns with management and contexts that they perceived to be different and were unfamiliar with. Further, Horseman's study proposes that an objective approach is required when identifying welfare issues rather than a focus on minority welfare concerns.

1.11 Rationale

A review of the literature reveals the Traveller/Gypsy culture to be rich in history, nomadism, traditions and customs. However, it is evident that racism and discrimination also feature greatly in the lives of this community. This chapter has outlined the impact of inequality and exclusion to the Traveller/Gypsy community and has offered insight into the difficulties encountered in accessing accommodation, medical care as well as other services and supports. Further, with the horse a crucial part of Traveller/Gypsy culture, it is evident that narratives concerning the perception of poor welfare in Traveller/Gypsy horses is also prevalent. However, there is little empirical data to support this view, therefore, there is a pressing and timely need to establish whether these perceptions are consistent with the reality of Traveller/Gypsy horses' lives, experiences and welfare. Additionally, interventions that may need to be taken to improve Traveller/Gypsy horse welfare must be explored.

1.12 Research aims and objectives

The overall aim of this research project is to examine horse welfare issues within Traveller/Gypsy communities in the UK and Ireland in order to quantify

the scale of any potential problems, to identify why these problems exist and to address any welfare issues by means of evidence-based interventions. This work is based on a mixed methods approach underpinned by following four research aims.

Traditionally and presently, the horse is held in high esteem within the Traveller/Gypsy community. From the review, it is evident that there is little knowledge on the subject of Traveller/Gypsy horse ownership. Further, empirical data on Traveller/Gypsy horse keeping and management practices is lacking. Therefore, this research study aims to investigate Traveller/Gypsy horse owners' attitudes to, and knowledge of, horse care and management practices. The involvement of Traveller/Gypsy horse owners is essential to assure accurate representation of this horse owning community. While Traveller horses were described as 'particularly vulnerable to compromise' (Horseman et al., 2018), a key problem with this statement is that; the extent of Traveller horse welfare concerns has yet to be established. Consequently, this research study aims to assess the current welfare status of Traveller/Gypsy horses.

Having outlined how equine stakeholders and the public perceive Traveller/Gypsy horse owners and horse welfare, it is clear that, Traveller/Gypsies are perceived negatively with stereotypes often applied to the whole ethnic group. However, insights into how stakeholders and the public inform their views and perceptions of Traveller/Gypsy horse culture are limited. Hence, this research study aims to evaluate equine stakeholders' and the general public's perception of Traveller/Gypsy horse welfare and management practices. These insights may enhance awareness of stakeholder/public representation of Traveller/Gypsy horse ownership, insights which may or may not reflect the actual situation pertaining to Traveller/Gypsy horse welfare. Ultimately, a final aim of this research study focuses on the development of evidence - based interventions that aim to improve horse welfare concerns, with these interventions cantering on the findings from the above research questions. However, due to Covid 19

restrictions, the execution of evidence-based interventions were not possible although a programme plan was developed for an intergroup activity. This activity is discussed further in the final discussion in Chapter 5.

To conclude, the research questions can be summarised as:

- What are the general public's perception of Traveller/Gypsy horse welfare and management practices?
- What are equine stakeholders' perceptions of Traveller/Gypsy horse welfare and management practices?
- What are Traveller/Gypsy horse owners' attitudes to, and knowledge of horse care and management practices?
- What is the current welfare status of Traveller/Gypsy horses?
- What evidence - based interventions, centred on the findings from the above research questions are required?

1.13 Positionality statement

As the author of this study, it is helpful to understand my positionality in this research. I am a white Irish middle-aged woman, who has resided in Ireland, England and Scotland. White Irish is recognised as an ethnic minority group in Britain. This means I have shared understandings of the difficulties that the research populations face as an ethnic minority community, and I could identify with some of the events participants shared and described. I, as an Irish woman was generally accepted by participants. My education and training is in psychology, family studies, mediation and facilitation skills. These courses provided me with the skills to build a rapport with participants, actively listen to their stories, ask questions while at the same time remaining impartial.

My passion for animal care and welfare was initiated by my farming background. As such, I changed my career path and completed an MSC in Applied Animal Behaviour and Animal Welfare. My MSc dissertation examined Irish Traveller horse owners' attitudes to horse care and welfare, in

addition to using Body Condition Scoring as an exemplar for equine welfare issues. This was a first-time study. This dissertation provided me with previous experience of conducting interviews with Traveller horse owners.

I have spent most of my adult life working with Travellers and I have extensive experience of engaging with Travellers in various settings including community and youth organisations, prison systems, educational facilities and animal welfare societies. I was a founding member of Shannon Traveller Horse Project, Ireland, set up in 2010 and I remain an active member of this project. From working with this ethnic minority group, I had a good awareness of their lived experiences and realities. As a result of this awareness, I was at ease discussing the topic under research because it was a subject with which I was familiar with. As such, these communities were comfortable around me, and I established a good rapport with participants.

I worked with a supervisory team, having regular meetings and discussions to ensure the study was guided by our collective knowledge and expertise. To minimise my own biases, supervisory review of all study materials and procedures during all stages of the research process enabled the identification of matters that required modification. The interpretation of the data was questioned, the findings verified, and the subsequent discussion reviewed on a regular basis among the supervisory team and decisions made were critically examined. As a team, we ensured that this study was sensitive and appropriate to the context in which it was conducted.

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Chapter 2: A survey of public perceptions of Traveller/Gypsy horse welfare and the factors that influence these perceptions.

2.1 Introduction

Travellers and Gypsies are minority ethnic groups in the UK and Ireland. These cultural groups have their own customs, languages and traditions. Today, their lifestyle is more likely to alternate between nomadic and static (Brown and Scullion, 2009). Nevertheless, their nomadic lifestyle with horses and horse ownership are fundamental to their identity as Travellers and Gypsies, with horse ownership regarded as one of the last connections to their nomadic way of life (Irish Traveller Movement (ITM), 2002).

2.1.1 Perception of Traveller/Gypsy culture

As ethnic minority groups, Travellers and Gypsies are legally protected under the Race Relations Act (1976, amended 2000), yet are considered to be one of the most discriminated against ethnic groups in Britain (Cemlyn et al., 2009). Travellers and Gypsies experience inequality in education (Cemlyn et al., 2009), health (Brown, 2010), employment (McGinnity et al., 2017) and within the criminal justice system (Cuthbertson, 2017). In fact, the Traveller/Gypsy community was cited as the minority group most likely to be disliked or feared by the wider community in Britain (Cemlyn, 2008), with the Traveller/Gypsy community being one of four groups who received the highest level of discriminatory attitudes in the Scottish Social Attitudes survey (Scottish Government, 2015). This finding had not changed significantly from previous survey findings conducted in 2010. A survey in Ireland with over one thousand participants revealed that the public's overall view of Travellers as either a fairly negative or very negative view, 24% had a fairly positive view and only 7% of the respondents had a very positive view of Travellers (Visser, 2018). It has been shown that negative views held by the public can have negative consequences for the Traveller/Gypsy community, with

experiences of prejudice, discrimination and social exclusion being commonplace (Fraser, 1995, Dahlgreen, 2015, Watson et al., 2017).

To the best of the author's knowledge, there is no previous research on the factors that influence the public's perceptions of Traveller/Gypsy communities; there is, however, research with other ethnic groups such as Romany people. A street survey of public perceptions of Romany people revealed that respondents from across all genders and age groups and from diverse backgrounds described this ethnic group in as many negative as positive/neutral terms (Ureche and Franks, 2007). However, positive perceptions were mostly evident amongst respondents who had Romany friends or friends from different ethnic backgrounds. Further, Garner et al. (2009) found that resentment against ethnic minorities was greater amongst the white working-class, who lived in deprived housing estates in England. At the root of this resentment was the perception that ethnic minorities were given preference for resources such as housing.

It is clear that negative perceptions of ethnic minority groups are commonplace in the UK, with negative perceptions being intensified against Traveller/Gypsy/Roma culture (Dahlgreen, 2015). According to Beutin (2006), perceptions and policy development can impact on each other in either a positive or negative way with Crawley (2009) stating that negative public perceptions and stereotypes may impact government policy development. As a result, these policies may be a catalyst for increased opposition to different ethnic groups, resulting in exclusion, discrimination and marginalisation which further exacerbates negative public perceptions and discrimination. Therefore, public perceptions need to be challenged in order to reverse the cycle of negative perceptions and discrimination towards diverse ethnic and minority groups (Crawley, 2009). In fact, an understanding and knowledge of discrimination by Turkish Society towards the Kurdish people, an Iranian ethnic group native to Kurdistan, was found to have a positive effect, in that the wider society improved their attitudes towards the Kurdish ethnic group (Bagci et al., 2017).

While it is evident that public perceptions of a specific ethnic group can have an impact on this ethnic and minority group, little research has been conducted on public perception of the Traveller/Gypsy ethnic group to date. Therefore, this PhD study investigated how the public perceive Traveller/Gypsy communities. In addition, the present study aimed to investigate the factors that influenced these perceptions. This information can be applied at both individual and policy level to understand existing perceptions of Traveller/Gypsy culture to address possible misconceptions and stereotypes.

2.1.2 Perception of Traveller/Gypsy horse culture and horse welfare

How the public perceive Traveller/Gypsy horse ownership and horse welfare is a further area of research in this study. Traveller/Gypsy horse owners keep, breed and sell horses and attend traditional horse fairs, such as Appleby horse fair in England and Ballinasloe in Ireland. Common recreational activities include trotting and harness/sulky racing (ITM, 2002). The care and management of horses in these communities is primarily a male role (Pavee Point, 2019), with horses often viewed as friends by this horse owning community (Court, 1985). While negative stereotypes of Travellers/Gypsies prevail in both the UK and Ireland (Ni Shuinear, 1997, 2002), negative stereotyping of Traveller horse culture was cited at the National Traveller Horse Ownership Seminar as commonplace and undeserved, with these stereotypes often promoted and influenced by the media (Cork Traveller Visibility Group, 2013).

Concern for the welfare of Traveller/Gypsy horses by equine stakeholders is well documented (Collins et al., 2010, 2012; Horseman et al., 2016). Equine stakeholders in these studies included veterinary professionals, equine service providers, horse trainers, equine charity workers, trading standards officers and stakeholders in the Irish equine trade. Collins et al. (2009) identified Travellers as responsible for reduced horse welfare while Horseman et al. (2016) classified tethering, lack of food and water and

inadequate routine health care as particular Traveller horse ownership welfare concerns. While these studies were based on stakeholder perceptions, studies on public views of Traveller/Gypsy horse ownership and Traveller/Gypsy horse welfare are lacking. However, the public were found to associate trespassing horses, abandonment, neglect and fly-grazing with Traveller/Gypsy horse culture (Gmelch, 1975). This reference dates back nearly fifty years, however, this viewpoint remains to this day and has often led to disagreements between these communities (Gmelch, 1975). In fact, the Control of Horses Act (COHA, 1996), discussed in Chapter 1, was introduced in Ireland as a result of public-perceived concerns about roaming and neglected horses, subsequent property damage, and poor horse welfare, characteristics often ascribed to Traveller/Gypsy horse ownership (Gmelch, 1975). While welfare issues can be found in all sectors of the horse industry (Collins et al., 2012), Traveller horse owners appear to be more vulnerable to the COHA regulations and horse impoundment than other horse-owning communities (Pavee Point, 2019).

Horses have been a part of human society for thousands of years and today, horses are more likely to be employed in sport and recreation in Western society (Endenburgh, 1999). For the public at large, concern for the welfare of horses is increasingly documented. Studies have included public perceptions of show horse welfare (Voight et al., 2016) and whip use in horse racing (Jones et al., 2015). Further, a study on horse ownership within American Crow Indian culture reported a negative perception of this horse owning community by the neighbouring non-Crow Indian public in America. However, the prime reason identified for these negative attitudes was a lack of understanding of American Crow Indian culture (Lawrence, 1985).

It is evident that concern for horse welfare is at the core of public perception of horse ownership and horse use. In fact, Collins et al.'s (2010) Delphi study on equine welfare issues revealed that public perception of the horse industry was a main concern for stakeholders. Likewise, Voight et al. (2016) found that officials in their study on show competitors' understanding and

perceptions of equine welfare considered public perceptions to be of concern to the industry. However, the literature has not, to the best of the author's knowledge, investigated public perception of Traveller/Gypsy horse welfare. Hence, in this study, how the Traveller/Gypsy horse-owning community is viewed by the public was examined. While a lack of information on Traveller/Gypsy horse culture may have aided the growth of negative perceptions towards Traveller/Gypsy horse welfare by the public, the result of this study plays an important role in providing information that can be used for educational purposes, with the aim of increasing public awareness of Traveller/Gypsy horse welfare. Further, this information may help change misconceptions and negative stereotyping of Traveller horse culture, as cited at the National Traveller Horse Ownership Seminar (2013).

2.1.3 Factors that influence perception of Traveller/Gypsy horse culture and horse welfare.

With few studies on public perceptions of Traveller/Gypsy horse welfare, an understanding of the factors that influence these views are equally limited. However, public perception of animal welfare and the factors that influence it are the subject of various research papers. A questionnaire survey in Spain on public perceptions of farm animal welfare revealed that overall, a high percentage of respondents considered farm animal welfare essential for both animals and humans (Maria, 2006). Factors affecting public general attitude towards animal welfare included gender, age and occupation. Women demonstrated a more positive attitude than men and young and medium aged people also had a more positive attitude to animal welfare than those aged over 50 years. Occupations such as worker, the retired and unemployed respondents displayed a more negative attitude to the concept of animal welfare than other occupations such as professionals, teachers, vets, farmers, housepersons and students (Maria, 2006).

A further predictor of a person's level of concern for an animal is empathy (Hills, 1993; Furnham et al., 2003; Heleski et al., 2004; Serpell, 2004; Mazas et al., 2013), with women found to demonstrate higher levels of empathy

towards animals than men (Mehrabian et al., 1988). In Herzog et al.'s (1991) 'Attitudes to Animals Scale', women scored consistently higher than men on attitude measurement towards the treatment of animals, thus indicating a more pro-animal attitude. In reviewing the factors that influence perceptions of equine wellbeing, female respondents in a study on youth perceptions of equine welfare, perceived greater levels of distress (in a series of selected videos measuring different levels of horse distress) than male respondents (Rice, 2018). Further, Rice (2018) found that factors such as a respondent's upbringing and whether they were competitors or spectators at horse shows influenced their perceptions.

Another demographic variable relevant to an understanding and concern for animal welfare was experience of companion animals (Paul and Serpell, 1993; Taylor and Signal, 2005), although Taylor and Signal (2005) found that attitudes were only relevant to current companion animal ownership. Croney and Botheras (2010) stated that emotional relationships with animals classed as companion animals influence how people regard and value nonhuman animals. Additionally, those from a non-farm background demonstrated a greater level of concern for an animal's welfare than those who live on a farm (Kendall, et al., 2009). Other factors such as income and educational level (Kellert, 1980), marital status (Kafer et al., 1992), race (Kellert, 1980) and ethical ideology (Galvin and Herzog, 1992) were cited as additional factors that influence attitudes toward the treatment of nonhuman animals. Based on the aforementioned, the influence of demographic variables on how the public perceive Traveller/Gypsy horse ownership was investigated. The inclusion of demographic variables aimed to provide insights into the factors that influence public perceptions of Traveller/Gypsy horse ownership, with these variables further identifying if similar demographic differences as described in the literature influence public perceptions of Traveller/Gypsy horse culture.

The media is a vehicle for sharing information, ideas or attitudes and people often rely on this channel for information (Murch, 1971). However, the media

has a powerful influence in reinforcing public perceptions (Morris, 2000). Lido (2006) found that readers' opinions about asylum seekers were influenced by how the press portrayed this group, which was usually in a negative way. Further, over 50% of respondents in Ureche and Franks' (2007) street survey stated that the Romani people are portrayed negatively in the media, with Jedidi (2014) reporting that different newspapers report diverse opinions on Romani people. As perceptions towards Traveller/Gypsy culture are already negative (Cemlyn, 2008; Visser, 2018), negative media representations have the potential to further shape how the wider community view these ethnic groups (Bowers, 2013). Therefore, the influence of the media was considered central to this study and was assessed by asking questions on the media sources people use to inform themselves about Traveller/Gypsy culture, horse ownership and horse welfare.

2.1.4 Rationale

It is evident that there is a lack of robust scientific information on the public's knowledge and perception of Traveller/Gypsy culture. Therefore, the purpose of this research was to address this gap, to identify how the public perceive Traveller/Gypsy culture and discern the factors that influence these perceptions. While horse ownership is fundamental to Traveller/Gypsy culture in the UK and Ireland, there are no recorded data on the extent of horse ownership or on the population of horses within Traveller/Gypsy communities. From the literature, it is evident that horses strongly feature in Traveller/Gypsy lives, although public and media perceptions of their welfare are often negative. However, there is a gap in research specifically focusing on knowledge, perceptions and factors that influence the public views of Traveller/Gypsy horse welfare, although these factors have been examined in other horse-owning communities. Therefore, this study investigated public perceptions of these aspects of Traveller/Gypsy horse culture, with the knowledge obtained forming the basis of how different facets of this horse owning culture are perceived by the public and the influences they may have on their perceptions of Traveller/Gypsy horse ownership.

Finally, as well as exploring the views of the public in relation to Traveller/Gypsy horse ownership, participants' support for various proposals to help improve Traveller/Gypsy horse welfare, if necessary, was assessed. This information is required as it may be applied to strategies for improved horse welfare. In view of the limited information on Traveller/Gypsy horse ownership and horse welfare, this study is important because the findings inform our understanding of the factors that influence the public's perceptions of Traveller/Gypsy horse culture.

2.2 Methodology

This study was approved by the Human Ethics Review Committee, The Royal (Dick) School of Veterinary Studies, The University of Edinburgh (Ref no. HERC_268_18).

2.2.1 Survey design

To assess public attitudes towards Traveller/Gypsy horse welfare, a six-part survey questionnaire was developed and implemented in December 2018. Unless otherwise stated, statements for each section were generated for this study and were based on a literature review outlined in Chapter 1. At the beginning of the questionnaire, participants were informed and consented to the following: participation was voluntary; they had the right to withdraw from the study at any time during completion without giving a reason or their legal rights being affected; there were no known risks to participating in this survey; responses would remain anonymous and confidential at all times; data would be analysed as collective data and individual answers to the questions would be seen only by the research team.

2.2.2 Questionnaire design

A survey questionnaire was designed to gather public knowledge, views and perceptions on Traveller/Gypsy horse culture, horse care, management and welfare. Answering options for the items used in the questionnaire were provided using a six-point Likert-type scale (Likert, 1932), with the opportunity for respondents to add optional comments following selected parts of the questionnaire. Likert-type scales were used because they are simple to construct, scales are likely to be highly reliable and large amounts of data can be collected from a large number of respondents relatively quickly. Likert type scales allows respondents greater flexibility in their response rather than forcing them to choose between just two options (Velicer, DiClemente and Corriveau, 1984)

The six-section questionnaire (*Appendix A1*) was designed to capture the following criteria for Traveller/Gypsy horse welfare:

Demographic information: The first part was a demographic section and consisted of statements pertaining to the participants' gender, age, country, region of residence, urban/rural location, their animal ownership status and to specify which animals were owned from the following list: dog, cat, horse, rabbit and other.

Attitudes to animals/animal welfare knowledge: The second section comprised of 20 statements investigating attitudes to animals and knowledge of animal welfare. In this study, The Animal Assessment Scale (Herzog, 1991) with minor modifications was used to assess the general public's attitudes to animals. To make the questionnaire more UK-compliant, the word millions was changed to thousands in the statement 'it is unethical to breed purebred dogs for pets when *millions* of dogs are killed in animal shelters each year' and hogs was changed to pigs in 'I think it is perfectly acceptable for cattle and *hogs* to be raised for human consumption'. Statements used to assess individual differences in attitudes towards the treatment of animals included 'There is nothing morally wrong with hunting wild animals for food' and 'I sometimes get upset when I see wild animals in cages at zoos'.

While Herzog et al. (1991) used a five-point Likert-type scale, participants in this study responded on a six-point Likert-type scale (Likert, 1932) ranging from 1 (Strongly disagree) to 6 (Strongly agree). By eliminating the mid-point in the scale, social desirability bias can be reduced (Garland, 1991). Further, the absence of the mid-point is recommended when respondents are unfamiliar with the research subject (Weems and Onwuegbyzie, 2001) which may be the case in this study. This will ensure that respondents do not use the mid-point as a poorly reasoned response, instead, they must indicate a slight preference at the very least. However, a 'don't know' option was available as suggested by Weems and Onwuegbyzie (2001).

The next part evaluated participants' general knowledge about animal welfare. Participants were asked to respond to 12 statements generated from the Five Freedoms of animal welfare (Farm Animal Welfare Council, (FAWC) 1993) on attributes that contribute to animal welfare on a Likert-type scale ranging from 1 (not at all) to 6 (very much). A 'don't know' response was an additional option.

Traveller/Gypsy culture: Considering Traveller/Gypsy culture, this section was divided into two parts. First, participants responded to 16 statements evaluating their knowledge of Traveller/Gypsy culture using a six-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). Generated statements were based on evidence from scientific literature and based on characteristics of Traveller/Gypsy culture. A 'don't know' response was an additional option. To gain insight into where participants receive their information about Traveller/Gypsy culture, in the second part of this section, participants responded on a six-point Likert-type scale ranging from 1 (not at all) to 6 (always) to 15 different media channels.

Classification/perception of horses: The next section aimed to gain an understanding of how participants both classify and perceive horses. Statements were influenced by a study on 'Current factors influencing perceptions of animals and their welfare' (McKendree et al. 2014). Participants were asked to indicate on a six-point Likert-type scale, ranging from 1 (not at all) to 6 (always) whether they classified horses to be companion, working, sport animals, livestock or other. Participants were then asked to respond to nine statements, based on the literature review on how horses are regarded, such as '*horses are social animals*' and '*horses are capable of expressing a range of emotions and feelings*' on a six-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). A 'don't know' option was available for both parts.

Traveller/Gypsy horse culture, horse care and welfare concern: The fifth section concerned Traveller/Gypsy horse culture, Traveller/Gypsy horse

owners' care of their horses and concern about the level of welfare. Participants responded on a six-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree) to six literature-related statements on horse culture and 23 literature related statements on owner care. Next, participants indicated their level of concern about the welfare of Traveller/Gypsy horses on a six-point Likert-type scale ranging from 1 (not concerned at all) to 6 (very concerned). A 'don't know' option was available for all questions. Participants were then asked how likely a number of media sources would present a positive image of Traveller/Gypsy horse welfare on a six-point Likert-type scale ranging from 1 (not likely at all) to 6 (very likely). A 'don't know' option was available for all questions. The final question in this section related to how Traveller/Gypsy horse owners were perceived by the public. Participants responded as having either a positive perception, negative perception or with 'don't know'. Participants were invited to give a reason for their response.

Responsibility/solutions to improve horse welfare: The final section considered responsibility for Traveller/Gypsy horse welfare and possible solutions to poor horse health and welfare. Participants responded to eight statements on whom they considered to be responsible for the welfare of Traveller/Gypsy horses on a Likert-type scale from 1 (strongly disagree) to 6 (strongly agree). Finally, participants were questioned about what they considered to be the most effective solutions to Traveller/Gypsy horse welfare. This section consisted of 12 recommendations which included improved legislation, horse ownership support structures, better communication strategies, tougher penalties for horse neglect and education programmes and followed the same format as the previous question.

Once the questionnaire was completed, the key researcher's email was included for respondents who had further questions/concerns about the survey/questions or would like to be informed of the study results. In addition, if respondents were concerned about an animal's welfare or wished to report an injured or distressed animal, contact details of animal welfare

organisations in England/Wales, Scotland and Ireland were provided. Throughout the questionnaire, attention checks such as *`If you read this, please select strongly agree`* were placed within long scales to control for low-effort response strategies such as not reading the statements, choosing the same response for all statements or ticking *`don't know`*.

2.2.3 Pilot Study

The survey was reviewed and piloted with ten members of staff and students within the University of Edinburgh and Scotland's Rural College. Questionnaires were examined for understanding, clarity, ambiguity and completion time. Pilot study respondents recommended that the approximate time that the survey would take should be included in the instructions.

2.2.4 Recruitment

Participants from the public were recruited from an online panel maintained by Prolific Academic (ProA), (<https://www.prolific.co>). ProA allows for the collection of reliable data by linking researchers with participants around the world. Panels for sourcing research participants have been used successfully in previous studies such as *`Consumer evaluation of farm animal mutilations`* (Connor and Cowan, 2020). This panel provider targeted 400 participants by pre-screening for demographic data, which included country and age as requested. A sample size of 400 was based on similar studies on public perceptions of animal welfare (zoo animals, Reade and Waran 1996; dairy cow welfare, Ellis et al. 2009) in addition to budget constraints. Participants from the UK and Ireland were recruited, and all respondents were required to be 18 + years to participate in the survey. Participants could only complete the survey once and they were paid a small fee for such.

2.2.5 Procedure

The survey was disseminated to participants by ProA, using the web-based survey provider *`Online Survey`*. This is a web-based survey tool designed for Academic Research, Education and Public Sector organisations (Jisc, Bristol, UK). Written instructions were provided with the questionnaire. An

introduction, rationale for the study and confidentiality statement preceded the questions (*Appendix A1*). After consenting to participate in the study, participants, were asked to rate their opinions on a scale of one to six. In this questionnaire, scale items were rated with the negative pole on the left and the positive one on the right. Some questions were 'negatively worded' so that respondents thinking had to be reversed when deciding whether they agree or disagree with statements. Respondents were also given the opportunity to add optional comments when requested. Respondents had to complete each question consecutively before being able to continue to the next question. Participants were allocated a maximum of 18 minutes to complete the study. The survey was expected to remain open for one week. However, due to unscheduled maintenance that took place on the survey platform, the survey remained open to accommodate respondents who were unable to complete the survey in this time.

2.2.6 Data Analysis

Data were initially cleaned and only results from respondents who had completed the survey in its entirety were analysed. Survey data were entered into an SPSS 25 (Chicago, IL, USA) spreadsheet and checked for errors. Reverse coding was applied to negatively worded items before analysis. Higher numbers (5 or 6) reflect more positive attitudes while lower numbers reflect a more negative attitude.

Respondents provided their age as year of birth. Participants were classified into four age groups, 18 - 25 years, 26 - 35 years, 36 – 45 years and over 45 years. These age groups were developed to balance this demographic profile for analysis. Region of residence was coded as follows, the South of England (SE), the North of England (NE) and the Midlands. The data set was too small for Scotland, Wales, Northern Ireland and Ireland and so these nations/countries were classed together as the Celtic countries (CC). Unless stated otherwise, data are presented as mean $\pm$ standard deviation.

Independent-samples t-test and a one-way analysis of variance (ANOVA), with Tukey post hoc test analysis were conducted to determine if there were statistically significant differences between the means of independent groups. The assumption of normality was assessed by Shapiro-Wilk's test ($p > .05$) and homogeneity of variances was measured by Levene's test for equality of variances ($p > .05$).

A chi-square test was conducted to establish differences in frequencies. As a data reduction technique, scales were subjected to principal components extraction method with varimax rotation. Principal Component Analysis (PCA) was assessed for suitability prior to analysis. The overall Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were assessed to demonstrate whether the data were eligible for factor analysis. Coefficients with a loading of at least 0.30 were chosen for factor analysis (Tabachnick and Fidell, 2006). Preliminary assessments of factors were based on eigenvalues, cumulative variance and visual examination of the scree plot and factor loadings. It was necessary to delete items that cross loaded, that is, two items loading on to more than one factor, as the purpose of PCA is to obtain theoretically significant factors that explain the majority of the variance (Hair et al., 2003). A cross loading item was retained in the factor it was most applicable to. This made factors more distinct in addition to representing separate concepts. A reliability analysis using Cronbach's alpha for each factor was conducted. The acceptable Cronbach alpha reliability value is 0.6 (Kline, 2005).

A multiple regression analysis was conducted on multiple independent variables to determine statistically significant predictors of the dependent variable. Independence of residuals was assessed by a Durbin-Watson statistic and homoscedasticity by visual examination of a plot of studentised residuals versus unstandardised predicted values. Assumption of normality was assessed by a P-P Plot.

Responses to the questions where the public gave reasons for their response on how Traveller/Gypsy horse owners are perceived by the public were analysed using NVivo 12 (qualitative data analysis software) with common themes identified. Responses to individual questions were not limited to the number of themes that they could fall into.

2.3 Results

2.3.1 Demographic information

A total of 420 people completed the questionnaire. Of these, 22 did not complete the control questions correctly and were excluded from the study. Further, one respondent was under 18 years of age and as the ethics approval only included participants 18 years or over, this respondent was removed from the dataset. Therefore, 397 (94.5%) respondents completed the questionnaire and provided demographic information including gender, age, country and region of location and pet ownership. The majority of respondents (67.5%, $n = 268$) were women, 32% ($n = 127$) were men and 0.5% ($n = 2$) described their gender in 'any other way'. Twenty percent ($n = 81$) of the respondents ranged in age from 18 to 25 years with 33% ($n = 132$) aged 26 to 35, 22% ($n = 86$) aged 36 to 45 and 25% ($n = 98$) aged 45 years and over. The mean age of respondents was 36.4 years ($\sigma = 12.2$).

Most of the participants (83%, $n = 328$) were from England. Two percent ($n = 10$) of respondents were from Ireland and 2% ($n = 9$) from Northern Ireland, 8% ($n = 31$) from Scotland and 5% ($n = 19$) from Wales. All of England's regions were represented, with the majority (34.8%, $n = 138$) from the South of England (SE), followed by 27.5% ($n = 109$) from the North of England (NE) and 15.9% ($n = 63$) from the Midlands. The Celtic countries (CC), which includes Ireland, Northern Ireland, Scotland and Wales represented 16.6% ($n = 66$) and 5.3% ($n = 21$) of respondents did not specify a region. Most (70.5%, $n = 280$) were from urban areas of the UK and Ireland and 60.5% ($n = 238$) of respondents were animal owners, with 3% ($n = 12$) being horse owners.

2.3.2 Knowledge of Traveller/Gypsy culture

With regard to respondents' knowledge of Traveller/Gypsy Culture, 12% ($n = 47$) of respondents reported 'don't know' when replying to this section. The highest level of respondents stating 'don't know' was for the statement, 'have significantly poorer health than that of general population' (33.6%),

followed by `have a strong work ethic` (18.3%). The lowest level of `don't know` was for the statement `are often subjected to hostility/ hate crime` (3%), *Table 2.1*.

Table 2.1 Number (%) of respondents who stated `don't know` to statements on knowledge of Traveller/Gypsy culture.		
Statements	%	n
Have significantly poorer health than that of general population	33.6	134
Most don't pay taxes	21.1	84
Have a strong work ethic	18.3	73
Those who live in houses are no longer Travellers/Gypsies	14.3	57
Take pride in cleanliness	12.0	48
Highly value extended family	11.5	46
Experience higher levels of discrimination than other ethnic groups	11.0	44
Most live outside the laws & rules of society	7.8	31
Only live in caravans	6.0	24
It is acceptable for shops/pubs to put up signs saying No Travellers/Gypsies	5.3	21
Should be evicted from unauthorised sites	4.8	19
Are often the target of racial insults	4.0	16
Are often subjected to hostility/ hate crime	3.0	12

Respondents had a higher level of agreement with the statement `highly value the extended family` followed by `are often subjected to hostility/hate crime` and `often the target of racial insults. Least agreement was for the statement `most don't pay taxes` followed by `should be evicted from unauthorised sites`, *Table 2.2*.

Table 2.2 Means and standard deviations (Std. Dev) for public knowledge of Traveller/Gypsy Culture (Scale1 = strongly disagree,6 = strongly agree).			
Statements	n	Mean	Std. Dev
Highly value extended family	351	5.03	1.09
Are often subjected to hostility/ hate crime	385	4.80	1.16
Are often the target of racial insults	381	4.77	1.17
It is acceptable for shops/pubs to put up signs saying `No Travellers/ Gypsies`	376	4.36	1.74
Those who live in houses are no longer Travellers/Gypsies	340	4.13	1.59
Only live in caravans	373	4.06	1.42
Have significantly poorer health than that of general population	263	4.02	1.30
Experience higher levels of discrimination than other ethnic groups	353	3.73	1.49
Take pride in cleanliness	349	3.59	1.60
Have a strong work ethic	324	3.37	1.47
Most live outside the laws and rules of society	366	2.72	1.42
Should be evicted from unauthorised sites	378	2.30	1.54
Most don't pay taxes	313	2.17	1.21

A Principal Component Analysis (PCA) was run on the 13-items that measured knowledge of Traveller/Gypsy culture. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.761. PCA identified two factors, accounting for 47% of the total variance. Factor 1, labelled `Cultural awareness` as factors relate to aspects of Traveller/Gypsy culture accounted for 26.7% and Factor 2, labelled `Cultural stereotypes` as it represents generalisations of Traveller/Gypsy culture, accounted for 20.45 % of the variance. Loadings from the exploratory factor analysis are displayed in *Table 2.3*.

Table 2.3 **Factors extracted from Principal Component Analysis that measured knowledge of Traveller/Gypsy culture, with loadings for each factor. Coefficients which load together are bolded.**

Statements	Cultural awareness	Cultural stereotypes
Highly value the extended family	.480	.102
Most don't pay taxes	.056	.787
Only live in caravans	.087	.713
Take great pride in cleanliness	.659	.062
Are often subjected to hostility and hate crime	.865	-.080
Are often the target of racist insults e.g., verbal abuse	.863	.018
Those who live in houses are no longer Travellers/Gypsies	-.032	.529
Most live outside the laws and rules of society	.003	.802
Experience higher levels of discrimination than other ethnic groups	.646	-.056
Should be evicted from unauthorised sites	.189	.638
Have a strong work ethic	.657	.164
Have significantly poorer health than that of the general population	.048	-.181
It is acceptable for shops/hotels/pubs to put up signs saying 'No Travellers/Gypsies'	.186	.601

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was 'Cultural awareness' $\alpha = 0.790$ (6 items) and 'Cultural stereotypes' $\alpha = 0.766$ (6 items).

There were a significant effect of region of residence on the scale 'Cultural awareness' $F(4, 389) = 3.866, p < 0.01$. Respondents from the Celtic countries had higher scores ($\bar{x} = 3.75, \sigma = 1.22, n = 66$) on 'Cultural awareness' than the South of England ($\bar{x} = 3.18, \sigma = 1.09, n = 137$), $p < 0.01$ and Midlands ($\bar{x} = 3.15, \sigma = 1.05, n = 62$), $p = 0.03$. There were no statistically significant effects of age, region of residence and animal ownership on Traveller/Gypsy horse culture knowledge, $p > 0.05$, Appendix A2.

2.3.3 Classification of horses

Of the 397 respondents, all reported how they classify horses but varied in their responses. The majority of respondents considered horses as companion animals, with a mean score of 4.32 ($\sigma = 1.38$, $n = 300$), followed by working animals ($\bar{x} = 4.03$, $\sigma = 1.27$). Respondents were least likely to classify horses as livestock ($\bar{x} = 2.6$, $\sigma = 1.57$) or other ($\bar{x} = 0.63$, $\sigma = 0.95$).

There was a statistically significant effect of gender, animal ownership and urban/rural location on the classification of horses. Women had a higher level of agreement with the classification of horses as companion animals than men, $t(393) = -4.560$, $p < 0.01$ and respondents who owned an animal also had higher agreement with the classification of horses as companion animals than those who were not animal owners, $t(395) = 3.27$, $p < 0.01$. Rural participants had a higher level of agreement than their urban counterparts with the classification of horses as working animals, $t(395) = -2.270$, $p = 0.02$. Animal owners had a higher level of agreement than non-animal owners when classifying horses as livestock, $t(395) = -2.695$, $p < 0.01$. There were significant differences between the age groups on how horses were classified, $F(3, 393) = 3.78$, $p < 0.01$. Respondents aged 16 – 25 years had a lower level of agreement with the classification of horses as working animals than those aged 36 – 45 years, $p < 0.01$, *Table 2.4*.

Table 2.4 Means and standard deviations (Std. Dev) for public classification of horses (Scale 1 = not at all, 6 = always).				
Statements	Demographic	n	Mean	Std. Dev
Horses are companion animals	Man	127	3.87	1.43
	Woman	268	4.53	1.30
	Animal owners	238	4.50	1.33
	Non animal owners	159	4.05	1.40
Horses are working animals	Urban	280	3.90	1.28
	Rural	117	4.25	1.23
	16 – 25 years	81	3.64	1.66
	36 – 45 years	86	4.27	1.11
Horses are livestock	Animal owners	238	2.80	1.63
	Non animal owners	159	2.37	1.45

There was no significant effect of region of residence on how respondents classified horses; companion animals $F(4, 392) = 0.837, p = 0.50$; Livestock $F(4, 392) = 0.792, p = 0.53$; Working animals $F(4, 392) = 1.003, p = 0.40$; Sport animals $F(4, 392) = 0.172, p = 0.95$ and Other $F(4, 392) = 0.619, p = 0.65$.

2.3.4 How horses are perceived

Respondents were asked to indicate how they perceive horses. Results demonstrated an overall $\bar{x}$ score of 5.01 ($\sigma = 0.66$), indicating a high level of agreement with the statements concerning how horses are perceived. The highest agreement was for 'horses need to be able to exercise' and the item least agreed upon were 'most horse sport is cruel to horses', Table 2.5.

Table 2.5 Means and standard deviations (Std. Dev) on how the public perceive horses (Scale1 = strongly disagree,6 = strongly agree).			
Statements	n	Mean	Std. Dev
Horses need to be able to exercise	393	5.84	0.45
Horses need to be able to express normal behaviour patterns e.g. grazing	389	5.65	0.64
Most horses are aggressive	371	5.29	1.00
Horses are capable of expressing emotions and feelings	36	5.27	0.95
Horse are social animals	357	5.24	0.95
Horses sometimes have to be beaten to get them to obey orders	368	5.17	1.36
Horses prefer to be kept in herds	280	4.69	1.25
It is unethical to eat horse meat	384	4.35	1.72
Most horse sport is cruel to horses	367	4.24	1.49

Gender had a significant effect on seven of the nine items of how horses are perceived with women's level of agreement higher with all statements than men, *Table 2.6*.

Table 2.6 Means and standard deviations (Std. Dev) for gender differences on how horses are perceived. Statistically significant results are bolded. (Scale 1 = strongly disagree, 6 = strongly agree). Significant results are bolded ($p < 0.05$).

Statements	Gender	n	Mean	Std. Dev	t	df	p
Horses are social animals	Man	114	4.97	1.05	- 3.908	353	0.01
	Woman	241	5.38	0.84			
Horses prefer to be kept in herds	Man	98	4.58	1.30	- 1.192	277	0.23
	Woman	181	4.77	1.21			
It is unethical to eat horse meat	Man	126	3.60	1.65	- 6.291	380	0.01
	Woman	256	4.73	1.63			
Horses are capable of expressing a range of emotions and feelings	Man	118	4.97	1.06	- 4.280	362	0.01
	Woman	246	5.41	0.85			
Horses need to be able to exercise	Man	127	5.76	0.51	- 2.427	389	0.01
	Woman	264	5.88	0.42			
Most horse sport is cruel to horses	Man	118	4.11	1.47	- 1.180	363	0.23
	Woman	247	4.31	1.50			
Horses sometimes have to be beaten to get them to obey orders	Man	112	4.93	1.49	- 2.136	364	0.03
	Woman	254	5.26	1.30			
Horses need to be able to express normal behaviour patterns	Man	124	5.46	0.78	- 4.162	385	0.01
	Woman	263	5.75	0.54			
Most horses are aggressive	Man	117	4.96	1.13	- 4.343	367	0.01
	Woman	252	5.44	0.90			

A statistically significant difference existed between rural and urban residents, $t(353) = - 2.921$, $p < 0.01$, and between different age groups, $F(3, 353) = 3.88$, $p < 0.01$, on the statement that 'horses are social animals'. Rural respondents had higher agreement with this statement than their urban counterparts. Post hoc analysis revealed that respondents aged over 45 had

higher agreement than 18 - 25 age group, $p < 0.01$. Rural respondents had significantly higher agreement with the statement 'horses prefer to be kept in herds' than urban respondents, $t(278) = -2.782$, $p < 0.01$. Animal owners had significantly higher agreement with the statement 'horses need to be able to express normal behaviour patterns' than non-animal owners, $t(387) = -2.221$, $p = 0.02$.

There was a statistically significant effect of age group, $F(3, 385) = 3.63$, $p < 0.01$ and region of residence, $F(4, 384) = 3.499$, $p < 0.01$ with the statement 'horses need to be able to express normal behaviour patterns'. Post hoc analysis revealed that the oldest age group had higher agreement than the youngest age group, $p < 0.01$ and respondents from the Celtic countries had higher agreement than the North of England, $p < 0.01$ and the South of England, $p < 0.01$. Animal owners had significantly higher agreement than non-animal owners with the statement 'most horses are aggressive', $t(369) = -1.985$, $p = 0.04$. Age had a statistically significant effect on the statement 'horses sometimes have to be beaten to get them to obey orders', $F(3, 364) = 3.62$, $p < 0.01$. Post hoc analysis revealed that respondents over the age of 45 had higher agreement than those aged 18 - 25 years, $p = 0.03$, *Table 2.7*.

Table 2.7 Means and standard deviations (Std. Dev) on how horses are perceived by the public (Scale 1 = strongly disagree,6 = strongly agree).

Statements	Demographic	n	Mean	Std. Dev
Horses are social animals	Urban	106	5.14	0.99
	Rural	251	5.46	0.79
	18 – 25 years	71	4.93	1.08
	45 +	90	5.43	0.88
	Urban	193	4.55	1.24
	Rural	87	5.00	1.22
Horses need to be able to express normal behaviour patterns	Animal owners	234	5.71	0.59
	Non animal owners	155	5.56	0.71
	18 – 25 years	78	5.51	0.81
	45 +	96	5.80	0.45
	Celtic countries	66	5.77	0.54
	North England	106	5.73	0.54
Most horses are aggressive	Animal owners	227	5.37	0.95
	Non animal owners	144	5.16	1.07
Horses sometimes have to be beaten to get them to obey orders	18 – 25 years	73	4.84	1.51
	45 +	95	5.43	1.11

2.3.5 Perception of Traveller/Gypsy horse culture

Overall, 38% (n = 150) of respondents chose the 'don't Know' answer option to statements on Traveller/Gypsy horse culture. Twenty eight percent (n = 111) 'don't know' if horse ownership is considered one of the last links to their nomadic way of life, 43% (n = 171) 'don't know' whether or not horse fairs are an ancient part of Traveller/Gypsy tradition or whether it is usually men who own and care for horses and 57% (n= 226) 'don't know' whether sulky racing is part of their culture or not. Over half, 53% (n = 210) 'don't know' if a horse's bloodline is highly regarded within their culture and 25% (n = 99) 'don't know' if horse fairs are an important social gathering. Respondents had highest agreement with the statement 'horse fairs are an important social gathering followed by 'horse ownership is an important tradition'. Respondents had lowest agreement with 'it is usually men who

own and care for horses' and a 'horse's bloodline is not highly regarded within their culture', *Table 2.8*.

Table 2.8 Means and standard deviations (Std. Dev) for public perceptions of Traveller/Gypsy horse Culture (Scale1 = strongly disagree,6 = strongly agree).			
Statements	n	Mean	Std. Dev
Horse fairs are an important social gathering	296	4.82	1.25
Horse ownership is an important tradition	338	4.70	1.23
Horse ownership is considered one of the last links to their nomadic way of life	288	4.53	1.30
Horse fairs are not an ancient part of their tradition	224	4.34	1.45
Sulky/Harness racing is not part of their culture	166	4.24	1.47
A horse's bloodline is not highly regarded within their culture	186	3.83	1.61
It is usually men who own and care for horses	227	3.78	1.61

A PCA was run on the items that measured knowledge/perceptions of Traveller/Gypsy horse culture. The Kaier-Meyer-Olkin statistic was 0.599. Two factors were extracted explaining 55.94% of the total variance. Factor 1, labelled 'Culture' as items related to Traveller/Gypsy horse culture explained 31.1% of the variance and Factor 2, labelled 'Not a tradition' as these items are presented as non-traditional aspects of Traveller/Gypsy horse ownership, 24.8% of the variance. Factor loadings are displayed in *Table 2.9*.

Table 2.9 Factors extracted from Principal Component Analysis that measured knowledge of Traveller/Gypsy horse culture, with loadings for each factor. Coefficients which load together are bolded.		
Statements	Culture	Not a Tradition
Horse ownership is an important tradition	.854	.073
Horse ownership is considered one of the last links to their nomadic way of life	.778	.135
Horse fairs are not an ancient part of their tradition	.078	.740
It is usually men who own and care for horses	.545	-.129
Sulky/Harness racing is not part of their culture	-.025	.871
A horse's bloodline is not highly regarded within their culture	-.041	.640
Horse fairs are an important social gathering	.721	.022

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was `Culture` $\alpha = 0.671$ (4 items) and `Not a tradition` $\alpha = 0.691$ (3 items). Respondents $\bar{x} = 4.46$ ($\sigma = 1.07$) was higher for the factor `Culture` than respondents $\bar{x} = 4.16$ ($\sigma = 1.33$) for `Not a tradition`. There were no statistically significant effects of any of the independent variables; gender, age, country and region of residence and pet ownership on `Culture` and `Not a tradition`, *Appendix A3*.

2.3.6 Perceptions of Traveller/Gypsy horse owner care of their horses

Overall, 28% ($n = 111$) of respondents reported `don't know` when completing this section. The highest number of respondents (45.6%, $n = 181$) reported `don't know` to `Traveller/Gypsy horse owners' horses seem to limp often` and the lowest (13.1%, $n = 52$) number to `Traveller/Gypsy horse owners are more likely to graze their horses in unauthorised private/common land e.g., parks`, *Table 2.10*.

Table 2.10 Number (%) of respondents who stated `don't know` to statements on Traveller/Gypsy horse owner care of their horses.		
Statements	%	n
Traveller/Gypsy horse owners' horses seem to limp often	45.6	181
Traveller/Gypsy horse owners are more likely to breed from their horses	36.5	145
Traveller/Gypsy horse owners are more likely to tether their horses	31.2	124
Traveller/Gypsy horse owners' practices are likely to seriously reduce the welfare of their horses	31.0	123
Traveller/Gypsy horse owners are more likely to abandon their horses	29.7	118
Traveller/Gypsy horse owners are more likely to ride and/or drive their horses in a manner that causes undue discomfort	29.7	118
Traveller/Gypsy horse owners are more likely to ride and/or drive their horses in a manner that causes undue distress	28.7	114
Traveller/Gypsy horse owners are more likely to subject their horses to intentional cruelty/abuse	27.5	109
Traveller/Gypsy horse owners seem to feed their horses well	27.5	109
Traveller/Gypsy horse owners seem to abide by the rules and regulations of animal welfare laws	27.5	109
Traveller/Gypsy horse owners seem to lack adequate shelter for their horses	27.2	108
Traveller/Gypsy horse owners seem to exercise their horses appropriately	27.2	108
Traveller/Gypsy horses are more likely to have poor welfare	26.2	104
Traveller/Gypsy horse owners seem to be responsible horse owners	24.7	98
Traveller/Gypsy horse owners' horses are more likely to be neglected	24.4	97
Traveller/Gypsy horse owners seem to treat their horses well	23.9	95
Traveller/Gypsy horse owners seem to be generally concerned about their horses' welfare	23.4	93
Traveller/Gypsy horse owners are likely to keep their horses in unsuitable environments	23.4	93
Traveller/Gypsy horse owners are likely to provide their horses with social contact with other horses	22.2	88
Traveller/Gypsy horse owners are likely to adequately care for their horses	20.7	82
Traveller/Gypsy horse owners should be prevented from owning horses	20.7	82
Traveller/Gypsy horse owners are likely to provide suitable land for their horses	19.6	78
Traveller/Gypsy horse owners are more likely to graze their horses in unauthorised private/common land e.g. parks	13.1	52

Respondents had highest agreement with the statement ` Traveller/Gypsy horse owners should be prevented from owning horses` ($\bar{x} = 4.19$, $\sigma = 1.63$) followed by ` Traveller/Gypsy horse owners are likely to provide their horses with social contact with other horses' ( $\bar{x} = 3.91$ ,  $\sigma = 1.31$ ) and `Traveller/Gypsy horse owners seem to feed their horses well` ( $\bar{x} = 3.91$ ,  $\sigma = 1.26$ ). Respondents had lowest agreement with `Traveller/Gypsy horse owners are more likely to graze their horses in unauthorised private/common land` ( $\bar{x} = 1.99$ ,  $\sigma = 1.14$ ) and `Traveller/Gypsy horse owners are more likely to breed from their horses` ($\bar{x} = 2.36$, $\sigma = 1.15$), *Table 2.11*.

Table 2.11 Means and standard deviations (Std. Dev) on public perception of Traveller/Gypsy horse owners care of their horses (Scale1 = strongly disagree,6 = strongly agree).			
Statements	n	Mean	Std. Dev
Traveller/Gypsy horse owners should be prevented from owning horses	315	4.19	1.63
Traveller/Gypsy horse owners are likely to provide their horses with social contact with other horses	309	3.91	1.310
Traveller/Gypsy horse owners seem to feed their horses well	288	3.91	1.26
Traveller/Gypsy horse owners seem to exercise their horses appropriately	289	3.69	1.42
Traveller/Gypsy horse owners are likely to adequately care for their horses	315	3.67	1.35
Traveller/Gypsy horse owners seem to treat their horses well	302	3.66	1.34
Traveller/Gypsy horse owners seem to be generally concerned about their horses' welfare	304	3.65	1.37
Traveller/Gypsy horse owners are more likely to subject their horses to intentional cruelty/abuse	288	3.55	1.57
Traveller/Gypsy horse owners' horses seem to limp often	216	3.51	1.49
Traveller/Gypsy horse owners seem to be responsible horse owners	299	3.42	1.43
Traveller/Gypsy horse owners are more likely to abandon their horses	279	3.38	1.55
Traveller/Gypsy horse owners' horses are more likely to be neglected	300	3.34	1.55
Traveller/Gypsy horse owners are likely to provide suitable land for their horses	319	3.22	1.42
Traveller/Gypsy horse owners seem to lack adequate shelter for their horses	289	3.14	1.50
Traveller/Gypsy horses are more likely to have poor welfare	293	3.09	1.50
Traveller/Gypsy horse owners' practices are likely to seriously reduce the welfare of their horses	274	3.05	1.42
Traveller/Gypsy horse owners are more likely to ride and/or drive their horses in a manner that causes undue discomfort	279	3.01	1.55
Traveller/Gypsy horse owners seem to abide by the rules and regulations of animal welfare laws	288	2.97	1.43
Traveller/Gypsy horse owners are likely to keep their horses in unsuitable environments	304	2.92	1.45
Traveller/Gypsy horse owners are more likely to ride	283	2.91	1.53

and/or drive their horses in a manner that causes undue distress			
Traveller/Gypsy horse owners are more likely to tether their horses	273	2.47	1.33
Traveller/Gypsy horse owners are more likely to breed from their horses	252	2.36	1.15
Traveller/Gypsy horse owners are more likely to graze their horses in unauthorised private/common land e.g. parks	345	1.99	1.14

A PCA was conducted on the items that measured public perceptions of Traveller/Gypsy horse owners care of their horses. The Kaier-Meyer-Olkin statistic was 0.896. Two factors were extracted explaining 61.1% of the total variance. Factor1, labelled `Good practices` where items represent good management and care practices, explained 42.7% of the variance and Factor 2, labelled `Poor practices` where items refer to poor care and management practices accounted for 18.3% of the variance. Factor loadings are displayed in *Table 2.12*.

Table 2.12 Factors extracted from Principal Component Analysis that measured public perception of Traveller/Gypsy horse owner care of their horses, with loadings for each factor. Coefficients which load together are bolded.

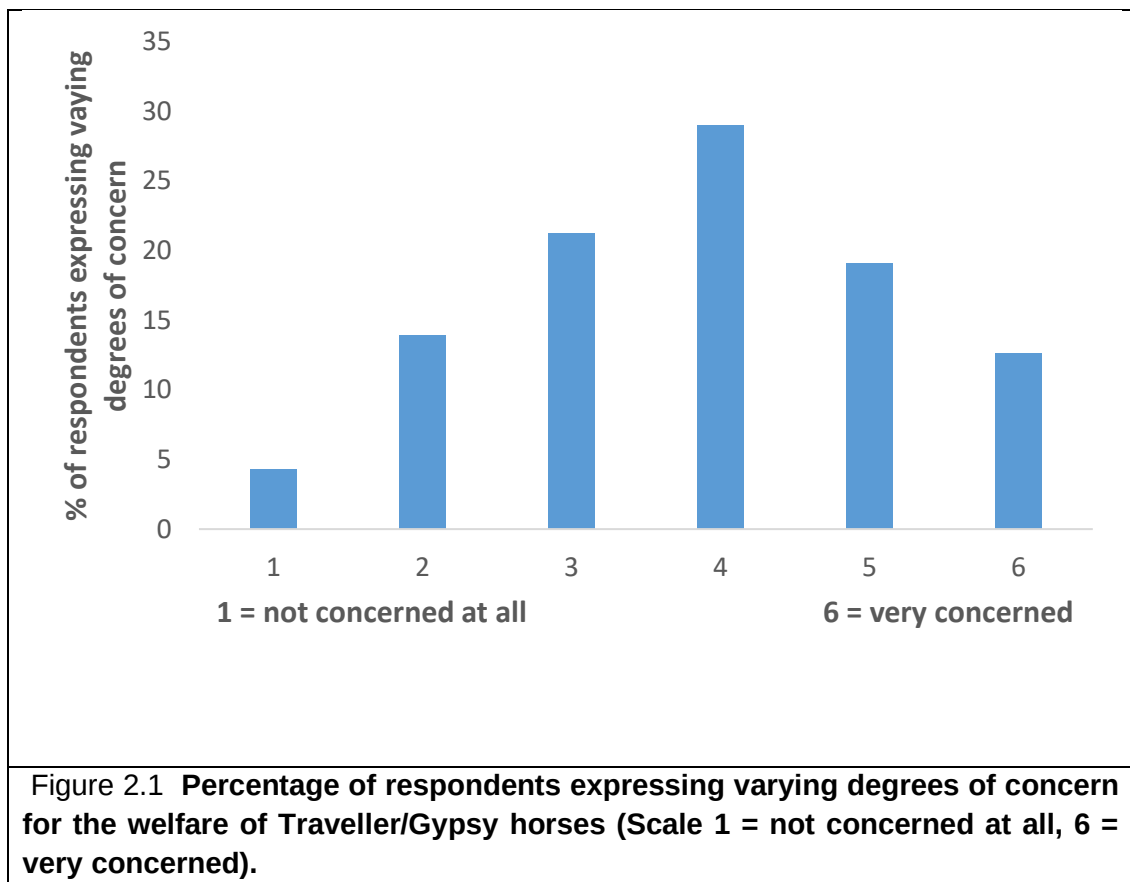
Statements	Good practices	Poor practices
Traveller/Gypsy horse owners seem to be responsible horse owners	.880	.199
Traveller/Gypsy horse owners are likely to provide suitable land for their horses	.852	.188
Traveller/Gypsy horse owners' practices are likely to seriously reduce the welfare of their horses	.010	.332
Traveller/Gypsy horse owners are more likely to abandon their horses	.169	.547
Traveller/Gypsy horse owners are likely to adequately care for their horses	.859	.204
Traveller/Gypsy horse owners are likely to provide their horses with social contact with other horses	.577	.052
Traveller/Gypsy horse owners seem to lack adequate shelter for their horses	.119	.339
Traveller/Gypsy horse owners seem to treat their horses well	.904	.245
Traveller/Gypsy horse owners seem to be generally concerned about their horses' welfare	.897	.219
Traveller/Gypsy horses are more likely to have poor welfare	.305	.778
Traveller/Gypsy horse owners are more likely to subject their horses to intentional cruelty/abuse	.177	.870
Traveller/Gypsy horse owners seem to exercise their horses appropriately	.851	.053
Traveller/Gypsy horse owners' horses are more likely to be neglected	.274	.820
Traveller/Gypsy horse owners seem to feed their horses well	.847	.096
Traveller/Gypsy horse owners are more likely to ride and/or drive their horses in a manner that causes undue distress	.017	.788
Traveller/Gypsy horse owners are more likely to ride and/or drive their horses in a manner that causes undue discomfort	.107	.795
Traveller/Gypsy horse owners are likely to keep their horses in unsuitable environments	.232	.739
Traveller/Gypsy horse owners seem to abide by the	.639	.040

rules and regulations of animal welfare laws		
Traveller/Gypsy horse owners are more likely to breed from their horses	.100	.170
Traveller/Gypsy horse owners' horses seem to limp often	.059	.804
Traveller/Gypsy horse owners are more likely to tether their horses	.094	.543
Traveller/Gypsy horse owners are more likely to graze their horses in unauthorised private/common land e.g. parks	.198	.433
Traveller/Gypsy horse owners should be prevented from owning horses	.200	.779

A reliability analysis using Cronbach's alpha for each factor was conducted and internal consistency reliability of these factors were 'Good practices' $\alpha = 0.945$ (9 items), 'Poor practices' $\alpha = 0.941$ (13 items). Respondents' mean scores were higher for the factor 'Good practices' ($\bar{x} = 3.20$, $\sigma = 1.53$, $n = 397$) than that for 'Poor practices' ($\bar{x} = 3.11$, $\sigma = 1.14$, $n = 373$). There were no statistically significant effects of any of the independent variables on 'Good practices' and 'Poor Practices', *Appendix A4*.

2.3.7 Level of concern for Traveller/Gypsy horse welfare

All respondents ($n = 397$) responded to the question on level of concern, with 'don't know' not receiving any responses. The majority of respondents scored at least 4 or above in their level of concern for Traveller/Gypsy horses, *Figure 2.1*. When asked how concerned they were about the welfare of Traveller/Gypsy horses, 61 % ($n = 242$) of respondents indicated that they were overall concerned ($\bar{x} = 3.82$, $\sigma = 1.34$).



There was a statistically significant effect of gender on level of concern for Traveller/Gypsy horses, with women ($\bar{x} = 3.96$, $\sigma = 1.29$, $n = 268$) demonstrating a higher level of concern than men ($\bar{x} = 3.56$, $\sigma = 1.4$, $n = 127$), $t(393) = -2.755$, $p < 0.01$. There was no statistically significant effect of the other variables of age, region of residence, urban/rural location and pet ownership on level of concern, $p > 0.05$.

The overall mean of the factors Culture, Not a tradition, Cultural awareness, Cultural stereotypes, Good practices and Poor practices, in addition to factors that measured public animal empathy Human purposes, Unnecessary animal use and Blood sport, and factors that measured public knowledge of animal welfare; Five freedoms and Health were used for multiple regression analysis. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.00. The independent variables in

the model statistically predicted `Level of concern`, $F(19, 351) = 7.10$, $p < 0.01$, $adj.R^2 = 0.239$. Results show that the variables `Unnecessary animal use`, `Culture`, `Cultural awareness`, `Good practices` and `Poor practices` can statistically predict level of welfare concern. The highest contributing predictor was `Unnecessary animal use` followed by `Good practices` and `Poor practices`. `Unnecessary animal use` had significant positive regression weights, indicating that respondents with higher scores on this scale are expected to have a higher level of concern for Traveller/Gypsy horses. `Culture`, `Cultural awareness`, `Good practices` and `Poor practices` had a significant negative weight, indicating that as these variables decrease, level of concern increases. There was no statistically significant effect of the remaining variables on the prediction of level of welfare, *Table 2.13*.

Table 2.13 **Multiple regression analysis of level of concern for Traveller/Gypsy horse welfare and its influential factors. Significant results are bolded ($p < 0.05$).**

Predictors	B	t	p
Age	.008	1.607	0.10
Regions (Unspecified)	-.440	-1.412	0.15
Regions (Celtic)	.064	0.338	0.73
Regions (Northeast)	-.032	-0.200	0.84
Regions (Midlands)	.164	0.875	0.38
Gender (Woman)	.253	1.866	0.06
Urban/Rural (Rural)	-.039	-0.284	0.77
Animal/None (Animal)	.126	0.940	0.34
Human purposes	.035	0.373	0.70
Unnecessary animal use	.479	3.777	0.01
Blood sport	.184	1.135	0.25
Five freedoms	.130	0.755	0.45
Health	-.290	-1.689	0.09
Culture	-.001	-2.448	0.01
Not a tradition	.000	0.969	0.33
Cultural awareness	-.175	-2.535	0.01
Cultural stereotypes	-.087	-1.392	0.16
Good practices	-.214	-4.505	0.00
Poor practices	-.149	-2.547	0.01

2.3.8 Perception of Traveller/Gypsy horse owners

When respondents were asked ‘how are Traveller/Gypsy horse owners perceived by the public?’ 84% (n = 334) reported a negative perception, 2% (n = 8) a positive perception and 14% (n = 55) replied ‘don’t know’. There was no significant effects of gender, age group, region of residence, urban/rural residence and animal/non-animal owner on public perception of Traveller/Gypsy horse owners, $p > 0.05$.

In total, there were 349 references to the open question on reasons given for how respondents believe the public perceive Traveller/Gypsy horse owners. Thirty-three respondents stated that they were ‘not sure’ why this community were perceived as they stated, i.e. positive, negative or don’t know. In total, eight themes were identified from the remaining 316 references. Results are presented according to finalised themes. Participants’ quotes are in italics.

Stereotypes and prejudice: The most common responses were related to prejudices and stereotypes (129 references). Responses referred to the beliefs, thoughts and attitudes that the public holds about Traveller/Gypsy horse owners (69 references). All 69 respondents stated that these prejudices shaped how the public view this community, *`Due to prejudice against travellers, many members of the public find any reason to criticise them and their way of life`* and *`The public don't agree with the way they live`*. Nevertheless, a minority of respondents expressed how unfair these prejudices towards Traveller/Gypsy horse owners were (three references), *`They are all tarred with a brush of mistreatment;`* *`They are treated as second class citizens`* and *`They are people just like you and I but are often treated unfairly`*.

It was commonly reported by respondents that stereotyping of Traveller/Gypsy culture was commonplace (60 references). Participants overwhelmingly stated that this culture was associated with criminal activity, trespassing, fly-tipping and tax evasion. A number of respondents cited those perceptions of Traveller/Gypsy culture were based on the view that they are criminal (27 references), *`Associated with crime and anti- social behaviour`* and *`Because no one wants them in their area as the burglary rate may increase`*. One respondent went on to say that while associated with crime *`there is not enough research to provide otherwise`*. There were sixteen statements on the stereotype *`trespassing`*, *`Because of trespassing and not moving on`* and *`Because they often settle in places illegally`*. Eleven references to *`fly-tipping`* were cited, *`The mess they leave on land they squat on`* and *`The amount of rubbish left behind on their campsites`*. A minority referred to tax evasion as a reason for how Travellers/Gypsy horse owners are perceived (five references), *`They are stereotyped as tax shirkers`* and *`are able to evade paying taxes`*. One respondent claimed that *`Further, the stereotype is they will mistreat their horses`*.

Horse welfare: Horse welfare was at the core of responses (58 references). Responses on Traveller/Gypsy horse owner treatment, management

practices and attitudes to horses were primarily negative (54 references), *`They don't not seem to care, they leave them in unsuitable places without room to move and not enough food to eat`; `cruel or unloving towards animals, not seeing them as pets` and `see a lot of horses tied at sides of motorways`*. Two respondents were positive in their views of horse ownership *`I would say the occasions I have seen them the horses look fit and well and have been well treated. I think most people who actually see the horses would think this` and `On the horse side, they seem to have the reputation of looking after their horses and taking pride in them`*. In addition, two respondents referred to the generalisation of negative perceptions *`majority are ok, but minority fail to adequately care for their horses` and `many people know of a dumped neglected horse and blame the community as a whole`*.

Media: Sixty-four respondents referred to media reporting. However, these references were generally focused on Traveller/Gypsy culture rather than Traveller/Gypsy horse owners. As might be expected, all these references maintained that the media presents a negative portrayal of Traveller/Gypsy culture, *`I think because of negative portrayal in the press and `You hear from the travellers and gypsies from reality tv shows that they are perceived negatively`*. Two respondents claimed that this negative portrayal was unjustified *`Just what the media post, although not always true`*. There were only six references referring to media portrayal of Traveller/Gypsy horse owners and once more all referred to negative reports, *`In terms of media perception, most news stories are likely to be about owners who neglect the welfare of their animals` and `Any gypsy horse welfare issues highlighted in news and TV animal welfare programmes have so far been about neglect or abuse by owners`*.

Cultural awareness: A consistent viewpoint was that public awareness of Traveller/Gypsy horse culture was limited (26 references), *`A lack of understanding of the culture by the general population causes negatively` and `I would assume that most people have a very limited amount of*

knowledge on the subject and make a quick judgement based on a small amount of information`. However, one respondent was of the view that *`When a conversation about travellers start, there is always one or two people that find something bad to say about [them] which I think is a bit unfair as most people don't understand what they are going through. I think they have a really hard life compared to most people`.*

Experiences: In total, there were 35 references that related to respondent experiences, nine were based on respondent's own experiences and 25 were based on other people's experiences of Traveller/Gypsy horse owners. All of those who reported that their own experiences influenced their reasons were negative statements *`The opinion of travelers is negative for a reason and I have seen first-hand how badly they treat the horses`* and *`Personal experience of Gypsy horses being left tethered on council land without permission or adequate shelter`.* Those who reported that others influenced their reasons varied in their responses with 23 negative and two positive statements. One respondent claimed that *`Most conversations I have had with people have had a negative tone in regard to gypsy travellers`* while another cited *` I hear people talking about gypsies and see their horses tethered at the roadside`.* However, two respondents were of the view that perceptions held by others were unfounded *`Because I know so many people who don't like Gypsies For no reason`* and *I think Gypsies and Travellers are perceived poorly no matter which aspect of their life you are asking about. I also think that since horse ownership has become something only for well-off people who can afford their own fields and stables, such things are now considered necessary. Therefore, Travellers who own horses and don't have those things will be perceived even more negatively`.*

Positive Statements: A minority of respondents (n = 11) reported positive reasons for public perceptions of Traveller/Gypsy horse owners. One respondent claimed that *`all normal people living different lives`* while another stated that *` Because they have been part of their culture for many years, my perception is that travellers respect their horses`.*

2.3.9 Perception of who is responsible for Traveller/Gypsy horse welfare

The majority of respondents (79%, $n = 314$) strongly agreed that Traveller/Gypsy horse owners are themselves responsible for their horse's welfare. There was strong agreement (57%, $n = 226$) that support from a number of agencies is required. All items ($n = 8$) of responsibility for Traveller/Gypsy horse welfare received a mean score of > 3 , (Table 2.14).

Table 2.14 Means and standard deviations (Std. Dev) on public perception on who is responsible for Traveller/Gypsy horse welfare (Scale1 = strongly disagree, 6 = strongly agree).

Statements	n	Mean	Std. Dev
Traveller/Gypsy horse owners	386	5.73	0.63
Traveller/Gypsy horse owners with support from above agencies	377	5.19	1.32
Animal welfare organisations	378	4.25	1.49
Horse sector	352	3.63	1.54
Local authority/council	378	3.37	1.62
Police/Gardai	370	3.33	1.62
Government body	376	3.17	1.61
Other	284	0.28	0.75

There was a statistically significant effect of gender on the statement 'Traveller/Gypsy horse owners themselves', $t(382) = -2.297$, $p = 0.02$. Women had a higher level of agreement ($\bar{x} = 5.79$, $\sigma = 0.51$, $n = 260$) than men, ($\bar{x} = 5.64$, $\sigma = 0.75$, $n = 124$). There was a significant difference between age groups on the statement 'government body', $F(3, 372) = 2.98$, $p = 0.03$. Post hoc analysis revealed that respondents aged 26 – 35 years ($\bar{x} = 3.47$, $\sigma = 1.61$, $n = 125$) specified a greater obligation by the government than those in the over 45 age group ($\bar{x} = 2.84$, $\sigma = 1.67$, $n = 92$), $p = 0.02$. There was also a significant difference between age groups on the statement 'local authorities/councils', $F(3, 374) = 4.27$, $p < 0.01$. Those aged 26 - 35 ($\bar{x} = 3.74$, $\sigma = 1.65$, $n = 128$) had a higher level of agreement with local

authorities/councils having a greater obligation than those aged 36 – 45 ($\bar{x}$ = 3.13, σ = 1.53, n = 81), p = 0.04 and over 45's ($\bar{x}$ = 3.03, σ = 1.61, n = 93), p < 0.01.

2.3.10 Public animal empathy

An overall mean score for animal empathy of 4.80, (σ = 0.63, n = 397) was recorded, indicating a high score on the level of agreement on a number of statements regarding animals. The highest level of agreement was for the statement `there should be extremely stiff penalties including jail sentences for people who participate in cock fighting` ($\bar{x}$ = 5.93, σ = 0.55) while respondents had the lowest level of agreement with the statement `I think it is perfectly acceptable for cattle and pigs to be raised for human consumption` ($\bar{x}$ = 2.66, σ = 1.54), *Table 2.15*.

Table 2.15 Means and standard deviations (Std. Dev) on public animal empathy (Scale1 = strongly disagree,6 = strongly agree).			
Statements	n	Mean	Std. Dev
There should be extremely stiff penalties including jail sentences for people who participate in cock fighting	397	5.93	0.55
It is morally wrong to hunt wild animals for sport	394	5.45	1.08
Wild animals, such as mink and raccoons, should not be trapped and their skins made into fur coats	382	5.43	1.18
The slaughter of whales and dolphins should be immediately stopped even if it means some people will be put out of work	371	5.39	1.21
The use of animals in rodeos and circuses is cruel	371	5.29	1.11
Breeding animals for their skins is a legitimate use of animals	391	5.16	1.32
The use of animals such as rabbits for testing the safety of cosmetics and household products is unnecessary and should be stopped	369	5.15	1.32
Basically, humans have the right to use animals as we see fit	393	5.00	1.23
The production of inexpensive meat, eggs, and dairy products justifies maintaining animals under crowded conditions	384	4.97	1.31
In general, I think that human economic gain is more important than setting aside more land for wildlife	387	4.80	1.30
It is unethical to breed purebred dogs for pets when thousands of dogs are killed in animal shelters each year	369	4.72	1.35
Too much fuss is made over the welfare of animals these days when there are many human problems that need to be solved	391	4.68	1.50
I sometimes get upset when I see wild animals in cages at zoos	384	4.60	1.37
I do not think that there is anything wrong with using animals in medical research	392	4.46	1.52
Much of the scientific research done with animals is unnecessary and cruel	369	4.38	1.51
I think people who object to raising animals for meat are too sentimental	382	3.83	1.58
There is nothing morally wrong with hunting wild animals for food	386	3.33	1.76
Some aspects of biology can only be learned through dissecting preserved animals such as cats	350	3.32	1.65
Continued research with animals will be necessary if we are ever to conquer diseases such as cancer, heart disease, and AIDS	359	3.28	1.70
I think it is perfectly acceptable for cattle and pigs to be raised for human consumption	384	2.66	1.54

The 20- item scale was subjected to principal components analysis (PCA) to measure empathy. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.782. Analysis identified three factors, accounting for 40% of the total variance; Factor 1, labelled `Human purposes` as items related to the use of animals for human reasons accounted for 21.3%, Factor 2, labelled `Unnecessary animal use` where items refer to unnecessary animal related activities and use the accounted for 12.1% and Factor 3, labelled `Blood sport` representing activities such as cock fighting etc accounted for 7.3% of the variance. Loadings from the exploratory factor analysis are displayed in *Table 2.16*.

Table 2.16 Factors extracted from Principal Component Analysis that measured public animal empathy, with loadings for each factor. Coefficients which load together are bolded.

Statements	Human purposes	Unnecessary animal use	Blood sport
It is morally wrong to hunt wild animals for sport	-.018	.391	.618
I do not think that there is anything wrong with using animals in medical research	.142	.741	.021
There should be extremely stiff penalties including jail sentences for people who participate in cock fighting	-.030	-.153	.591
Wild animals, such as mink and raccoons, should not be trapped and their skins made into fur coats	.085	.103	.666
There is nothing morally wrong with hunting wild animals for food	.103	.468	.135
I think people who object to raising animals for meat are too sentimental	.201	.059	.274
Much of the scientific research done with animals is unnecessary and cruel	.115	.792	-.070
I think it is perfectly acceptable for cattle and pigs to be raised for human consumption	.580	.179	-0.21
Basically, humans have the right to use animals as we see fit	.578	.143	.097
The slaughter of whales and dolphins should be immediately stopped even if it means some people will be put out of work	.060	.220	.362
I sometimes get upset when I see wild animals in cages at zoos	.152	.586	.169
In general, I think that human economic gain is more important than setting aside more land for wildlife	.643	-.038	.186
Too much fuss is made over the welfare of animals these days when there are many human problems that need to be solved	.778	.027	.090
Breeding animals for their skins is a legitimate use of animals	.595	.007	.144
Some aspects of biology can only be learned through dissecting preserved animals such as cats	.606	.135	-.128

Continued research with animals will be necessary if we are ever to conquer diseases such as cancer, heart disease, and AIDS	.696	.242	-.233
It is unethical to breed purebred dogs for pets when thousands of dogs are killed in animal shelters each year	-.045	.445	.040
The production of inexpensive meat, eggs, and dairy products justifies maintaining animals under crowded conditions	.655	-.066	.109
The use of animals such as rabbits for testing the safety of cosmetics and household products is unnecessary and should be stopped	.160	.635	.088
The use of animals in rodeos and circuses is cruel	-.040	.472	.410

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was `Human purposes` (8 items) $\alpha = 0.814$, `Unnecessary animal use` (7 items) $\alpha = 0.736$ and `Blood sport` (4 items) $\alpha = 0.463$. Overall mean scores for `Animal empathy`, `Human purposes`, `Unnecessary animal use` and `Blood sport` are presented in Table 2.17.

Table 2.17 Means and standard deviations (Std. Dev) for public animal empathy and sub-scales `Human purposes`, `Unnecessary animal use` and `Blood sport`. (Scale1 = strongly disagree,6 = strongly agree).		
Factors	Mean	Std. Dev
Animal empathy	4.60	0.63
Human purposes	4.26	0.97
Unnecessary animal use	4.54	0.91
Blood sport	5.54	0.69

There was no statistically significant effect of any of the independent variables including gender, age, region of residence, urban/rural location and pet ownership on factor scores, $p > 0.05$.

2.3.11 Knowledge of animal welfare

Data from attributes contributing to animal welfare knowledge were analysed. Respondents scored $\bar{x} > 5$ on all items, indicating a high level of knowledge of animal welfare properties. Respondents had highest agreement with the statement 'the way an animal is treated' whilst respondents had lowest agreement with the statement that related to 'an animal's feelings', *Table 2.18*.

Table 2.18 Means and standard deviations (Std. Dev) for public knowledge of animal welfare attributes (Scale 1 = not at all, 6 = very much).			
Statements	n	Mean	Std. Dev
The way an animal is treated	393	5.80	0.46
An animal's need to be protected from cruelty	392	5.77	0.59
An animal's health	390	5.76	0.61
An animal's need to be protected from suffering	392	5.64	0.77
An animal's need to be protected from hunger and thirst	395	5.61	0.78
An animal's environment	393	5.59	0.65
An animal's need to be protected from pain	392	5.56	0.84
An animal's need to be protected from injury and disease	392	5.53	0.82
An animal's need to express normal behaviour patterns	390	5.42	0.82
An animal's need to be protected from fear	390	5.37	0.97
An animal's need to be protected from stress	389	5.33	0.98
An animal's feelings	382	5.13	1.12

The 12- item scale was subjected to PCA to measure knowledge of animal welfare. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.91. Analysis identified two factors, accounting for 67% of the total variance, Factor 1, labelled 'Five freedoms' as items represented the freedoms that animals should have accounted for 57.6% and Factor 2, labelled 'Health/feelings/environment' where items are related to an animal's health, sentience and environment, accounted for 9.34% of the variance. Loadings from the exploratory factor analysis are displayed in *Table 2.19*.

Table 2.19 Factors extracted from Principal Component Analysis that measured public knowledge of animal welfare, with loadings for each factor. Coefficients which load together are bolded.

Statements	Five freedoms	Health/feelings/environment
An animal's health	.078	.799
The way an animal is treated	.428	.673
An animal's feelings	.411	.608
An animal's environment	.310	.806
An animal's need to be protected from hunger and thirst	.608	.457
An animal's need to express normal behaviour patterns	.526	.545
An animal's need to be protected from pain	.834	.281
An animal's need to be protected from suffering	.766	.349
An animal's need to be protected from injury and disease	.855	.245
An animal's need to be protected from cruelty	.700	.341
An animal's need to be protected from fear	.834	.233
An animal's need to be protected from stress	.794	.239

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was 'Five freedoms' $\alpha = 0.924$ (8 items) and 'Health/feelings//environment' $\alpha = 0.757$ (4 items). There were no statistically significant effects of any of the independent variables on factor scores, $p > 0.05$.

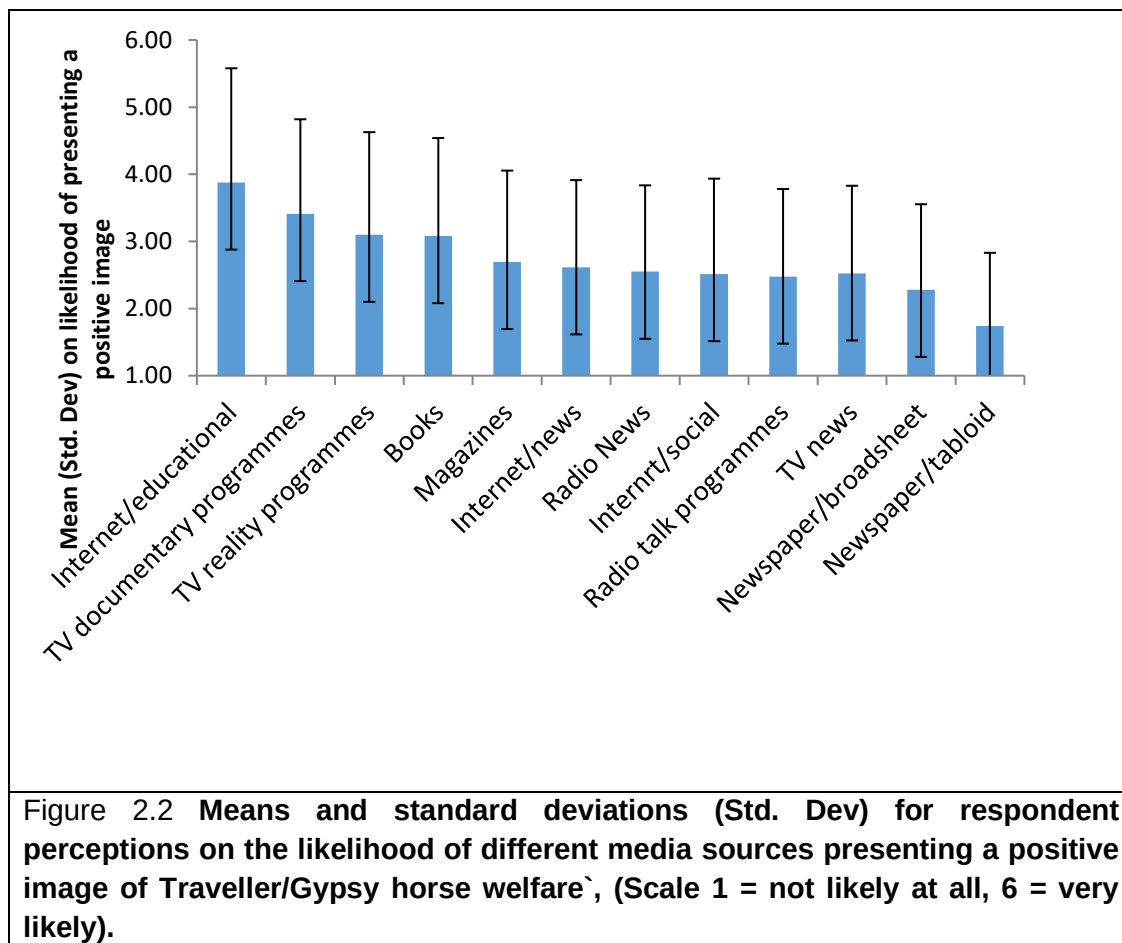
The overall mean of the factors 'Human purposes', 'Unnecessary animal use' and 'Blood sport' were used for multiple regression analysis. There was independence of residuals from the multiple regression analysis, as assessed by a Durbin-Watson statistic of 1.90. The independent variables in the model statistically predict animal welfare knowledge, $F(11, 383) = 11.36$, $p < 0.01$, $adj.R^2 = 0.224$. Results showed that the variables age, gender, animal ownership, region of residence and 'Unnecessary animal use',

statistically significantly predict animal welfare knowledge. The highest contributing predictor was the factor 'Unnecessary animal use', followed by age, gender(woman), Celtic countries and Midland regions of residence and animal owner. These variables had significant positive regression weights, indicating that respondents with higher scores on these scales have higher animal welfare knowledge. There was no statistically significant effect of the remaining variables on the prediction of animal welfare knowledge, *Table 2.20*.

Table 2.20 Multiple regression analysis of public animal welfare knowledge and its influential factors. Significant results are bolded ($p < 0.05$).			
Predictors	B	t	p
Age	.010	4.400	0.01
Gender (Woman)	.239	4.039	0.01
Urban/Rural (Rural)	.018	0.294	0.76
Animal/None (Animal)	.136	2.343	0.02
Regions (Unspecified)	.003	0.000	1.00
Regions (Celtic)	.245	2.969	0.01
Regions Northeast)	.119	1.700	0.09
Regions (Midlands)	.199	2.405	0.01
Human Purposes	.038	1.301	0.19
Unnecessary animal use	.164	4.705	0.01
Blood Sport	.071	1.679	0.09

2.3.12 Media presentation of Traveller/Gypsy horse welfare

Twelve media sources were presented, and respondents were asked whether these media sources presented a positive image of Traveller/Gypsy horse welfare. An overall mean score of 2.73 ($\sigma = 0.55$) was reported for these 12 media sources, indicating that respondents agreed that these media sources are not very likely to present a positive image of Traveller/Gypsy horse welfare. Media sources considered most likely to present a positive image were educational internet sites ($\bar{x} = 3.87$, $\sigma = 1.70$) followed by TV documentaries ($\bar{x} = 3.40$, $\sigma = 1.41$) and TV reality programmes ($\bar{x} = 3.09$, $\sigma = 1.52$). Tabloid newspapers were cited as least likely to present a positive image of Traveller/Gypsy horse welfare ($\bar{x} = 1.73$, $\sigma = 1.09$), *Figure 2.2*.



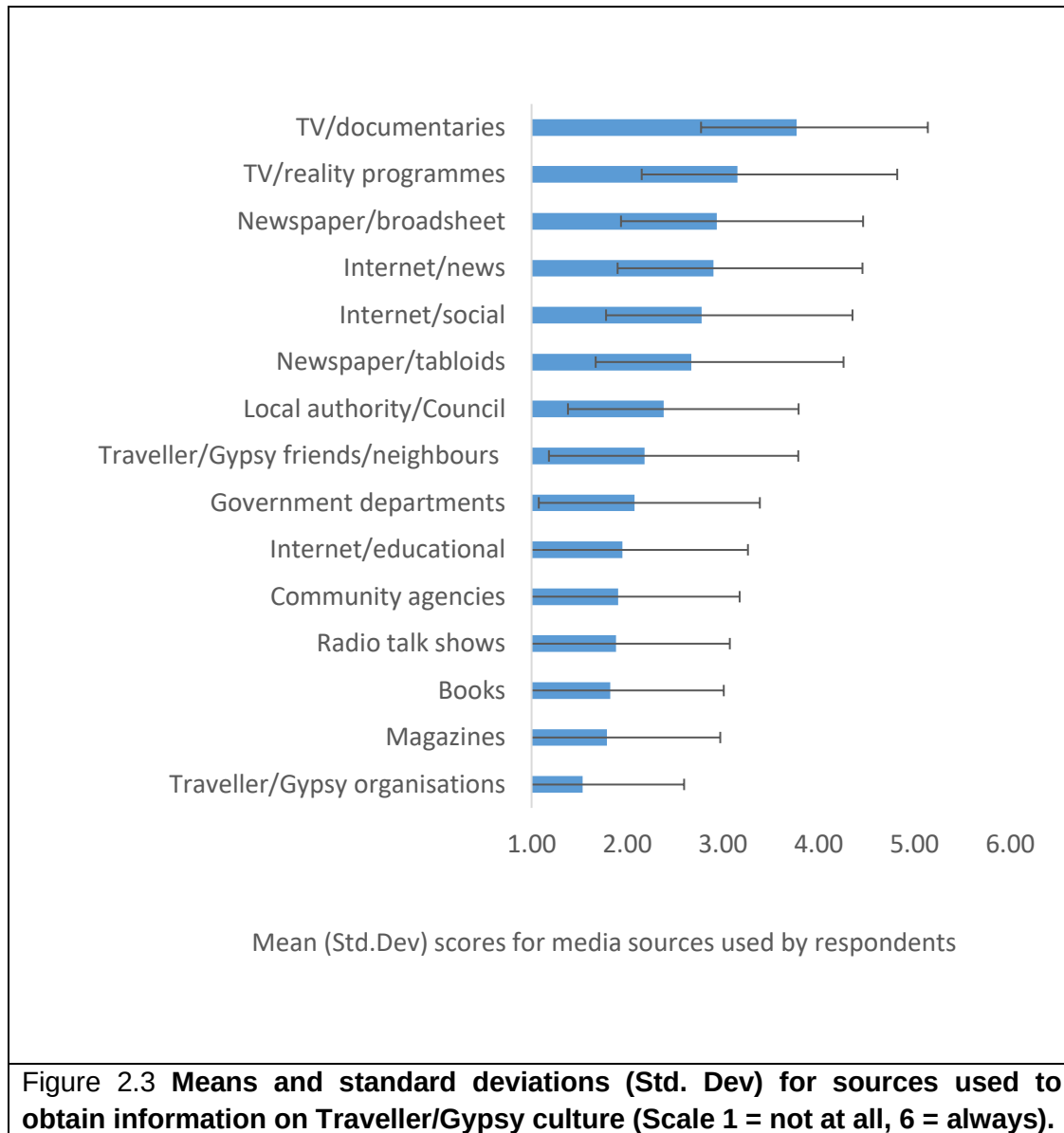
There was a statistically significant effect of urban/rural location on the likelihood of different media sources presenting a positive image of Traveller/Gypsy horse welfare, $t(370) = -2.590$, $p < 0.01$. Rural respondents ($\bar{x} = 1.96$, $\sigma = 1.29$, $n = 110$) had a higher level of agreement with the statement that tabloid newspapers presented a more positive image of Traveller/Gypsy horse welfare than urban respondents ($\bar{x} = 1.64$, $\sigma = 0.97$, $n = 262$). There was also a statistically significant effect of animal ownership on the likelihood of different media sources presenting a positive image of Traveller/Gypsy horse welfare animal ownership and age group, $t(359) = 2.711$, $p < 0.01$. Animal owners ($\bar{x} = 3.27$, $\sigma = 1.56$, $n = 220$) had a higher level of agreement with the statement that TV reality programmes such as *My Big Fat Gypsy Wedding* are more likely to present positive images of

Traveller/Gypsy horse welfare than non-animal owners ($\bar{x} = 2.82$, $\sigma = 1.43$, $n = 141$).

Age groups also had a statistically significant effect on the statement that TV reality programmes are more likely to portray a positive image of Traveller/Gypsy horse welfare, $F(3, 357) = .336$, $p = 0.02$. Post hoc analysis revealed that respondents aged 26 – 35 years ($\bar{x} = 2.83$, $\sigma = 1.46$) had lower agreement than 36 – 45-year-olds ($\bar{x} = 3.44$, $\sigma = 1.54$), $p = 0.02$. There was no statistically significant effect of region of residence on whether media sources presented a positive image of Traveller/Gypsy horse welfare, $p > 0.05$.

2.3.13 Sources of information used for information on Traveller/Gypsy culture

The most common response for where the public get their information from was 'not at all', with the majority stating that they never receive information from 14 of the 15 media methods stated. For the 15 media sources, a mean score of 2.44 ($\sigma = 0.60$) was recorded, indicating that respondents are not really using these information sources very much. Documentary programmes ($\bar{x} = 3.77$, $\sigma = 1.37$), and reality programmes ($\bar{x} = 3.15$, $\sigma = 1.67$) were the most used information sources with the highest overall scores. Traveller/Gypsy organisations were the least used information source, *Figure 2.3*



There was a statistically significant effect of gender on where they source their information on Traveller/Gypsy culture. Women were more likely to source information from TV documentaries than men, $p = 0.03$. Men were more likely to source information from radio talk programmes, $p = 0.01$, educational internet sites, $p = 0.01$, news internet sites, $p = 0.01$, reality programmes, $p = 0.01$ and books than women, $p = 0.03$, (Table 2.21).

Table 2.21 Mean and standard deviation (Std. Dev) for effect of gender on information sources used to obtain information on Traveller/Gypsy culture, (Scale 1 = not at all, 6 = very much). Significant results are bolded ($p < 0.05$).						
Information source	Gender	Mean	Std. Dev	t	df	p
TV documentaries	Man	3.57	1.34	-2.119	393	0.03
	Woman	3.88	1.38			
TV reality programmes	Man	3.57	1.34	-4.173	393	0.01
	Woman	2.66	1.64			
Radio talk programmes	Man	2.10	1.27	2.490	393	0.01
	Woman	1.78	1.17			
Internet (educational)	Man	2.22	1.40	2.923	393	0.01
	Woman	1.81	1.23			
Internet (news)	Man	3.23	1.48	2.916	393	0.01
	Woman	2.74	1.57			
Books	Man	2.00	1.20	2.171	393	0.03
	Woman	1.73	1.17			

There was a statistically significant effect of urban/rural location on sources of information used. Rural respondents reported that they were more likely to source information on Traveller/Gypsy culture from community agencies and radio talk programmes than urban respondents, *Table 2.22*.

Table 2.22 Mean and standard deviation (Std. Dev) for effect of urban/rural location on information sources used, (Scale 1 = not at all, 6 = very much). Significant results are bolded ($p < 0.05$).							
Information Source	Location	n	Mean	Std dev	t	df	p
Community agencies	Urban	280	1.82	1.23	-2.010	395	0.04
	Rural	117	2.10	1.36	-1.929	395	0.04
Radio talk shows	Urban	280	1.74	1.04	-3.731	395	0.01
	Rural	117	2.22	1.33	-3.454	395	0.01

There was a statistically significant effect of age on sourcing information from broadsheet newspapers, $F(3, 393) = 2.869$, $p = 0.03$. Respondents aged 36 – 45 were more likely to source information from this media than respondents aged 26 – 35. Age also had a statistically significant effect on sourcing information from tabloid newspapers $F(3, 393) = 3.719$, $p < 0.01$, with

respondents over 45 years less likely to source information from tabloid newspapers than those aged 36 – 45 years. Age had a statistically significant effect on sourcing information from radio talk shows, $F(3, 393) = 3.927, p < 0.01$ and from the internet (social), $F(3, 393) = 5.975, p < 0.01$. Respondents aged 18 -25 were less likely to use radio talk shows than respondents aged 36 – 45 years and more likely to source information from the internet (social) than the oldest age group, *Table 2.23*.

Table 2.23 Means, standard deviations (Std. Dev) for effect of age on information sources used, (Scale 1 = not at all, 6 = very much). Significant results are bolded ($p < 0.05$).

Information Source	Age Group	Mean	Std dev	p
Newspaper (broadsheet)	26 - 35	2.85	1.58	0.02
	35 - 45	3.35	1.57	
Newspaper (tabloid)	35 - 45	3.10	1.71	0.01
	Over 45	2.35	1.50	
Radio talk programmes	18 - 25	1.72	1.08	0.04
	36 - 45	1.99	1.25	
Internet (social)	18 - 25	3.28	1.60	0.01
	Over 45	2.31	1.49	

PCA was run on the 14-question scale that measured sources of information. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.826. PCA identified three factors, accounting for of 56.8% of the total variance, Factor 1, labelled `Internet/radio/books` accounted for 35.8% and Factor 2, labelled `Newspaper/TV media` accounted for 13% and Factor 3, labelled `Agencies` accounted for 7.9% of the variance. Factor loadings are displayed in *Table 2.24*.

Table 2.24 **Factors extracted from Principal Component Analysis that measured information sources used to obtain information on Traveller/Gypsy culture, with loadings for each factor. Coefficients which load together are bolded.**

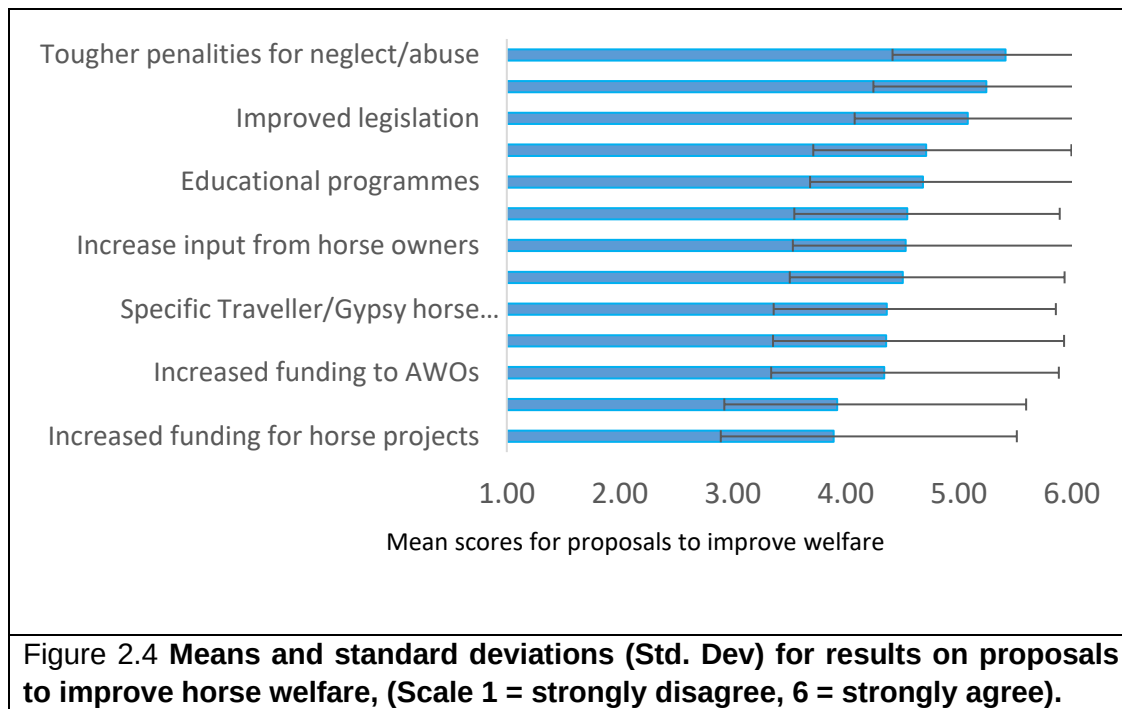
Information sources	Internet/Radio/Books	Newspaper/TV Media	Agencies
Traveller/Gypsy Organisations	.422	-.181	.480
Government departments (health, education)	.154	.132	.818
Local authority/councils	.154	.182	.838
Community agencies	.362	.172	.726
Newspapers (Broadsheet)	.176	.623	.328
Newspapers (Tabloid)	.124	.776	.144
TV documentaries	.079	.804	-.029
TV reality programmes	.031	.767	.008
Radio talk programmes	.487	.256	.291
Internet sites (Educational)	.686	.093	.276
Internet sites (Social)	.528	.459	.204
Internet sites (news)	.455	.451	.241
Books	.767	.117	.034
Magazines	.730	.257	.192
Have friends/neighbours in these communities	.561	-.041	.141

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was `Internet/Radio/Books` $\alpha = 0.799$ (7 items), `Newspaper/TV media` $\alpha = 0.783$ (4 items) and `Agencies` $\alpha = 0.796$ (4 items). There were no statistically significant effects of any of the independent variables; gender, age, country and region of residence and animal ownership on factor scores, $p > 0.05$.

2.3.14 Proposals to improve horse health and welfare

Respondents rated their level of agreement on a number of proposals to improve the health and welfare of Traveller/Gypsy horses. Respondents scored an overall mean score of 4.60 ($\sigma = 0.46$), indicating an agreement with a number of these proposals on the improvement of welfare. Tougher penalties for equine abuse and neglect received the highest rate of strongly

agree ($\bar{x} = 5.41$, $\sigma = 1.12$) and increased funding for horse projects the lowest ($\bar{x} = 3.89$, $\sigma = 1.62$), *Figure 2.4*.



There was a statistically significant effect of gender on proposals to improve horse health and welfare, $t(369) = -1.10$, $p = 0.03$. Women ($\bar{x} = 4.47$, $\sigma = 1.47$, $n = 249$) were more favourable of the proposal of developing a separate Traveller/Gypsy equine welfare organisation than men ($\bar{x} = 4.12$, $\sigma = 1.52$, $n = 122$). There was also a statistically significant effect of age on proposals to improve horse health and welfare, $F(3, 373) = 3.54$, $p < 0.01$. Post hoc analysis revealed that the oldest age group ($\bar{x} = 5.62$, $\sigma = 0.71$, $n = 90$) was more likely to advocate for tougher penalties than the youngest age group ($\bar{x} = 5.16$, $\sigma = 1.12$, $n = 152$), $p < 0.01$. There was no statistically significant effect of urban/rural location, region of residence and animal ownership on proposals to improve Traveller/Gypsy horse welfare, $p > 0.05$.

2.4 Discussion

The overall aims of the current study were to assess public perceptions of Traveller/Gypsy horse ownership and horse welfare. The present study was also designed to evaluate public perceptions of Traveller/Gypsy culture in order to determine their knowledge and understanding of this ethnic group.

2.4.1 Knowledge and perception of Traveller/Gypsy culture

By focusing on Traveller/Gypsy culture, two main themes in relation to respondents' knowledge of Traveller/Gypsy culture were identified. Respondents were either culturally aware, or respondents based their knowledge on cultural stereotypes associated with this culture. Results show that participants from the Celtic countries had significantly higher scores on the subscale 'Cultural awareness' than those from the South of England and Midlands. A possible explanation for increased cultural awareness amongst respondents from the Celtic countries could be that Travellers have their origins in Celtic countries since Celtic or pre-Celtic times (McVeigh, 2007; Williamson, 1994), while Gypsies arrived in the British Isles in the 1500's (Bancroft, 2005). Therefore, respondents from Celtic countries have a longer history of Traveller cultural experience. Nevertheless, it could be argued that five centuries later, an awareness of Gypsy culture should be well established.

Further, the implication of lower cultural awareness in the South of England is that the greatest number of Travellers and Gypsies in England live in the Southeast (Office for National Statistics, 2014). This may suggest that in this region there is insufficient interaction between the wider society and Travellers/Gypsies. After all, Travellers and Gypsies are found to be still living on the peripheries of mainstream society (Powell, 2008). Therefore, a lack of knowledge and understanding of Traveller/Gypsy culture may still be prominent in these areas and participants may rely more on cultural stereotypes when evaluating Traveller culture, which often shows a negative association with that culture (Fraser, 1995). This was also found in a study on

American Crow Indian culture, an indigenous horse owning community, where a lack of understanding of their culture by the wider American society existed, resulting in negative stereotyping (Lawrence, 1985). The Plains indigenous people of South-eastern Montana, America, still view horses according to their traditional tribal belief and are criticised by the numerically dominant white society for practices such as leaving their horses to `winter out` with no supplementary feed or for overgrazing of land. However, according to Crow Indian philosophy, horses have the capabilities to cope in these situations, and have done so since their nomadic days.

Respondents' prejudices and stereotypes on Traveller/Gypsy culture alluded to views that Travellers/Gypsies were criminal, tax evaders, fly-tippers and trespassers. On the subject of associating Travellers/Gypsies with crime, reference was made to the need for research to prove that Travellers/Gypsies were not criminals. Apart from contravening the Human Rights Act, (Article 6, Section 2, 1988) whereby `Everyone charged with a criminal offence shall be presumed innocent until proved guilty according to law`, to suggest that research is required to prove that members of Traveller/Gypsy culture alone are not criminals is alarming and prejudiced. There was acknowledgement, by a minority, that prejudices against all Travellers/Gypsies are unjust. Therefore, by improving levels of understanding of Traveller/Gypsy culture origins, values, customs, similarities and differences amongst the public, it is likely that stereotypes will be modified (Fiske, 2017).

Results of the present study, however, showed, to some extent, that respondents were aware that Travellers/Gypsies are often subjected to hostility and hate crime and are also targets of racial insults. Moreover, respondents agreed with the statement that it is acceptable for shopkeepers to have signs not allowing Travellers/Gypsies on their premises. This indicates a widespread negative association with this cultural group in both the UK and Ireland . Respondents, whose knowledge of Traveller/Gypsy culture was related to cultural stereotypes supports Fraser's (1995) assertion

that Travellers/Gypsies are subjected to negative stereotyping. On the contrary, participants of the present study were aware that Traveller/Gypsy culture highly values the extended family. Furthermore, participants did not agree with the statements 'that Traveller/Gypsies do not pay taxes', 'that they should be evicted from unauthorised sites', and 'that they live outside the laws and rules of society', which all represent common myths held by society and the media (Families, Friends, Travellers, n.d.). It needs to be noted that up to one third of participants expressed that they did not know whether to agree or disagree with these statements, indicating overall low knowledge about this cultural group. As a result, Travellers and Gypsies may continue to be disproportionately vulnerable to racist attitudes, social exclusion and discrimination (Fraser, 1995; Dahlgreen, 2015; Watson et al., 2017).

The resources used to seek information on Traveller/Gypsy culture may explain respondents' level of knowledge and perception of this culture. On average, participants were more likely to rely on documentaries and reality TV programmes. With a recent increase in Traveller/Gypsy documentary and reality TV shows in the UK, which may be due to their sensationalist narrative which often appeals to those who have little understanding of Traveller/Gypsy culture, this particular finding is not surprising. However, reality and documentary programmes on Traveller/Gypsy culture are often criticised for their sensationalism and negative representation of this culture (Tremlett, 2014). Therefore, this portrayal on TV reality shows may act to reinforce respondents' already-existing beliefs and stereotypes of Traveller/Gypsy culture.

Having friends and/or neighbours in the Traveller/Gypsy community were the least used source of information on this community. A possible explanation for this may be that Travellers/Gypsies do not live in the vicinity of respondents, or it may be that the Traveller/Gypsy community still remain an outsider group with limited, if any, interaction between these groups (Powell, 2016). This lack of social integration between communities may be related to the Traveller/Gypsy distinctive way of life such as their mobile lifestyles, or it

may be that a lack of trust exists between the communities. This mistrust is often based on a legacy of stereotyping, discrimination and prejudices which needs to be addressed through improved knowledge with the intention of improving social integration (Van Cleemput, 2007).

Another little-used information medium in the present study was magazines. Of all the news platforms available, respondents in Ofcom's study on 'News Consumption in the UK: 2019' rated magazines to be more accurate, trustworthy and impartial. This observation leads to the question as to why respondents in the present study did not use magazines, however, it is likely that information may be scarce on this specific topic in magazines. Further, the move to digital media may also explain why magazines did not feature in respondents' choice of information sources on Traveller/Gypsy horse culture. In fact, the growth in digital media was found to replace or substitute printed material (Freedman and Schlosberg, 2011). Sourcing information from Traveller/Gypsy organisations were one of the mediums that participants used least although these organisations are the channels that provide accurate information on Traveller/Gypsy culture and heritage. Therefore, this medium should be promoted further to ensure that information entering the public in general is correct and reliable.

The media was also found to play a key role in how the public perceived Traveller/Gypsy horse owners. The public were of the view that media representation of both Traveller/Gypsy community and horse culture was largely negative, a view supported by previous reports (Cork Traveller Visibility Group, 2013). In the current study, respondents stated that media sources do not present a positive image of Traveller/Gypsy horse welfare, with tabloid newspapers cited as least likely to present a positive image of Traveller/Gypsy horse culture. Fox et al. (2012) examined British tabloid attitudes towards East European migration to the UK and found that Roma people were portrayed more negatively than Hungarians and Romanians. Their analysis corresponds with the findings in this study.

Rural respondents in the current study were more of the viewpoint that tabloid newspapers presented a positive image of Traveller/Gypsy horse welfare. These different views may be due to respondent's information seeking behaviours although no significant differences were found between rural and urban respondents on the use of tabloid newspapers in this study. However, other studies have found different views between those living in urban and rural locations on animal welfare issues (Clark et al., 2016) and on their knowledge of meat chicken production in Australia (Erian and Phillips, 2017). These findings suggest that differing views may be dependent on respondent location, hence the finding in this study. Contrary to expectations, animal owners in this study stated that TV reality programmes present positive images of Traveller/Gypsy horse welfare more so than non-animal owners. It is intriguing that animal owners are of this view as TV reality shows often misrepresent the Traveller/Gypsy community (Taylor, 2008). One plausible explanation for this result is that, while most respondents were animal owners, only 3% were horse owners. This may denote a reduced understanding of horse welfare and how it is portrayed on TV reality shows. Further, respondents' understanding of Traveller/Gypsy horse culture was found to be lacking in this study.

Age groups also had a significant effect on respondents' views on media representation of Traveller/Gypsy horse welfare; in particular, those aged 26 – 35 years were less likely to agree that TV reality programmes portrayal is positive, than those aged 36 – 45 years. Younger respondents were found to have an increased awareness of animal welfare (Clark et al., 2016), therefore this may explain their awareness of how accurate the representation of Traveller/Gypsy horse welfare is on TV reality programmes. The media is recognised as a powerful influence in reinforcing public perception (Morris, 2000). Hence, negative media perceptions of Traveller/Gypsy horse owners are likely to continue to shape how the public view this horse owning community (Bowers, 2013).

While there is a wealth of different types of information sources available to, and used by, respondents, it is evident that there remains a great need for further reliable information sources on Traveller/Gypsy culture. The different types of media used by the public can be summarised into three categories 'Internet/radio/books', 'Newspaper/TV media' and 'Agencies'. Today, the use of digital media has surpassed other information seeking mediums although TV is still a popular channel of news information (Reuters, 2017). While the internet is a readily accessible information source, internet users are subject to material from the search engines and social media sites that they use and subscribe to. As such, these sites may only present limited information, misinformation and/or strengthen users' pre-existing views. Nevertheless, having a knowledge of these different categories may inform and guide future allocation of Traveller/Gypsy cultural information. However, regardless of the information medium used to source information on Traveller/Gypsy culture, it is crucially important that information is relevant and accurate and that a true representation of Traveller/Gypsy culture is amplified to improve cultural awareness in the wider society.

2.4.2 Perception of Traveller/Gypsy horse culture

The present study also evaluated public perception of Traveller/Gypsy horse culture. Respondents did acknowledge that 'horse fairs are an important social gathering' and 'horse ownership is an important tradition'. These findings indicate that at least some of the characteristics of Traveller/Gypsy horse culture were recognised. Media attention to horse fairs is common and Gypsies and Travellers were found to be outnumbered by tourists at Appleby Fair, one of the largest Traveller/Gypsy horse fairs in Europe (Crew, 2018), therefore, participation and interaction at these events may contribute to respondents' awareness of these characteristics. There are various welfare and other agencies present at Appleby Horse Fair offering advice and education on horse health and personal health. However, the presence of Traveller/Gypsy organisations would help educate tourists on

Traveller/Gypsy culture and horse culture, a proposal which may influence increased integration and understanding between the communities.

While participants may be aware that these are important facets of Traveller/Gypsy horse culture, it seems that they are unaware of what role horses play and how deeply embedded horses are in this culture. For instance, nearly forty percent of respondents reported that they 'don't know' to a number of statements on Traveller/Gypsy horse culture. Further, when asked their views on Traveller/Gypsy horse owners care of their horses, almost one third of respondents reported that they did not have any knowledge on a number of aspects of Traveller/Gypsy horse owner care. For example, participants did not know that men usually own and care for horses and that a horse's bloodline, that is, a horse's family tree, is considered important. These traits are common facets of Traveller/Gypsy horse culture (Burke Wood, 2019). There was also no significant differences between study regions on perceptions of Traveller/Gypsy horse culture, perhaps indicating that the significance of the horse is not realised across nations and countries.

To summarise, respondent perceptions on Traveller/Gypsy horse ownership were subsumed under two categories, horse ownership was seen as either part of their 'Culture' which relates to a distinctive pattern of living by owning and keeping of horses or that horse ownership was 'Not a tradition' indicating that this was not a custom in Traveller/Gypsy culture that was practiced from generation to generation. There were no significant differences on how respondents perceived these groupings. Nevertheless, these classifications should provide for a better understanding of how the public perceive Traveller/Gypsy horse culture. This is desirable for future work on informing and educating the public on Traveller/Gypsy horse culture. Findings on public knowledge of Traveller/Gypsy horse culture is comparable to the results of public knowledge of Traveller/Gypsy general culture, that is, the publics' awareness of horse culture within these communities is equally limited. While this section was aimed at providing some insight into

respondents' knowledge and perception of Traveller/Gypsy horse culture, it does seem that respondents lack knowledge, or are misinformed about this horse-owning community. This may be due to the information sources used by respondents to seek information on Traveller/Gypsy culture, including horse ownership which is an important element of this ethnic culture. While TV documentaries and reality shows concentrate on different aspects of Traveller/Gypsy culture, they are less likely to include horse culture in these programmes. Overall, findings indicate a low level of knowledge of Traveller/Gypsy culture and horse culture, which appears to be evident throughout this study.

Respondents were concerned about Traveller/Gypsy horse welfare, with women demonstrating an even greater level of concern than men. This is consistent with previous studies where women were consistently found to be more concerned about animals and animal use than men (Herzog et al., 1991; Taylor and Signal, 2005; Colombo et al., 2017; Menor-Campos et al., 2019). There are a number of possible explanations for this result. The higher level of concern demonstrated by women in the present study might be expounded by the higher number of female respondents in this study, which reflects other studies on animal welfare (Prickett et al., 2010). In general, a higher number of women are involved in the horse industry (Wickens et al., 2011) and women are also more likely to participate in equine-related surveys (Stowe, 2012 and British Equestrian Trade Association (BETA), 2011). Further, findings in this study indicate that horses were classified as companion animals by the majority of respondents and respondents who owned an animal were more likely to classify horses as companion animals than those who were not animal owners. Classification of animals have been found to influence peoples' perceptions on how animals should be cared for, with Croney and Botheras (2010) stating that animals classified as companion animals were more likely to influence how people perceive and care for other animals.

Another possible explanation for the higher level of concern for Traveller/Gypsy horses by women is that there was significantly greater agreement amongst women than men on seven of the nine items concerning how horses are perceived. In this study, greater agreement on most of the attributes regarding horses demonstrates an understanding of what constitutes good horse welfare. Women were also found to be associated with a higher level of animal welfare knowledge, perhaps revealing a greater level of concern by women for animals perceived to have poor welfare. These findings mirror the results of previous studies, where women who had higher levels of animal knowledge also demonstrated a higher level of concern for animal wellbeing. For example, Blanc et al. (2020) found in their study that women had a greater knowledge and put a greater emphasis on animal welfare attributes when purchasing and consuming beef than men. Respondents who owned an animal had significantly higher scores on classifying horses as companion animals than those who were not animal owners. In the current study, there were no significant effects on how men classified horses.

Other factors such as empathy have also shown an association between this factor and level of concern for horse welfare, with the empathy subscale 'Unnecessary animal use' found to predict level of concern for Traveller/Gypsy horses. Phillips (2009) reported that those who possess positive attitudes towards animals are more likely to care for their welfare. Therefore, it is possible that the findings of the present study may not be exclusively aimed at Traveller/Gypsy horses' welfare but are a confirmation that increased empathy increases level of concern for all animals' welfare (Furnham et al., 2003; Taylor and Signal, 2005).

Results of the present study showed that respondents who perceived horse ownership to be part of Traveller/Gypsy culture, who are culturally aware and considered Traveller horse owners' practices to be good were associated with a low level of concern for Traveller/Gypsy horse welfare. These findings suggest that a greater knowledge and understanding of Traveller/Gypsy

culture and horse culture reduces concern for their horse's welfare. Previous studies, such as that of Hemsworth and Coleman (2011), demonstrated that sufficient knowledge of a subject is necessary for higher animal welfare although this is not specific to Traveller/Gypsy horse welfare.

Conversely, horse owner care practices considered to be poor had an effect on level of concern for Traveller/Gypsy horse welfare. The results showed that a lack of understanding of horse owner practices increased level of concern. This demonstrates respondents' lack of knowledge and understanding of critical aspects of horse ownership that may have an effect on their welfare, which are, horse owner practices. It has to be noted that horse owners' lack of knowledge of their horses' welfare needs was identified by equine welfare professionals as a key priority concern requiring attention for improved horse welfare (Rioja–Lang et al., 2020). However, only 3% of the respondents in the present study were horse owners and therefore the majority of participants may not have adequate knowledge to assess horse welfare in general and Traveller horse welfare more specifically. Hence, further empirical work is required to investigate the true extent of public knowledge and understanding of Traveller/Gypsy horse welfare.

2.4.3 Perception of Traveller/Gypsy horse owner care

This study also assessed public perception of Traveller/Gypsy horse owner care. In summary, items used to measure horse care can be grouped into two main categories: good practices and poor practices, however, there were no significant differences when comparing perceptions of horse care for demographic data. Nevertheless, the items sought to determine public perceptions of horse owner care in these ethnic communities. There was high agreement that Traveller/Gypsy horse owners are likely to provide their horses with social contact with other horses and feed their horses well. This finding suggests that respondents are of the view that these horse care practices are realised within the Traveller/Gypsy horse owning community, a finding supported by Rowland et al. (2019) whereby Traveller horse owners apply management practices that included these two elements of horse care

and management. It seems possible that these results are related to how respondents regard horses, with the data indicating positive agreements with various statements concerning horses.

There was a higher level of agreement that horses need to be able to exercise and to be able to express normal behaviour patterns. Exercise and expression of normal behaviours are well-known aspects of horse management (Waran et al., 2002), consequently, it may be that the public associate horses with exercise in general as horses are prominent in various sports and run and jump naturally. Hence, it is not surprising that respondents supported the need for such. In their study on risk assessment, Aven and Kristensen (2019) recognised the need for both robust general knowledge in addition to sufficient specific knowledge of the subject under study. Therefore, in this study, overall knowledge of animal welfare was examined as a prerequisite to specific knowledge of the subject investigated, that is, Traveller/Gypsy horse owner care of their horses. Hence, an explanation for the high agreement that Traveller/Gypsy horse owners provide their horses with social contact was that respondents in the present study indicated a high level of knowledge of animal welfare properties, therefore, are more aware of a horse's needs for social contact and adequate feed. In relation to horses being considered as social animals, those that identified themselves as rural respondents agreed more than their urban counterparts with this statement. With horses more likely to be visible in rural environments, routine exposure to horses may explain this finding. According to Boden (2013), horses in urban areas are more likely to be kept in livery yards and riding schools, perhaps suggesting that they are less observable to the public in general. The oldest age group also had a higher level of agreement that horses are social animals than the youngest age group. A possible reason for this may be that horses are managed differently today with horses more likely to be individually housed with limited contact with other horses (Søndergaard et al., 2004; Henderson, 2007). Perhaps these

housing practices result in the perception that horses are not social animals by the younger generation.

In this study, animal owners and respondents from the Celtic countries considered that horses need to be able to express normal behaviour patterns, a practice that positively affects their welfare. Celtic countries are considerably more rural; therefore, horses are more likely to be managed in conditions that allow for this practice. As such, respondents from these countries may be more aware of the need to express normal behaviour. While it was expected that animal owners would support the practice of normal behaviour patterns, it was perhaps surprising that animal owners had a higher level of agreement that most horses are aggressive. Nevertheless, while 60% of respondents were animal owners, only 3% were horse owners. With a minority of respondents being horse owners, knowledge on horse care may be limited in the study sample. Further, pet ownership may not be a reliable indicator of knowledge of different species, perhaps indicating that respondents' knowledge of another species may be limited. Therefore, differences in how respondents perceive horses may explain their differing views of Traveller/Gypsy horse owner care. There was least agreement over the statement that Traveller/Gypsy horse owners are likely to graze their horses in unauthorised private/common land and are more likely to breed from their horses. However, there were no significant differences when comparing these statements for demographic data, therefore, all respondents appear to have comparable views of these practices. Fly-grazing and indiscriminate breeding are characteristics often associated with Traveller/Gypsy horse ownership (Horseman et al., 2016). However, Rioja-Lang et al. (2020) did not identify these practices with any distinct horse owning community, therefore, this more recent study supports the view of respondents in this study on Traveller/Gypsy horse care and management practices.

While the respondents in this study demonstrated a good knowledge of the concept of animal welfare as already discussed, in general there seems to be

an overall absence of knowledge and understanding of Traveller/Gypsy horse owner care. In fact, when asked their views on Traveller/Gypsy horse owner care, almost one third of respondents reported that they did not have any knowledge on a number of aspects of Traveller/Gypsy horse owner care. This particular outcome supports the overall low level of knowledge of Traveller/Gypsy culture and horse culture which appears to be evident throughout this study. What is surprising is that Traveller/Gypsy horse owners should be prevented from owning horses had the highest agreement amongst respondents. This finding resonates with Horseman et al.'s (2016) study whereby Traveller horse owners were singled out as the main contributors to poor horse welfare, although stakeholders did not at any stage imply that horse ownership should be vetoed in this community. It is evident throughout the current study that respondents have strong views albeit poor knowledge of Traveller/Gypsy horse ownership.

While there is no recorded data on the degree of Traveller/Gypsy horse welfare concerns available (Rowland et al., 2019), it would be highly beneficial to explore this further to identify the true extent of horse welfare issues in this community. As such, this may modify respondents' belief that Traveller/Gypsy horse owners should be prevented from owning horses. These findings on public perception of horse owner care are also likely to be related to the media's portrayal of Traveller/Gypsy horse culture. In fact, respondents agreed that media sources do not present a positive image of Traveller/Gypsy horse welfare.

2.4.4 Perceptions of Traveller/Gypsy horse owners

Another important feature of this study was participants perceptions of Traveller/Gypsy horse owners themselves. When asked how the public perceive Traveller/Gypsy horse owners, the vast majority of respondents stated that they tend to be viewed negatively. Despite many agreeing that Traveller/Gypsy horse owners are generally perceived negatively, reasons varied as to why this is the case. Lawrence (1985) too found that the neighbouring public viewed Crow Indian horse culture negatively, therefore,

overall incidence of negative public perceptions is arguably no different in Traveller/Gypsy horse culture. Lawrence (1985) explained these negative public perceptions as a lack of understanding of culture. This finding builds on the previous discussion on respondents' minimal knowledge and understanding of Traveller/Gypsy culture, horse culture and horse owners. Prejudices and stereotypes were cited as the main reasons for public negative perception of Traveller/Gypsy horse owners. These findings resonate with perceptions of Traveller/Gypsy culture as discussed previously and in previous studies (Fraser, 1995; Dahlgreen, 2015).

It is apparent that the difficulties faced by Traveller/Gypsy horse owners are influenced by how these ethnic groups are perceived by the wider society in general. References to Traveller/Gypsy horse owner treatment, management practices and attitudes to horses as motives for negative public perceptions identifies with reports from the National Traveller Horse Ownership Seminar (Cork Traveller Visibility Group, 2013), where perceptions of Traveller/Gypsy horse ownership were predominantly negative. This result confirms Horseman et al.'s (2016) previously reported negative perceptions of Traveller/Gypsy horse ownership, with stakeholders' assigning practices such as tethering and lack of food to Traveller/Gypsy horse management. However, research is necessary on the accuracy of these practices assigned to Traveller/Gypsy horse owning communities. The media used to source information on Traveller/Gypsy culture may also go some way to explaining this finding. For instance, documentary and reality TV programmes were the channels most used to source information on Traveller/Gypsy culture. However, TV documentaries and reality shows often portray less than favourable views of Traveller/Gypsy culture, with Poppelwell (2012) emphasising the harmful effects of the reality TV show *My Big Fat Gypsy Wedding* on the Traveller/Gypsy communities. Further, with prejudices and stereotypes part of the Traveller/Gypsy horse owner experience, having a better understanding of how these are influenced by media portrayals requires further investigation. This may help to lessen the likelihood of

participants basing their classification of Traveller/Gypsy horse owners on prejudices and stereotypes (Fiske, 2017).

Culture awareness, or lack of, was a factor found to contribute to how Traveller/Gypsy horse owners were perceived by the public. In this study, a lack of knowledge of Traveller/Gypsy culture was evident, therefore, it is not surprising that poor cultural understanding increases negative attitudes towards diverse ethnic groups. Marshall et al. (2017) found that a lack of cultural understanding had an influence on healthcare professionals' willingness to care for culturally diverse patients and concluded that negative attitudes prevail when cultural awareness is lacking. This finding highlights the need for increased Traveller/Gypsy cultural awareness in order to improve public knowledge of Traveller/Gypsy horse ownership.

Respondent's personal experiences of Traveller/Gypsy horse ownership were referred to with many descriptions of `experience` of poor horse welfare. The same trend holds true when referring to other peoples' experiences of Traveller/Gypsy horse management. While anecdotal evidence and hearsay are often used to support peoples' views, statistical evidence has a credible advantage over anecdotal support, a viewpoint supported by Hornik and Hoeken (2007). In their study, various consequences, supported by either anecdotal or statistical evidence, were presented to participants who had to rate the possibility of these consequences. They found that statistical, rather than anecdotal evidence had more of a persuasive advantage. These results suggest that by providing statistical evidence to the public about Traveller/Gypsy horse ownership, a change in the perception of Traveller/Gypsy horse welfare may be obtained. While positive reasons for public perceptions of Traveller/Gypsy horse owners were reported, these were in the minority. According to Pavee Point (2019), portrayal of Traveller/Gypsy horse ownership is usually negative. However, horse welfare within other horse owning groups is also being scrutinised by the public. For example, horse welfare within equestrian sport is currently under review (Furtado et al. 2021) while the concept of Social

License to Operate (SLO) is also being applied to equestrian sport. SLO is the public's acceptance of an organisation/activity to operate legitimately. In equestrian sport, public concerns about equine welfare is at the core of this industry's SLO (Heleski et al, 2020).

Respondents' perceptions on who is responsible for Traveller/Gypsy horse welfare was another important aspect of this study. Not surprisingly, there was general agreement that Traveller/Gypsy horse owners were themselves responsible for their horse's welfare. There was, however, a significant difference between men and women on designating responsibility for horse welfare, with women having higher agreement that Traveller/Gypsy horse owners were. The Animal Welfare Act (2006) requires that a person who is responsible for any equid/s, has a 'Duty of Care' to ensure that it has its Five Freedoms met. The Five Freedoms is the most well-known model of animal welfare (Farm Animal Welfare Council, (FAWC) (2009), and it was not surprising that respondents in this study were aware of such. However, respondents' knowledge and understanding of the attributes that contribute to animal welfare in this study also indicated that their understanding was based on a health/feelings/environment aspect of animal welfare. It is also not surprising that health and environment featured strongly in the second factor as this is consistent with the literature, whereby people are likely to focus on environment and health when referring to animal welfare, in addition to pain, injury/disease and fear which were strong items in the first factor (Mellor, 2016).

Gender was also found to be a predictor variable of higher animal welfare knowledge in this study, this result is likely to have influenced women's perceptions of who is ultimately responsible for horses in their care. Interestingly, respondents aged 26 - 35 years specified a greater obligation by the government, local authorities and councils to Traveller/Gypsy horse welfare than the older age groups. It may be that the older age groups have political beliefs that are less supportive of government or council interventions in horse ownership and that the owner is ultimately responsible

for their own animals. However, there is no empirical data to support this view. Further, financial assistance and monetary grants towards animal ownership is a relatively recent occurrence, therefore, younger respondents may view this initiative as assumed responsibility to an extent by the agencies who provide the funding, usually government and local authorities.

While respondents' overall view was that Traveller/Gypsy horse owners are ultimately responsible for the care of their horses, the results also show that respondents agreed to some extent that other agencies were also responsible. One of these agencies was animal welfare organisations, with this finding highlighting the importance the public assigns to welfare organisations. One such organisation, the Royal Society for the Prevention of Cruelty to Animals (RSPCA), received over one million phone calls in 2019 relating to animal welfare concerns in general, indicating the significance of this organisation. However, further research is required as to the contribution animal welfare organisations can make to Traveller/Gypsy horse ownership, if required. An overall assessment of responsibility for Traveller/Gypsy horse welfare indicates that respondents are open to other organisations sharing responsibility for Traveller/Gypsy horse ownership. According to Animal Health and Welfare Strategy for Great Britain (Department for Environment, Food and Rural Affairs, 2004), co-operation and collaboration between animal owners and animal services is at the core of best practice for improved animal welfare.

To conclude the discussion on stakeholder perceptions of Traveller/Gypsy horse ownership, respondents' perceptions on a number of proposals to improve horse welfare will form the final section of this study. The results show that respondents were supportive of a number of proposals, should it be necessary to improve the health and welfare Traveller/Gypsy horses. This finding is comparable to the support strategies recommended in Traveller Horse Ownership (Pavee Point, 2019). However, tougher penalties for equine abuse and neglect, longer prison sentences and improved legislation relating to equine abuse and neglect received the highest rate of support

from respondents, with respondents over 45 years of age more likely to advocate for tougher penalties than the youngest age group. It is not uncommon for the law to be viewed as the most appropriate course of action for animal welfare concerns, which is reflected in the Animal Welfare (Sentencing) Act 2021, which was recently passed into law. This Bill makes provision for the maximum sentence for animal cruelty to be increased to five years and was introduced following public consultation in 2018, with 70% of the public supporting the need for tougher sentencing for animal abuse.

Increased funding to, or development of, horse projects received the least support from respondents. As horse projects are unique to Ireland and with the majority of respondents from England, it may be that respondents are unfamiliar with these projects. However, these initiatives still obtained an above average score (> 3). The provision of land for horses was also one of the least supported initiatives by respondents. With land accessibility one of the key difficulties that Traveller/Gypsy horse owners encounter (Rowland et al., 2019), an explanation for this finding may be in the wording of the statement. Perhaps, access rather than provision is more applicable as provision may have been interpreted as providing land for free. Generally, respondents approved of the development of a separate Traveller/Gypsy equine welfare organisation, with women found to be more in favour of this initiative than men. It is encouraging that respondents are supportive of an innovative initiative that will support Traveller/Gypsy horse owners.

2.4.5 Limitations

While the current research obtained a large amount of data about public perceptions of Traveller/Gypsy horse culture, there are limitations to this study. The use of a panel was advantageous in reaching a targeted sample group although a larger sample size would produce more robust results. The use of a self-report method to collect information may have limited respondents on the information they can provide, therefore, data may lack depth. Research using a qualitative methodology would provide greater insight into the basis of answers. The questionnaire was lengthy, as a result,

respondents may not have remained fully engaged for the full survey or questions may be answered superficially. It is also possible that respondents had a tendency to provide socially desirable responses to the questions on the survey questionnaire rather than authentic responses. Further, the use of multiple testing amplifies the risk of finding significance where it is not there. The reason for this is that the probability of finding a significant result by chance increases depending on the number of times comparisons are performed. A Bonferroni correction for multiple comparisons is advised as it is more rigorous than the Tukey test.

2.5 Conclusion

The various factors that influenced how respondents view Traveller/Gypsy horse ownership provides preliminary data on public knowledge of and perceptions of Traveller/Gypsy horse culture, horse owner care, level of concern, information sources used, media representation, responsibility and proposals to improve welfare, if necessary. Based on the research data, some general conclusions can be made regarding public perceptions of Traveller/Gypsy horse culture. Overall, the data shows that the respondents had a limited knowledge of Traveller/Gypsy horse culture and horse owner care and showed a high level of concern for Traveller/Gypsy horses. Further, results broadly suggest negative views prevail among the public towards Traveller/Gypsy horse ownership and horse welfare. This finding supports the previously documented negative perceptions of Traveller/Gypsy horse ownership, (Cork Traveller Visibility Group, 2013; Pavee Point, 2019). Prejudices and stereotypes were provided as the most common reason for public perception of Traveller/Gypsy horse owners with these prejudices and stereotypes also applied to the whole ethnic group. Nevertheless, this research has identified that the public were somewhat aware of important elements of Traveller/Gypsy culture such as the extended family being highly valued. The study has also shown that some aspects of their horse culture were recognised, such as the tradition of horse ownership and the importance of fairs as social events. In addition, the public stated that horse

owners are likely to provide their horses with social contact with other horses and feed their horses well. These statements are supportive of Traveller/Gypsy horse management practices. The present study has found that generally there was agreement with the provision of a number of support structures that will assist Traveller/Gypsy horse owners in the care and management of their horses.

However, it could be argued that a particular strength of this study is that it represents one of the few which investigates public perceptions towards Traveller/Gypsy horse ownership. However, the findings provide strong evidence that there is a great need for public education on Traveller/Gypsy culture as well as horse culture. By providing Traveller/Gypsy cultural awareness and training, a greater understanding, knowledge and insight into the tradition of horse ownership will be achieved. Hence, negative attitudes and perceptions of Traveller/Gypsy horse ownership, which are often influenced by the media, may be challenged and reduced within the general public. This will provide for better relations between the public and the Traveller/Gypsy horse owning community. However, it is not only public perceptions of Traveller/Gypsy horse owners that needed to be explored, the views of equine stakeholders who are pivotal to horse health and welfare and their relations with this horse owning community should also be a focus for empirical research on Traveller/Gypsy horse culture.

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Chapter 3: A survey of stakeholders' perceptions of Traveller/Gypsy horse health and welfare and the factors that influence these perceptions.

3.1 Introduction

Equine stakeholders play an important role in maintaining high equine welfare standards. The parts of the equine industry that facilitate this include health, welfare and service specialists such as veterinarians, farriers, animal welfare officers and central and local government officials. With horses culturally important to Travellers/Gypsies (Irish Traveller Movement, 2002), equine stakeholders have associated Traveller/Gypsy horse owners with reduced horse welfare; for example, Horseman et al. (2016) observed that Traveller horses were described as 'particularly vulnerable to compromise'. Stakeholders identified tethering, lack of food and water provision, limited routine health care and 'broken in too young' as specific Traveller horse welfare concerns. Likewise, a Delphi study with Irish equine stakeholders identified equine welfare issues, their causes and reviewed effective solutions to equine welfare problems (Collins et al., 2009, 2010, 2012). Unregulated events and horse disposal were the main issues considered as a key concern and similar to the Horseman et al.'s (2016) study, stakeholders also identified poor equine welfare in the Traveller horse-owning community (Collins et al., 2009, 2010). Rioja-Lang et al. (2020) prioritised equine welfare concerns in their Delphi study with equine welfare experts in the UK, although they did not identify Traveller/Gypsy horses as vulnerable to compromise. Nevertheless, there rarely appears to be any consideration of whether or not declarations of poor Traveller/Gypsy horse welfare are warranted as there is a lack of robust and factual information on the welfare of Traveller/Gypsy horses. Furthermore, a review of the literature suggests that stakeholder perceptions of equine welfare issues in Traveller/Gypsy horse ownership have not been studied empirically. Therefore, it was

considered that there was a need for comprehensive research on the extent and nature of stakeholders' views of Traveller/Gypsy equine welfare to understand this previously uncharted area.

3.1.1 Stakeholder perceptions of Traveller/Gypsy equine welfare issues

While research to date has not yet `fully` determined stakeholders' views of Traveller/Gypsy horse welfare, there is a good body of literature on stakeholder perceptions of equine welfare in general. Health and welfare issues were identified and discussed in depth in Chapter 1. To summarise, issues that were considered to affect equine welfare included unrecognised/unresolved stress/pain, unsuitable diet and delayed euthanasia (Horseman et al., 2016; Rioja-Lang et al., 2020), inappropriate stabling/turnout (Horseman et al., 2016), unregulated events and horse disposal (Collins et al., 2010) and considerable worm burdens, (Rioja-Lang et al., 2020). In addition to the health and welfare issues identified, equine experts in a Delphi study on Canadian equine welfare identified inappropriate drug use in both the equine sport setting and for medical purposes along with poor access to psychological resources such as social interaction with other horses as prime welfare concerns at the individual horse level. At an equine industry level, ignorance/lack of knowledge and overpopulation of horses were leading welfare concerns in Canada (Dubois et al., 2018) while staff shortages were identified by stakeholders as a contributing factor to horse welfare in the horseracing industry in the UK (Butler et al., 2019).

Health-related concerns were also universal across all stakeholders' perceptions of racehorse welfare (Butler et al., 2019). Lack of responsibility and low income were factors perceived by animal agencies in the United States as contributors to horse neglect and abandonment (Stull and Holcomb, 2014). Based on stakeholders' perceptions, it is evident there are various issues that contribute to poor equine welfare issues. However, while veterinarians identified poor nutrition, parasite control and over-population of horses as key health and welfare concerns in a study on a Native American

Reservation in South Dakota, USA (an indigenous minority group with a distinct horse culture), they also recognised strengths within the reservation for good horse welfare. This is particularly important with regard to the issue of Traveller/Gypsy horse welfare as positive aspects of Traveller/Gypsy horse ownership are rarely reported. Rowland et al. (2019) did find that Traveller horse owners in Ireland had a good knowledge of the natural behaviour and natural environment of horses and its application in their management practices. Whilst the prevalence of key animal welfare issues is often informed by stakeholders' knowledge and expertise, there is also a need for empirical evidence to accurately measure and assess the true extent of these welfare issues (Chadwick et al., 2017). Further, according to O'Loughlin and Kelly (2004), a good knowledge of the subject area is more important than expertise alone.

3.1.2 Factors that influence stakeholder perceptions

In addition to identifying stakeholder views of equine health and welfare concerns, factors that have contributed to these perceptions have been investigated, with perceptions often depending on factors such as demographic variables and socioeconomic status. For example, Visser and Van Wijk-Jansen's (2012) exploratory study on knowledge, attitudes and practices in relation to equine welfare which included stakeholders (horse trainers) found that female respondents were more concerned about equine welfare than male respondents. This finding is consistent with other studies (Heleski et al., 2006; Prickett et al., 2010).

Another factor found to have an influence on perception of equine wellbeing was educational level. Equid industry members in South Dakota, USA with the lowest level of education were more indecisive on whether water and food provision was an indicator of equine wellbeing than those with higher levels of education (McNeill et al., 2017). In the same study, income level and area and location of residency were found to be contributory factors in influencing perceptions to equine welfare challenges. Respondents earning in excess of US\$100,000 had a greater number of undecided responses on

parasite infestations as a welfare challenge than those on a lower income and respondents who resided in Eastern South Dakota agreed more that the neglect of a horse's physical needs was a key concern in South Dakota than their Western South Dakota counterparts. Furthermore, respondents from rural areas were less likely to agree than those from urban/suburban areas that keeping current records was necessary to monitor animal well-being (McNeill et al., 2017).

Different stakeholder roles within the equine industry were found to influence perceptions of equine welfare challenges (Horseman et al., 2016; Butler et al., 2019). For example, veterinary surgeons and racehorse trainers classified health challenges such as prevention of diseases to a greater extent than other stakeholder participants (owners, stable staff) (Butler et al., 2019). Participants from equine charitable organisations/enforcement workers were more likely to identify Travellers to compromise horse welfare than other stakeholders in Horseman et al.'s (2016) study.

While demographic factors may have an influence on stakeholders' perceptions of horse welfare, perceptions may also be related to relationship between horse owner and equine services. Coe et al. (2007) reported that the veterinarian-client relationship was a key aspect of client expectations of veterinary care. In addition to providing veterinary care, clients expected the veterinarian to be caring, considerate, supportive and to be treated as an individual. Therefore, the quality of the relationship between the horse owner and the equine service is likely to influence engagement between these two parties. However, the barriers that lie in the path of the wider Traveller/Gypsy communities accessing a variety of services have been well documented and discussed at the outset of this work (in Chapter 1). Some of the key reasons cited for reduced engagement with a wide range of services include stigmatisation and lack of cultural understanding (Matthews, 2008; Cemlyn et al., 2009; Francis, 2013) and prejudice, hostility and discrimination (Cemlyn et al., 2009). These experiences differ greatly to what clients expect of veterinary care as discussed above (Coe et al., 2007). While the prospect of

Traveller/Gypsy horse owners' engagement with necessary services are likely to be reduced, these stereotypes and lack of cultural understanding are also likely to impact how stakeholders engage with and perceive Traveller/Gypsy horse owners. In fact, Traveller horse owners stated that lack of engagement by local authorities was a prime factor for the lack of support for Traveller horse project development in Ireland. However, in this same study, reference was made to some positive relationships between Traveller horse owners and both the veterinary services and horse welfare organisations (Pavee Point, 2019).

While veterinarians in a study in South Dakota identified a number of horse welfare issues on the reservation, they also expressed an unwillingness to provide their services to the Native Indian community although reasons for this reluctance were not reported (Gebhart and Bott, 2013). With the client-equine stakeholder relationship fundamental to the equine's welfare, this research may be beneficial by identifying current relationships between stakeholder and Traveller/Gypsy horse owner. By exploring ways to facilitate positive relationships and engagement between Traveller/Gypsy horse owners and equine services, stakeholder perceptions of this horse owning community may be enhanced.

In addition to the above-mentioned factors influencing perceptions of equine welfare, the media too has a powerful influence in reinforcing perceptions (Morris, 2000). The media is partly responsible for the unfounded negativity surrounding Traveller horse ownership (Pavee Point, 2019). Different media have reported that Travellers are associated with indiscriminate breeding in the Sunday Telegraph (Lyons, 2018) and have drawn attention to disagreements between Travellers and councils over grazing land for horses in the Irish Times (Holland, 2018). Connected to this negative media coverage of Traveller/Gypsy horse ownership and horse welfare is the need to examine the influences and impact of media representations of Traveller/Gypsy horse culture on stakeholder perceptions of this community. This is especially significant to this study as scientific information on

Traveller/Gypsy horse welfare is minimal, therefore, an understanding of equine stakeholder's information seeking behaviours and their preferred communication styles is vital for ensuring that accurate and reliable information on Traveller/Gypsy culture and horse culture is sourced and disseminated to stakeholders. This information may also help inform future equine welfare policy.

3.1.3 Rationale

The purpose of this part of the research study was to address the lack of empirical research on stakeholder perceptions of Traveller/Gypsy horse ownership and horse health and welfare. It is evident that there are a number of factors that influence stakeholders' perceptions of equine health and welfare although these factors have not been examined in the context of Traveller/Gypsy horse welfare. By including demographic variables, this study aims to provide insight into which factors influence stakeholders' perceptions of Traveller/Gypsy horse ownership and horse welfare. An understanding of these factors will play an important role in increasing awareness of how horse ownership within these ethnic communities is viewed. Finally, support for different proposals to help improve Traveller/Gypsy horse welfare, if necessary, was assessed. This information is valuable as it may be applied to strategies for improved equine welfare across all horse owning communities.

3.2 Methodology

This study was approved by the Royal (Dick) School of Veterinary Studies, University of Edinburgh, Human Ethics Review Committee (HERC_235_18)

The methodology for the stakeholder survey closely resembled that of the public survey and is outlined in Chapter 2.

3.2.1 Questionnaire Design

A survey questionnaire was designed to gather information, views and experiences from equine stakeholders on Traveller/Gypsy horse care, management and welfare. Based on a literature review, a number of perceived issues related to Traveller/Gypsy horse welfare were identified. Answering options for the items used in the questionnaire were provided using a six-point Likert-type scale (Likert, 1932). Respondents were given the opportunity to add optional comments following selected parts of the questionnaire. If not specified, statements for each section were generated for this study and were based on a literature review and the research teams' expertise in the area.

The four-section questionnaire was designed to capture the following criteria relating to Traveller/Gypsy horse welfare (Questionnaire can be found in *Appendix B1*).

Demographic information: The first part of the questionnaire comprised of statements that addressed stakeholders' demographic information. In addition to gender and age, the following information was requested: occupation, occupation practice location, ethnicity of Travellers/Gypsies in location, number of Traveller/Gypsy sites in location using a multiple-choice question format and source/s of information on Traveller/Gypsy culture on a six-point Likert-type scale ranging from 1, not at all to 6, always.

Traveller/Gypsy Horse Welfare: The second section sought experiences and views on a number of related subjects. Firstly, stakeholders were asked how often they addressed equine health/welfare issues with Traveller/Gypsy

groups on a six-point Likert-type scale ranging from 1, not at all to 6, very often, whether they were personally aware of the number of both Traveller/Gypsy horses and neglected horses in their location in a multiple-choice format and to give estimates. An open question allowed stakeholders to state the prime signs of horse neglect in their area. Stakeholders then responded to statements on a six-point Likert-type scale ranging from 1, not common at all to 6, very common, on the prevalence of health, welfare and management issues in Traveller/Gypsy horses. Level of concern about the welfare of Traveller/Gypsy horses was measured on a six-point Likert-type scale ranging from 1, not concerned at all to 6, very concerned. To gain more insight into Traveller/Gypsy horse health, in the final part of this section, stakeholders were asked to respond to statements regarding the prevalence of various horse health issues and their significance to Traveller/Gypsy horses. The questionnaire used various disease syndrome descriptors, with descriptors grouped into the following categories: respiratory diseases, skin diseases, eye problems, dental disease, hoof problems, non-foot conditions, internal medical problems/behaviour issues, external parasites and weight problems. These disease syndromes were evaluated using a six-point Likert-type scale ranging from 1, not prevalent at all to 6, highly prevalent. There was also an option of 'other' to allow participants to state problems not listed in the health-related descriptors. Stakeholders were asked to only score the conditions that they were aware of or to otherwise tick 'not applicable'. The development of health-related descriptors was based on the National Equine Health Survey (NEHS) (Blue Cross, 2017).

Traveller/Gypsy Horses Care and Welfare: The next section requested stakeholders to indicate their level of agreement ranging from 1, strongly disagree to 6, strongly agree on health and welfare statements related to Traveller/Gypsy horses such as 'are well cared for' and 'have poor health condition'. The current level of welfare of Traveller/Gypsy horses, according to stakeholders was evaluated using a six-point Likert-type scale ranging from 1, very poor to 6, very good. Finally, stakeholders were invited to

indicate how various media sources were likely to present a positive image of Traveller/Gypsy horse welfare on a six-point Likert type scale ranging from 1, not likely at all to 6, very likely.

Traveller/Gypsy Horse Owners: In the first part of this section, stakeholders were asked how likely Traveller/Gypsy horse owners were to request the advice of their occupation on a six-point Likert-type scale ranging from 1, not likely at all to 6, very likely, with the option of `not applicable` available for respondents whose occupation does not apply, e.g., equine administration. Further, respondents had the opportunity to add further comments if they wished to do so.

In the next two parts, stakeholders responded to statements related to Traveller/Gypsy horse owners' care, management, husbandry practices and responsibility such as `know how to adequately care for a horse`, `should be prevented from owning horses` and `are aware of horse welfare legislation`. To provide an understanding of how stakeholders perceive the difficulties that Traveller/Gypsy horse ownership, the next part centred on the difficulties that horse owners may encounter. Respondents had to indicate their level of agreement or disagreement for both parts on a six-point Likert type scale ranging from 1, strongly disagree to 6, strongly agree. Stakeholders were next asked to indicate how aware Traveller/Gypsy horse owners were of the concept of horse welfare. This was evaluated on a six-point Likert-type scale ranging from 1, not aware at all to 6, very aware. In the final part of this section, respondents stated how Traveller/Gypsy horse owners are perceived by their occupation using a multiple-choice format, i.e., `positive perception`, `negative perception` or `don't know` and were requested to give a reason for their answer.

Responsibility: The final section of the questionnaire evaluating who has the responsibility for Traveller/Gypsy horse welfare followed the same format as the public questionnaire (Chapter 2).

Additional Information: Information was comparable to that in the public survey in chapter 2.

3.2.2 Stakeholders

The questionnaire was distributed to equine stakeholders who currently work or had previously worked with Traveller/Gypsy horses/horse owners in the UK and Ireland. Categorisation of stakeholders included equine health professionals, animal welfare workers, equine service providers and council/trading standards officials. There was also an opportunity for respondents to choose ‘other’ and specify an occupation not included in the choices offered. These categories were identified according to the wider research teams’ direct knowledge of stakeholders and through web- based research.

3.2.3 Pilot Study

The initial version of the questionnaire was piloted with ten students and staff at the University of Edinburgh and Scotland’s Rural College (SRUC) to elicit possible difficulties in understanding of questions and to improve wording and format, if necessary. Based on respondents’ feedback, modifications were made as follows: the difference between broadsheet and tabloid newspapers was clarified by including an example of each.

3.2.4 Recruitment

The questionnaires were emailed to over 100 organisations considered to be associated with Traveller/Gypsy horses/horse welfare between July 2018 and September 2018. Organisations were sourced using online platforms, veterinary publications and the research team’s knowledge of relevant contacts and organisations. Stakeholders were also made aware of and encouraged to complete the survey through requests from organisations already working in the field. Further, various organisations promoted the study via their social media platforms and were requested to forward the questionnaire to members of their organisation for participants to complete.

3.2.5 Procedure

The stakeholder questionnaire was transferred onto the survey tool `Online Survey` (Jisc, Bristol, UK) and the research questionnaire was made available via a link to the survey in September 2018. All organisations were contacted by email with an introductory letter (*Appendix B2*) and a link to the questionnaire. Information was also provided on the background of the study, defined the level of commitment required, and confirmed that complete anonymity would be ensured (*Appendix B1*). In order to optimise the response rate, reminders for the study were sent again to stakeholders during October 2018 with the questionnaire link. The questionnaire remained open until December 31st, 2018.

3.2.6 Data Analysis

Analysis followed the same format as the public questionnaire (Chapter 2). Independent-samples t-test, and a one-way analysis of variance (ANOVA) with Tukey post hoc test analysis determined statistically significant differences between independent groups. Chi-square test established differences in frequencies. Principle Component Analysis (PCA) was used as a data reduction technique. The criteria for PCA, was that the variable had a loading of at least 0.30 and did not load on more than one component (Tabachnick and Fidell, 2006). Multiple regression analysis determined statistically significant predictors of the dependent variable.

Respondents provided their age as year of birth. Participants were classified into four age groups, 20 - 34 years, 35 - 44 years, 45 - 55 years and 56 years and over. These age groups were developed for balanced designs. For multiple regression analysis, age as a continuous variable was used. Region of residence of practice was coded as follows: England: South East (SE), South West (SW), North of England (NE) and the Midlands. Ireland: Connacht, Leinster and Munster. Wales, Scotland/Northern Ireland and Nationwide. Scotland/Northern Ireland were grouped together as the `Control of Horses Act` is not in place in these nations.

Occupation was grouped as follows: veterinarian; animal welfare officer/worker (AWO); equine services; equine education/trainer; council/trading standards/police officers; voluntary welfare and other workers (administration etc), hereafter referred to as `other` occupations. Respondents were assigned to the occupation that best described their roles within the equine industry.

Unless stated otherwise, data are mean $\pm$ standard deviation.

3.3 Results

3.3.1 Demographic information

A total of 103 people fully completed the stakeholder questionnaire. Two council organisations opted out of disseminating the survey and informed the researcher accordingly. The reasons given were as follows:

- 1 The service refers issues regarding Traveller/Gypsy horse welfare to the Royal Society for the Prevention of Cruelty to Animals (RSPCA) and due to trading standards budget cuts were not in a position to complete the survey.
2. The service was advised not to participate in the survey

Most respondents were women (68.9% $n = 71$), 29.1% ($n = 30$) were men and 1.9% ($n = 2$) preferred not to disclose their gender identity. Of the 103 respondents, 22.3% ($n = 23$) ranged in age 20 to 34 years with 29.1% ($n = 30$) aged 35 - 44, 27.2% ($n = 28$) aged 45 - 55 and 21.4% ($n = 22$) aged 56 years and over. The mean age of respondents was 44.87 years ($\sigma = 11.83$).

The survey succeeded in reaching a variety of occupations that work/worked with Traveller/Gypsy horse owners. The highest percentage of respondents were animal welfare officers/workers (22.3%, $n = 23$) followed by veterinarians (21.4%, $n = 22$), council/trading standards/police (17.5%, $n = 18$), equine education/trainers (11.7%, $n = 12$), `other` occupations (12.6%, $n = 13$) and voluntary animal welfare workers (7.8%, $n = 8$).

Most respondents (60.2%, $n = 62$) practised their occupation in England, followed by Ireland (29.1%, $n = 30$), 4.9% ($n = 5$) practised in Scotland, 2.9% ($n = 3$) in Wales, 1% ($n = 1$) in Northern Ireland and 1% ($n = 1$) worked across multiple areas. The South East (England) represented the greatest number of occupational practice areas, *Table 3.1*.

Table 3.1 Number and percent of stakeholder occupational practice areas in the UK and Ireland.

Occupational practice area	%	n
Connacht (Ireland)	5.8	6
Leinster (Ireland)	8.7	9
Midlands (England)	10.7	11
Munster (Ireland)	12.6	13
Nationwide	10.7	11
North England	14.6	15
Scotland/Northern Ireland	5.8	6
South East (England)	25.2	26
South West (England)	2.9	3
Wales	2.9	3

The highest response was from equine education/trainers in the South East of England, followed by AWOs in Munster and South East England and council/trading standards/police in Munster, *Table 3.2*.

Table 3.2 Frequency of different occupations in stakeholders practice areas.

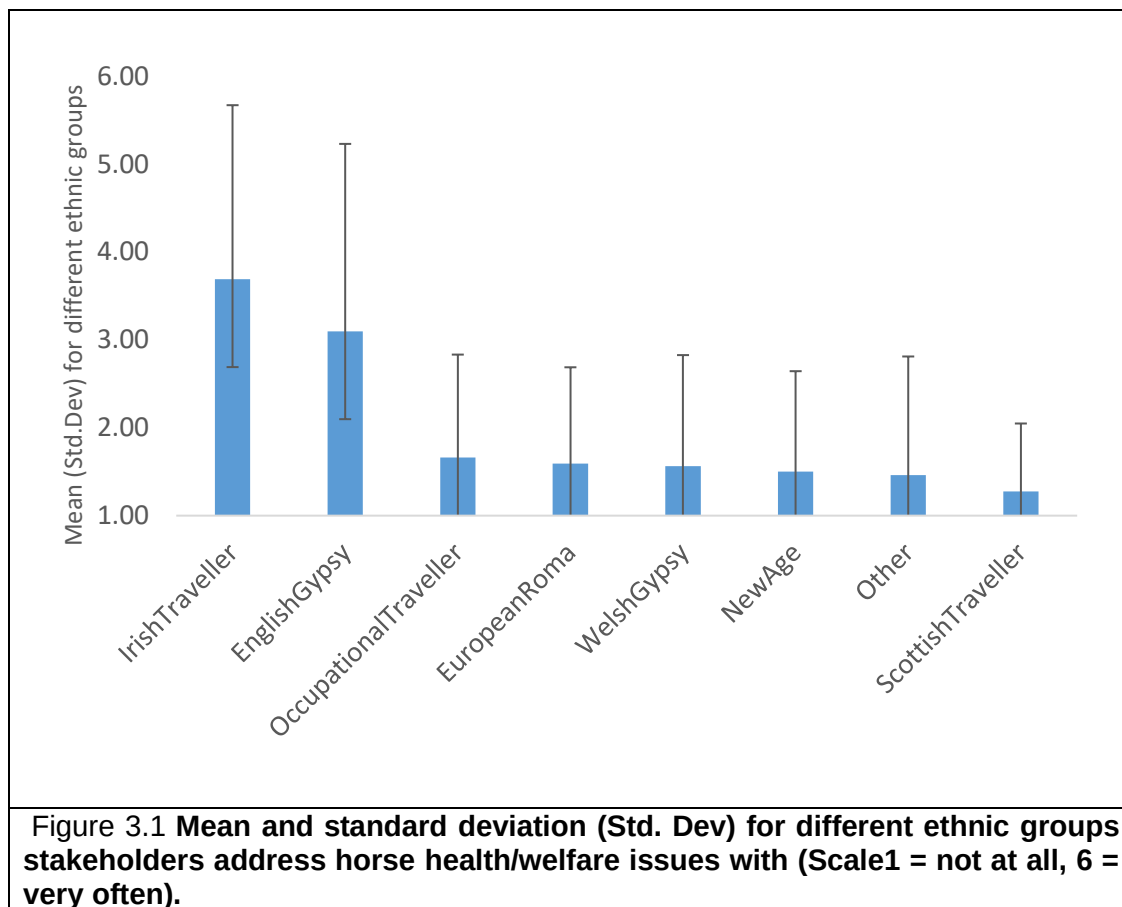
Practice Area	Veterinarian	AWO	Council/ trading standard/ police	Equine service	Equine ed/ trainer	Voluntary welfare	Other
Connacht (Ireland)	1	1	3	0	1	0	0
Leinster (Ireland)	3	1	2	1	1	1	
Midlands (England)	0	5	0	0	1	2	3
Munster (Ireland)	3	2	5	0	0	2	1
Nationwide	3	5	1	0	0	0	2
North England	3	2	4		4	0	2
Scotland/N.I.	2	1	1	1	0	1	0
South East (England)	4	5	2	4	6	1	4
South West (England)	0	1	0	1	0	0	1
Wales	2	0	1	0	0	0	0

Most respondents reported that the ethnicity of Traveller/Gypsy communities in their area were Irish Travellers (41.7%, n = 43) followed by English Gypsies (21.4%, n = 22). Scottish Gypsies/Travellers accounted for 2.9% (n = 3) and Welsh Gypsies (1%, n = 1). Nearly six percent (n = 6) of respondents did not know the ethnic groups in their area while the remaining ethnic groups in respondents' area were a combination of Irish, English, Welsh, Scottish and Romany Travellers and Gypsies (27.2 %, n = 28).

Just under half of the respondents (49.5%, n = 51) knew how many Traveller/Gypsy sites were in their location while the rest (50.5%, n = 52) did not know how many sites were within their location. The number of sites reported varied from one to 600 and was described by one person as being 'too many to count'.

3.3.2 Health/welfare issues addressed with different ethnic groups

Stakeholders were asked to indicate how often they addressed equine health and/or welfare issues with different ethnic groups. The highest mean score was for Irish Travellers, and Scottish Travellers were the lowest ethnic group stakeholders addressed health/welfare issues with, *Figure 3.1*.



There was a statistically significant effect of occupation on how often equine health/welfare issues were addressed with Irish Traveller horse owners, $F(6, 90) = 5.42, p < 0.01$. Post hoc analysis revealed that AWOs ($\bar{x} = 4.30, \sigma = 1.89, n = 23$) addressed health/welfare issues significantly more often with Irish Traveller horse owners than equine services ($\bar{x} = 1.17, \sigma = 0.40, n = 6$), $p < 0.01$ and equine education/trainers ($\bar{x} = 2.33, \sigma = 1.92, n = 12$), $p = 0.03$. Equine services ($\bar{x} = 1.17, \sigma = 0.40, n = 6$) addressed health/welfare issues significantly less often than voluntary welfare ($\bar{x} = 4.63, \sigma = 1.99, n = 8$), $p = 0.08$ and `other` occupations ($\bar{x} = 4.92, \sigma = 1.84, n = 13$), $p < 0.01$. Council/trading standards/police ($\bar{x} = 1.07, \sigma = 0.25, n = 15$) addressed health/welfare issues significantly less often than voluntary welfare ($\bar{x} = 4.63, \sigma = 1.99, n = 8$), $p = 0.03$ and `other` occupations ($\bar{x} = 4.92, \sigma = 1.84, n = 13$), $p < 0.01$. The effects of gender, age group, region of occupational

practice on different ethnic groups that stakeholders worked were non-significant, $p < 0.05$.

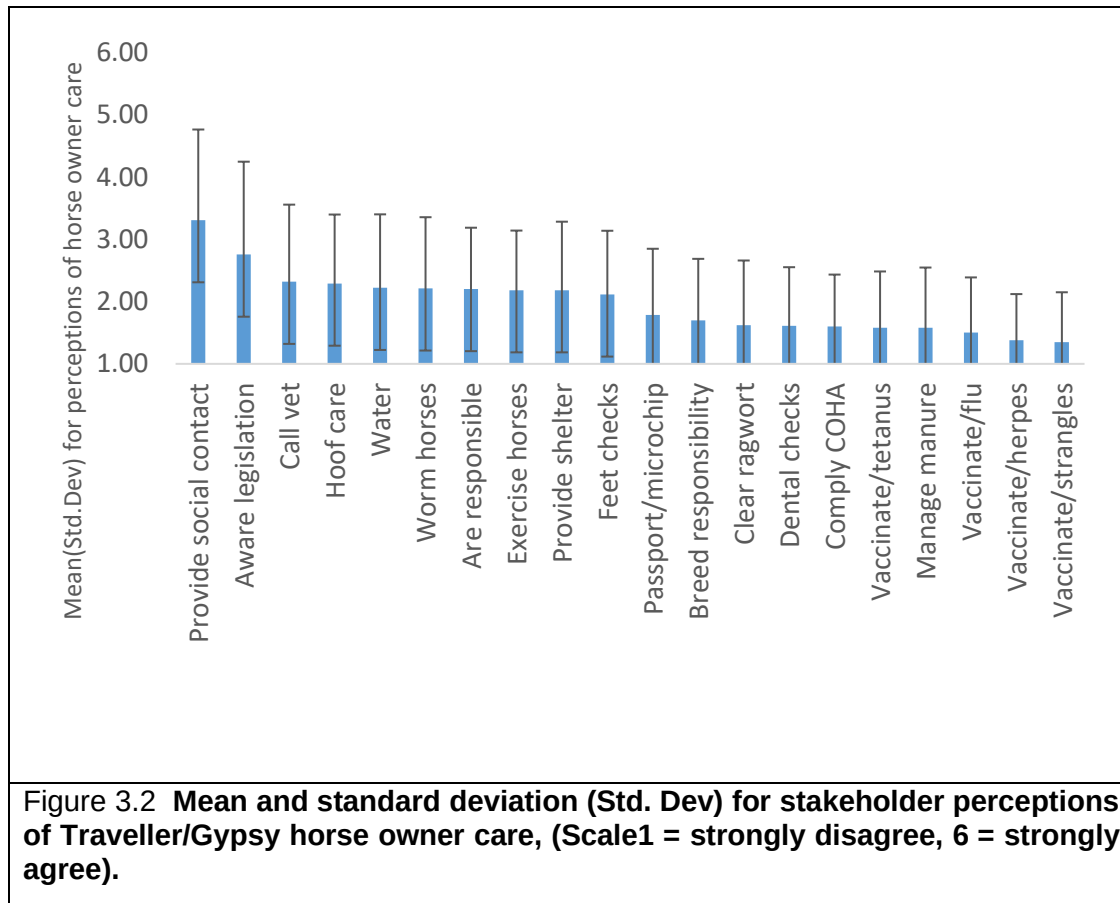
3.3.3 Number of horses

Just over half of stakeholders (50.5%, $n = 52$) claimed that they were personally unaware of the number of Traveller/Gypsy horses in their location while 49.5% ($n = 51$) said they were aware. The number of horses estimated by stakeholders varied from one to 100. Asked whether they were personally aware of the number of neglected Traveller/Gypsy horses, 35.9% ($n = 37$) stated they did while 64.1% ($n = 66$) said they did not. Of those who stated they were aware of the number of neglected horses, 48.6% ($n = 18$) estimated the average number of neglected horses at 251 horses (minimum = 2, maximum = 2000). Of the stakeholders who were not aware of the number of neglected horses, 4.5% ($n = 3$) estimated an average of 216 horses (minimum = 50, maximum = 500).

When asked the prime signs of neglect in Traveller/Gypsy horses in their location, there were responses from 68 respondents. The most prevalent signs of neglect cited were weight/body condition issues (44 references) followed by 42 references to health-related concerns. These included parasites (16 references), diseases (15 references) and wounds (11 references). There were 30 references to lack of resources such as food, water and shelter. Tethering/fly-grazing accounted for 27 references and lack of hoof care (24 references). There were 17 references to the keeping of equines in unsuitable environments with ten of those references relating to the presence of ragwort while abandoned horses accounted for ten references and dead horses accounted for four references. Horses ridden/driven to distress accounted for 12 references, abuse obtained seven references and neglect received five references. Both indiscriminate breeding and unkempt horses received three references, absence of the Five Freedoms (Farm Animal Welfare Council (FAWC), 1993) received two references and lack of turn out, delayed veterinary care, poor mouth care and 'depression' were referred to once.

3.3.4 Perceptions of Traveller/Gypsy horse owner care

Stakeholders were asked to respond to 20 questions on their perceptions of Traveller/Gypsy horse owner care. Stakeholders (n = 103) had highest agreement with the statement that Traveller/Gypsy horse owners `provide their horses with social contact with other horses` followed by `are aware of legislation`. The least agreement was with `vaccinate their horses against strangles`, Figure 3.2.



PCA was run on the 20 items that measured stakeholder perceptions of Traveller/Gypsy horse owner care. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.889. Analysis identified two factors, accounting for 59% of the total variance. Factor 1, labelled `Health care` as it related primarily to health care practices accounted for 47.6% and Factor 2, labelled

`Management` as it was associated with horse owner management practices accounted for 11.4% of the variance, *Table 3.3*.

Table 3.3 Factors extracted from Principal Component Analysis that measured stakeholder perceptions of Traveller/Gypsy horse owner care, with loadings for each factor. Coefficients which load together are bolded		
Statements	Health care	Management
Aware of legislation	.083	.194
Responsible horse owners	.188	.774
Comply with COHA	.123	.482
Provide social contact	-.220	.616
Call Vet	.437	.668
Vaccinate/Flu	.882	.157
Vaccinate/Tetanus	.808	.284
Vaccinate/Strangles	.932	.085
Vaccinate/Herpes	.915	.032
Deworm	.502	.625
Regular dental checks	.776	.372
Regular feet checks	.427	.672
Provide hoof care	.280	.727
Provide shelter	.183	.785
Exercise	.383	.615
Breed responsibility	.606	.468
Provide water	.489	.570
Clear ragwort	.747	.319
Manage manure appropriately	.630	.301
Microchip/Passport	.551	.433

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was 0.934 for `Health care` (7 items), and 0.904 for `Management` (12 items). Stakeholders evaluated both `Health care` ($\bar{x} = 1.70$, $\sigma = 0.79$) and `Management` ($\bar{x} = 1.93$, $\sigma = 0.80$) to be low. There was a statistically significant effect of gender on `Health care`, $t(99) = -2.948$, $p < 0.01$. Men had higher scores ($\bar{x} = 2.05$, $\sigma = 1.03$, $n = 30$) than women ($\bar{x} = 1.55$, $\sigma = 0.63$, $n = 71$). There were no statistically significant effects of age, occupation and region of occupational practice on factor scores, $p > 0.05$, (*Appendix B3*).

The overall mean of stakeholder perception of Traveller/Gypsy horse owner care, in addition to the individual factors `Health care` and `Management`

were used for multiple regression analysis. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.84. The variables in the model were significant predictors of `Management`, $F(22, 80) = 4.10, p < 0.01, adj.R^2 = 0.401$. The significant predictors of `Management` were region, with stakeholders from Munster giving higher scores for `Management` which indicated that they perceived management to be better. Furthermore, occupation (equine education/trainer and `other` occupations), level of welfare and perception of Traveller/Gypsy horse owners were also significant predictors of `Management`. In particular, stakeholders who were involved in equine education and trainers perceived management to be better. The positive regression weights indicate that participants with higher scores on level of welfare and perception of Traveller/Gypsy horse owners also perceived management practices to be better, *Table 3.4*.

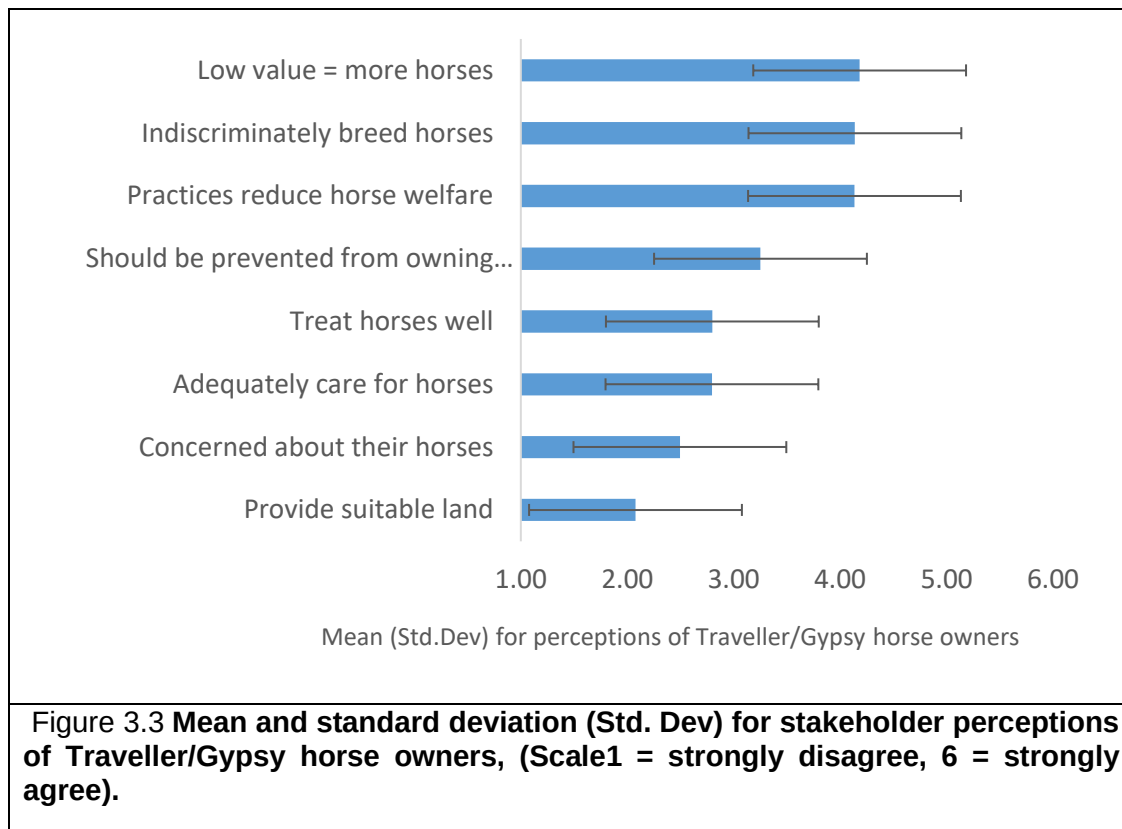
Table 3.4 **Multiple regression analysis on the factors that influence perception of Traveller/Gypsy horse `Management care`. Significant results are bolded ($p < 0.05$).**

Predictors	B	t	p
Gender (Woman)	-.113	-.633	0.52
Region (Connacht)	.374	1.149	0.25
Region (Leinster)	.221	.864	0.39
Region (Midlands)	.078	.310	0.75
Region (Munster)	.637	2.602	0.01
Region (Nationwide)	.480	1.887	0.06
Region (North England)	.081	.379	0.70
Region (Scotland/Northern Ireland)	.037	.114	0.90
Region (South West)	.277	.698	0.48
Region (Wales)	.427	1.059	0.29
Occupation (council/trading standards official/police)	.198	.865	0.39
Occupation (equine education/trainer)	.517	2.026	0.04
Occupation (equine services)	.339	1.115	0.26
Occupation (`other' occupation)	.541	2.111	0.03
Occupation (veterinarian)	.117	.537	0.59
Occupation (voluntary welfare)	.239	.891	0.37
Request advice from equine services	.124	1.878	0.06
Level of horse welfare	.293	3.735	0.01
Age	-.002	-.364	0.71
Aware of concept of animal welfare	.031	.575	0.56
Difficulties encounter by Traveller/Gypsy horse owners	-.037	-.550	0.58
Stakeholder perception of Traveller/Gypsy horse owners	.301	2.584	0.01

3.3.5 Perceptions of Traveller/Gypsy Horse Owners

When asked to indicate their level of agreement on statements relative to Traveller/Gypsy horse owners, stakeholders had highest agreement with the statement that `the low market value of horses has allowed Travellers/Gypsies to buy more horses than they can care for` followed by `are more likely to indiscriminately breed from their horses. Stakeholders had

the lowest level of agreement with the statement `provide suitable land for their horses, *Figure 3.3*.



PCA was run on the eight items that measured stakeholder perceptions of Traveller/Gypsy horse owners. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.687. The analysis identified two factors, accounting for 47.7 % of the variance. Factor 1, accounting for 30.1% of the variance was labelled `Considerate owners` with items relating to the positive aspects of horse management. Factor 2, accounting for 17.6 % of the variance was labelled `Inadequate practices` where items are linked to poor management practices. Loadings from the exploratory factor analysis are displayed in *Table 3.5*.

Table 3.5 Factors extracted from Principal Component Analysis that measured stakeholder perceptions of Traveller/Gypsy horse owners, with loadings for each factor. Coefficients which load together are bolded

Statements	Considerate owners	Inadequate practices
Most treat their horses well	.805	-.192
Are more likely to indiscriminately breed from their horses	-.039	.812
The low market value has allowed Traveller/Gypsy owners to buy more horses than they can care for	.035	.807
Know how to adequately care for their horses	.627	-.055
Provide suitable land for their horses	.547	.082
Their practices seriously reduce the welfare of horses	-.304	.595
Are generally concerned about horse welfare	.626	-.188
Should be prevented from owning horses	-.295	.060

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was 0.627 for 'Considerate owners' (4 items) and 0.620 for 'Inadequate practices' (3 items). The overall mean score for 'Considerate owners' was 2.54 ($\sigma = 0.84$) and for 'Inadequate practices' was 4.15 ($\sigma = 1.30$). There was a statistically significant effect of occupation on the factor 'Considerate owners', $F(6, 96) = 3.119, p < 0.01$. Post hoc analysis revealed lower scores by 'other' occupations ($\bar{x} = 1.80, \sigma = 0.52, n = 13$) on Traveller/Gypsy horse owners being considerate owners than veterinarians ($\bar{x} = 2.70, \sigma = 0.81, n = 22$), $p = 0.02$, AWOs ($\bar{x} = 2.71, \sigma = 0.80, n = 23$), $p = 0.02$, equine services ($\bar{x} = 3.00, \sigma = 0.77, n = 7$), $p = 0.02$ and voluntary workers ($\bar{x} = 2.93, \sigma = 0.49, n = 8$), $p = 0.03$. There were no statistically significant effects of gender, age group and region of occupational practice on factor scores, $p > 0.05$ (Appendix B4).

The overall mean of the eight items that measured stakeholder perceptions of Traveller/Gypsy horse owners, in addition to the overall mean of the factors 'Considerate owners' and 'Inadequate practices' were used for

multiple regression analysis. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.01. The variables in the model were significant predictors of stakeholder overall perception of Traveller/Gypsy horse owners, $F(22, 80) = 5.90$, $p < 0.01$, $adj.R^2 = 0.514$. The contributing predictors were horse owner care, request advice, region, occupation, difficulties and level of concern. Participants from Scotland/Northern Ireland had higher scores for overall perception of Traveller/Gypsy horse owners and therefore, had an enhanced perception of these horse owning groups. Furthermore, the positive regression weights indicated that participants with higher scores on request advice, level of concern and perception of horse owner care also had enhanced overall perception of Traveller/Gypsy horse owners.

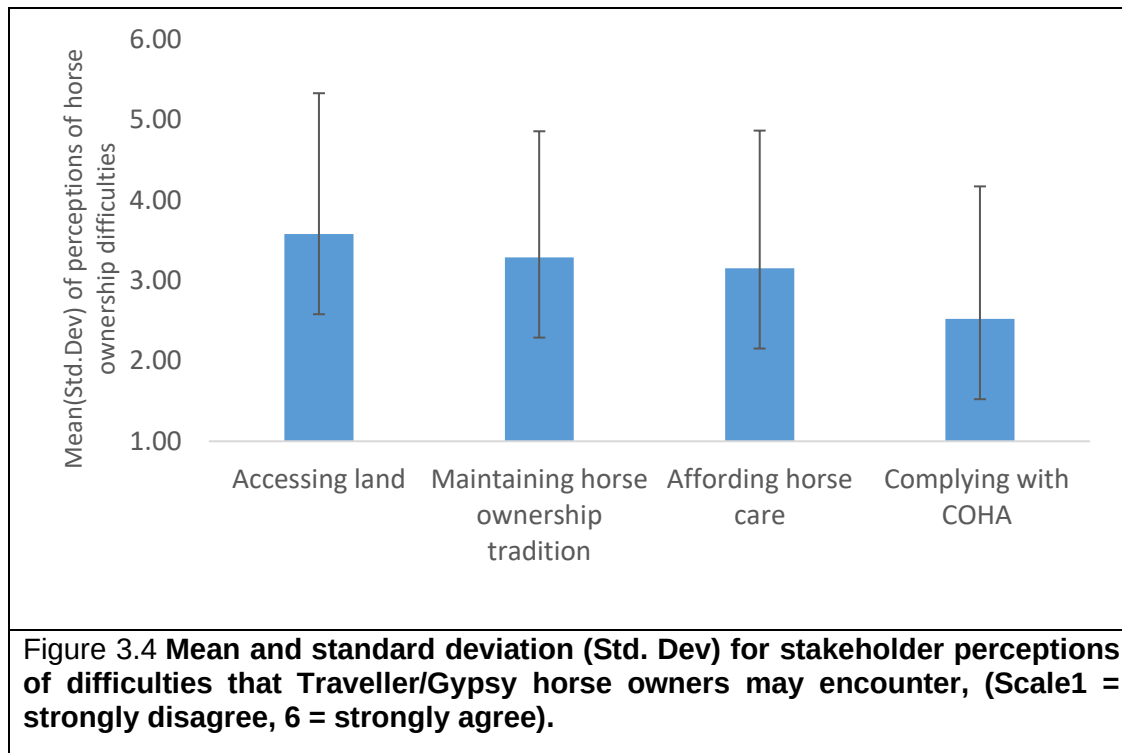
Occupation (‘other’ occupations) and perception of horse owner difficulties had a significant negative weight, therefore, those working in ‘other’ occupations and those who perceived there to be more difficulties had a lower overall perception of Traveller/Gypsy horse owners. The remaining variables were not statistically significant, $p < 0.05$, *Table 3.6*.

Table 3.6 Multiple regression analysis on the factors that influence stakeholder perceptions of Traveller/Gypsy Horse Owners. Significant results are bolded ($p < 0.05$).

Predictors	B	t	p
Gender (Woman)	-.065	-.404	0.68
Region (Connacht)	.047	.159	0.87
Region (Leinster)	-.057	-.248	0.80
Region (Midlands)	-.077	-.345	0.73
Region (Munster)	-.314	-1.412	0.16
Region (Nationwide)	.117	.509	0.61
Region (North England)	-.187	-.979	0.33
Region (Scotland/Northern Ireland)	.571	2.047	0.04
Region (South West)	.106	.296	0.76
Region (Wales)	-.043	-.120	0.90
Occupation (council/trading standards official/police)	-.006	-.031	0.97
Occupation (equine education/trainer)	-.189	-.822	0.41
Occupation (equine services)	-.111	-.408	0.68
Occupation (`other` occupations)	-.781	-3.577	0.01
Occupation (veterinarian)	-.316	-1.644	0.10
Occupation (voluntary welfare)	-.029	-.120	0.90
Request advice from equine services	.158	2.779	0.01
Level of horse welfare	.147	2.064	0.04
Age	-.003	-.516	0.60
Aware of concept of animal welfare	-.002	-.046	0.96
Perception of Traveller/Gypsy horse owner care	.397	3.574	0.01
Difficulties encounter by Traveller/Gypsy horse owners	-.158	-2.744	0.01

3.3.6 Horse ownership difficulties

Stakeholders were asked their level of agreement on four statements on the difficulties that Traveller/Gypsy horse owners may encounter. The highest agreement amongst stakeholders ($n = 103$) was that accessing land for their horses is difficult, followed by maintaining the tradition of horse ownership, affording horse care and complying with the Control of Horses Act (COHA), *Figure 3.4*.



There was a statistically significant effect of gender, occupation and region of practice on difficulties encountered by Traveller/Gypsy horse owners. Men scored significantly higher than women on the difficulties encountered by Traveller/Gypsy horse owners in accessing land, $t(99) = 3.233$, $p = 0.02$, affording horse care/management, $t(99) = -2.536$, $p = 0.02$ and complying with COHA, $t(99) = -2.489$, $p < 0.01$.

Agreement with the statement that Traveller/Gypsy horse owners have difficulties in accessing land, was significantly higher for stakeholders from Munster and Connacht than for those from the South East. Council/trading standards official/police and voluntary welfare had significantly higher agreement than equine education/trainers and AWOs had significantly higher agreement than 'other' occupations. Council/trading standards official/police had significantly higher agreement with the statement that horse owners have difficulty affording horse care and in complying with the COHA than 'other' occupations, *Table 3.7*.

Table 3.7 Means, standard deviations (Std. Dev) and post hoc analysis on the effects of gender, region of practice and occupation on difficulties that Traveller/Gypsy horse owners`, (Scale 1 = strongly disagree, 6 = strongly agree). Significant results are bolded ($p < 0.05$).							
Statements	Demographic variable	n	Mean	Std. Dev	t	df	p
Accessing land for their horses is difficult	Man	30	4.40	1.49	3.233	99	0.01
	Woman	71	3.22	1.73			
	Munster	13	4.53	1.56	P = 0.04		
	South East	26	2.69	1.56			
	Connacht	6	5.16	1.69	P = 0.04		
	South East	26	2.69	1.56			
	AWOs	23	3.73	1.71	P = 0.02		
	`Other`	13	1.83	1.18			
	Council/trading standards/police	18	4.77	1.55	P < 0.01		
	`Other`	13	1.83	1.18			
	Voluntary welfare	8	4.50	1.69	P < 0.01		
	`Other`	13	1.83	1.18			
Affording horse care and management is difficult	Man	30	3.76	1.52	2.356	99	0.20
	Woman	71	2.90	1.74			
	Council/trading standards/police	18	4.16	1.42	P < 0.01		
	`Other`	13	1.76	1.23			
Complying with the COHA is difficult	Man	30	3.10	1.68	2.489	99	0.01
	Woman	71	2.23	1.54			
	Council/trading standards/police	18	3.22	1.66	P = 0.04		
	`Other`	13	1.46	0.66			

3.3.7 Stakeholder perceptions of Traveller/Gypsy horse owners' awareness of the concept of welfare

When asked to indicate how aware Traveller/Gypsy horse owners are of the concept of horse welfare, a mean score of 2.87 ($\sigma = 1.31$) was recorded by stakeholders ($n = 103$) indicating that they believed that horse owners had a low level of awareness. There were no statistically significant effects of gender, age group, region of practice and occupation and Traveller/Gypsy horse owner awareness of the concept of horse welfare, $p > 0.05$.

3.3.8 Perception of Traveller/Gypsy horse owners by stakeholder occupation

When respondents were asked 'how are Traveller/Gypsy horse owners perceived by your occupation?', the majority (75.7%, $n = 78$) reported a negative perception, followed by 'don't know' (16.5%, $n = 17$) and positive perception (7.8%, $n = 8$). The number of male and female respondents perceiving Traveller/Gypsy horse owners in either a positive or negative way did not differ ($\chi^2(df\ 4) = 2.976$, $p = 0.56$). There was no significant effect of age group, occupation or region of practice on the perception of Traveller/Gypsy horse owners by stakeholder occupation, $p > 0.05$.

Stakeholders were asked in an open text question to give a reason for their answer on how Traveller/Gypsy horse owners were perceived by their occupation. Of the 86 stakeholders who stated either a negative or positive perception, 75 of these provided a reason. Of these, three stakeholders stated that they were 'impartial' or did not receive feedback from their colleagues on why this community was perceived as they stated i.e., positive or negative. In total, five themes were identified from the remaining 72 stakeholders. Results are presented according to finalised themes. Participants' quotes are in italics.

Stereotypes and prejudice: The most common responses were related to prejudices and stereotypes (33 references). A number of responses referred to negative perceptions of Traveller/Gypsy horse owners although there were also negative references to the community itself '*Many are sadly unlawful and can behave extremely badly in society*', '*High crime rates/violence is part of their culture/generally dishonest and sly*'. However, there was one reference that alluded to the generalisation of negative perceptions of Traveller/Gypsy horse owners '*There is a general consensus of opinion that as soon as you mention the G&T Community you get a negative response no matter what the subject is*'. One stakeholder was of the opinion that Travellers rather than Gypsies contributed to the negative views of this horse owning community '*Please don't batch them together. Travellers or settled*

travellers (Pikeys) are the issue, not necessarily Gypsies`. Interestingly, negative opinions of Traveller/Gypsy horse owners were ascribed by one stakeholder to the lack of knowledge by those who work in the industry, `Many of the assumptions also stem from vets and others in the 'horse world' having quite inadequate understandings of horse welfare beyond basic health components of good welfare`.

Horse welfare: Horse welfare was central to a number of responses (25 references). Responses related to poor health and welfare, cruelty and neglect and were primarily negative, *`Decades of equine neglect and cruelty`, 'Being a veterinary clinic we only see the sick horses`*. One stakeholder referred to good owners but that this was counteracted by having too many horses to care for, *`I feel that some are good owners but as most have too many horses and keep breeding more many suffer`*.

Abandonment/Fly-grazing: Twelve references were ascribed to abandonment and fly-grazing as reasons for their occupations' perception of Traveller/Gypsy horse owners with all these responses relating to either one or both of these, *`Frequent problems with abandonment`, `They are just abandoned to illegally fly graze`*. In addition, there was one reference to the public's complaints about fly-grazing, *`Because much of the time, we are dealing with complaints by the public about fly-grazing horses on Council land`*.

Engagement with services: There were four references to Traveller/Gypsy horse owners' lack of engagement with services with all responses indicating that Traveller/Gypsy horse owners are reluctant to engage with the veterinary service *`don't call a vet or take advice often enough`, `Generally very slow to seek veterinary intervention and when vets are called often too late to affect a positive outcome`*.

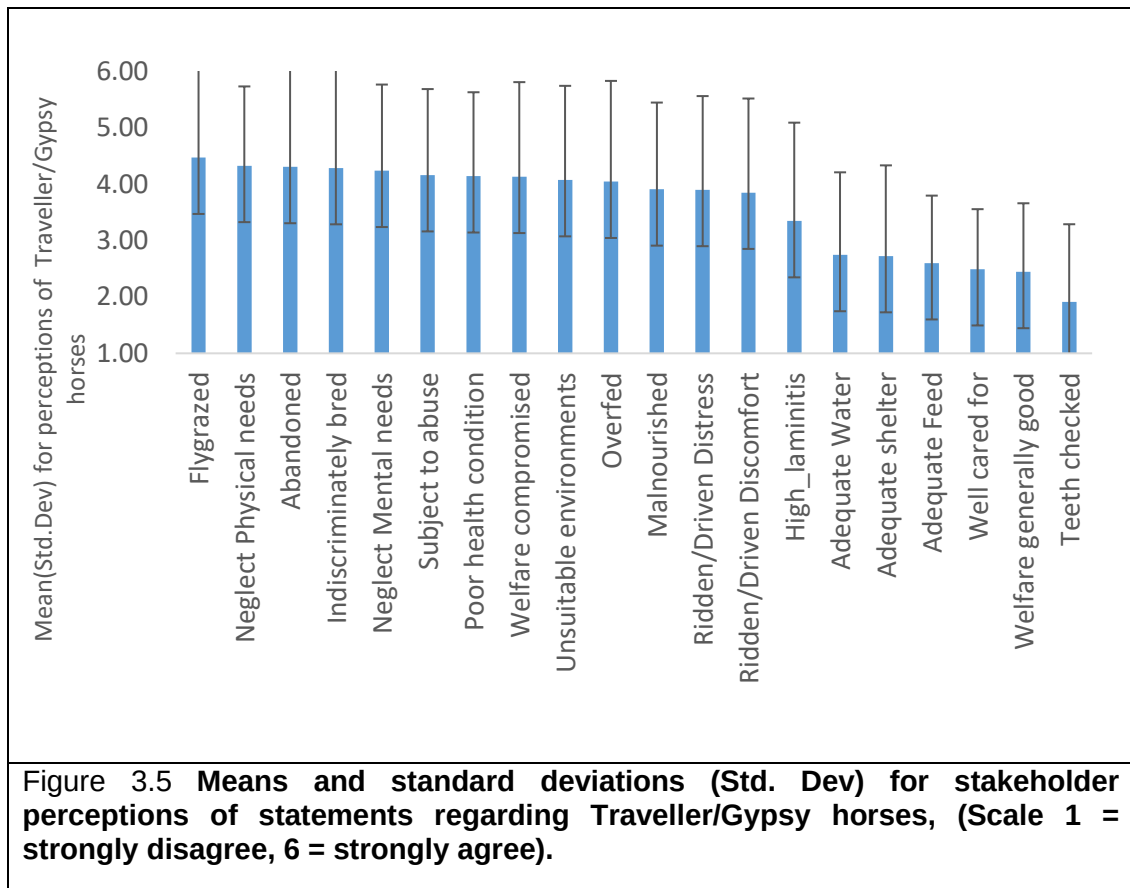
Positive references: A minority of respondents (seven references) reported positive reasons for stakeholder perceptions of Traveller/Gypsy horse owners. One stakeholder stated that *`Our interaction within job role is*

usually positive` while another stated that `They understand the need for dentistry in their horses`. Further, there was a recognition that horse welfare issues can occur in all horse owning communities (one reference), *`Equine welfare issues happen across all communities - rich, posh, poor, traveller`.*

Education: One statement referred to the lack of support and education provided to Traveller communities, which may give rise to poor animal welfare knowledge, *`The lack of support and education provided to the travelling community has left their community in the dark ages in regards to animals welfare and modern veterinary methods that are kinder less painful ways to treat equines`*. This same stakeholder advocates for education and horse projects *`I feel education and providing urban horse projects could be beneficial to both owners and horses`*.

3.3.9 Perception of Traveller/Gypsy horses

When asked to indicate their level of agreement on statements related to the management and care of Traveller/Gypsy horses, stakeholders (n = 103) had highest agreement with the statement that *`Traveller/Gypsy horses are fly-grazed`*, followed by *`neglected of their basic physical needs`* and are *`more likely to be abandoned than other horses`*. Stakeholders were least likely to agree with the statement that horses' teeth are regularly checked, *Figure 3.5*.



PCA was run on the 20- item scale that measured stakeholder perceptions on the care and welfare of Traveller/Gypsy horses. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.781. Analysis identified two factors, accounting for 40.5 % of the variance. Factor 1, accounting for 31% of the variance was labelled 'Poor practices', which were management practices that contributed to poor horse care. Factor 2, accounted for 9.5% of the variance was labelled 'Good practices', this factor related to management practices that promoted good horse care, *Table 3.8*.

Table 3.8 Factors extracted from Principal Component Analysis that measured stakeholder perceptions of Traveller/Gypsy horses, with loadings for each factor. Coefficients which load together are bolded		
Statements	Poor practices	Good practices
Have poor health condition	.611	-.044
More likely to be abandoned	.472	-.453
Subjected to intentional abuse	.757	-.027
Well cared for	-.295	.680
Ridden/driven in manner that causes distress	.689	-.447
Ridden/driven in a manner that causes discomfort	.651	-.476
Welfare likely to be compromised	.741	-.361
Provided with adequate feed	-.160	.696
Neglected of basic physical needs	.756	.051
Are overfed	.300	-.221
Have high incidence of laminitis	-.017	.054
Neglected of basic mental needs	.582	-.015
Provided with adequate water	-.019	.686
Are indiscriminately bred from	.350	-.202
Have teeth checked regularly	-.140	.411
Have adequate shelter	.132	.612
Are malnourished	.506	-.205
Kept in unsuitable environments	.498	-.133
Their welfare is generally good	-.242	.632
Are fly grazed	.433	-.404

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was 'Poor practices', 0.859 (13

items) and 'Good practices' 0.717 (6 items). The overall mean score for 'Poor practices' was 4.13 ($\sigma = 1.00$) and 2.48 ($\sigma = 0.85$) for 'Good practices'.

There was a statistically of age on 'Poor practices', $F(3, 99) = 3.723$, $p < 0.01$. Post hoc analysis revealed that respondents 20 – 34 years ($\bar{x} = 3.52$, $\sigma = 0.90$, $n = 23$), had lower scores on 'Poor practices' than respondents 35 - 44 years ($\bar{x} = 4.32$, $\sigma = 1.08$, $n = 30$), $p < 0.01$ and respondents 45 - 55 years ($\bar{x} = 4.33$ $\sigma = 0.96$, $n = 28$), $p < 0.01$. There was no statistically significant effect of gender, occupation or region of practice on factor scores, $p > 0.05$, (Appendix B5)

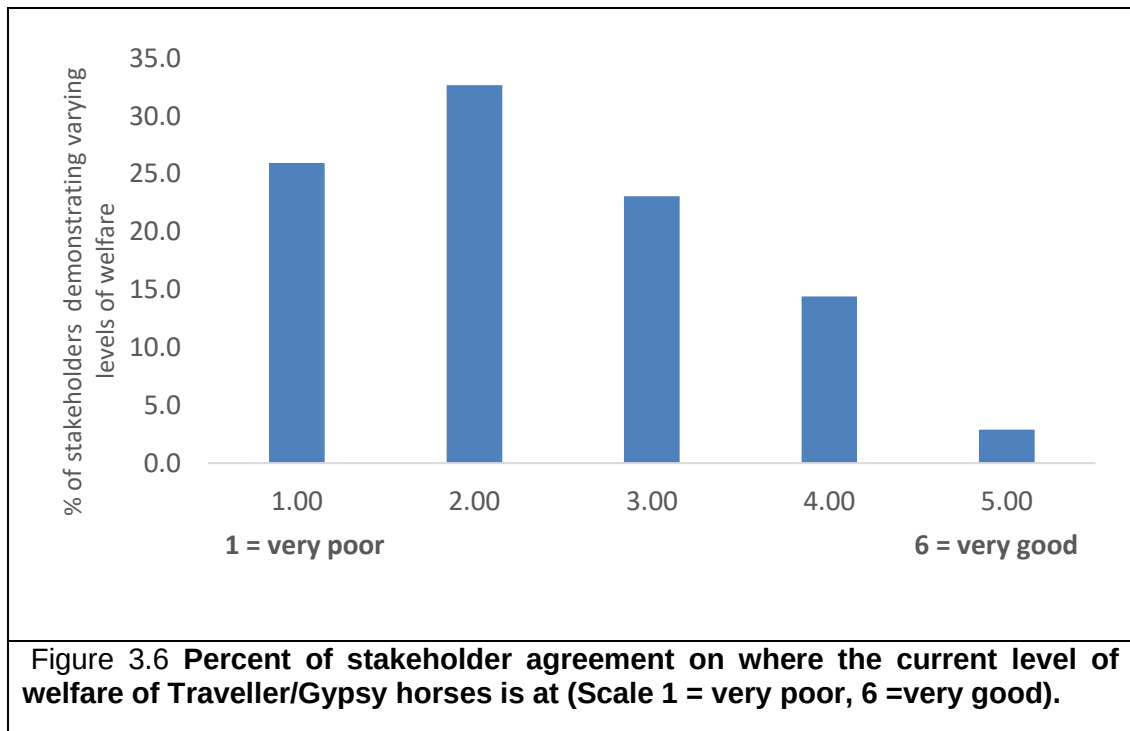
The overall mean of the items that measured perceptions of 'Traveller horse care' in addition to the overall mean of the factors 'Poor practices' and 'Good practices' were used for multiple regression analysis. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.84. The variables in the model were significant predictors of the factor 'Good practices', $F(23, 79) = 3.62$, $p < 0.01$, $adj.R^2 = 0.372$. Results show that the variables region (from Munster and North England), occupation (AWO), level of welfare and perceptions of Traveller/Gypsy horse owner care significantly predicted 'Good practices'. Stakeholder perceptions of Traveller/Gypsy horse owner care and level of welfare had significant positive regression weights, indicating that those stakeholders with higher overall perceptions of Traveller/Gypsy horse owners' care and higher perceptions of the level of welfare also had higher perceptions of practices being good. The remaining predictors had a significant negative weight, therefore, stakeholders from Munster and North England and AWOs had lower perceptions of practices being good. The remaining variables were not significant predictors of 'Good practices', $p > 0.05$, Table 3.9.

Table 3.9 Multiple regression analysis on the factors that influence stakeholder perceptions of `Good practices`. Significant results are bolded ($p < 0.05$).

Predictors	B	t	p
Gender (Woman)	.041	.211	0.83
Region (Connacht)	-.258	-.718	0.48
Region (Leinster)	-.373	-1.327	0.19
Region (Midlands)	-.395	-1.442	0.15
Region (Munster)	-.617	-2.236	0.03
Region (Nationwide)	-.459	-1.634	0.11
Region (North England)	-.585	-2.479	0.02
Region(Scotland/Northern Ireland)	-.663	-1.891	0.06
Region (South West)	.685	1.564	0.12
Region (Wales)	-.225	-.510	0.61
Occupation (AWO)	-.543	-2.152	0.03
Occupation (equine education/trainer)	-.074	-.237	0.81
Occupation (equine services)	-.371	-1.067	0.29
Occupation (`other` occupation)	-.153	-.460	0.65
Occupation (veterinarian)	-.201	-.755	0.45
Occupation (voluntary welfare)	-.077	-.243	0.81
Request advice from equine services	-.031	-.430	0.67
Level of horse welfare	.267	2.974	0.01
Age	-.005	-.683	0.50
Perception of Traveller/Gypsy horse owners	.103	.755	0.45
Aware of Concept of animal welfare	.019	.310	0.76
Perception of Traveller/Gypsy horse owner care	.400	2.728	0.01
Difficulties encountered by Traveller/Gypsy horse owners	.053	.721	0.47

3.3.10 Current level of welfare of Traveller/Gypsy horses

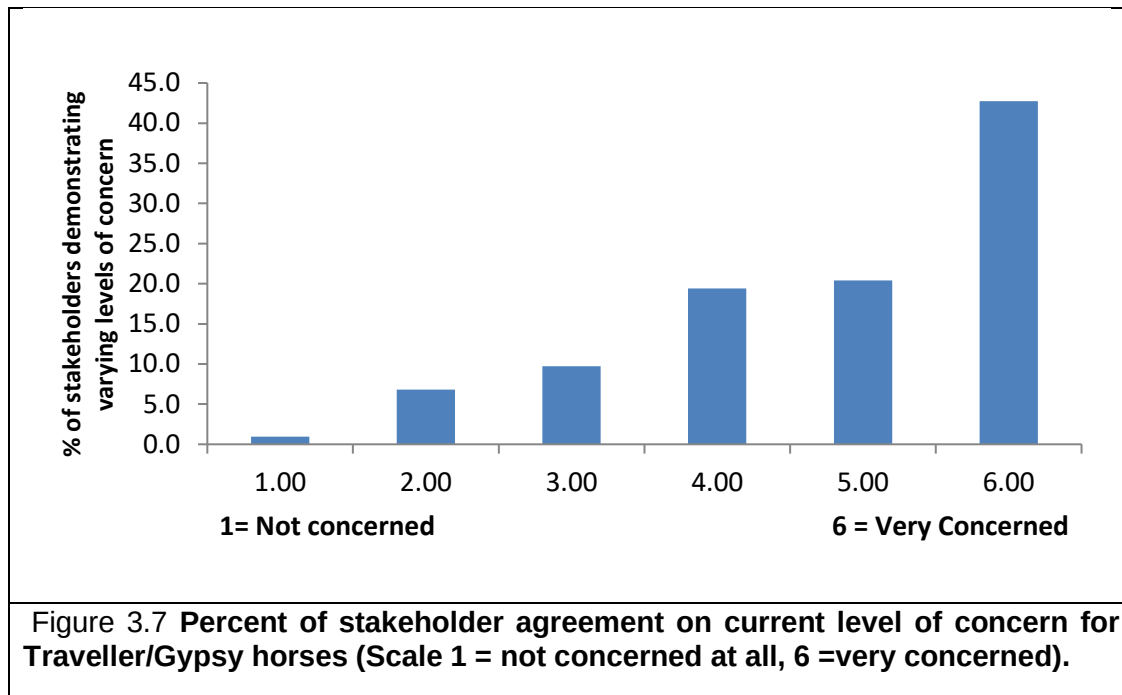
Stakeholders were asked to indicate where they believe the current level of welfare of Traveller/Gypsy horses is at. Nearly 82% ($n = 85$) of Stakeholders agreed that the current level of welfare of Traveller/Gypsy horses was poor to very poor (score 1, 2, 3), *Figure 3.6*.



There was a statistically significant effect of occupation on scores for current level of welfare, $F(6, 96) = 4.392$, $p < 0.01$. Post hoc analysis revealed that respondents in `other` occupations ($\bar{x} = 1.30$, $\sigma = 0.63$, $n = 13$) perceived the current level of welfare to be lower than veterinarians ($\bar{x} = 2.68$, $\sigma = 0.99$, $n = 22$), $p < 0.01$, AWOs, ($\bar{x} = 2.60$, $\sigma = 1.03$, $n = 23$), $p < 0.01$ and equine services ($\bar{x} = 3.14$, $\sigma = 1.06$, $n = 7$), $p < 0.01$. The remaining variables i.e., gender, age group and region of practice had no significant effect on the score given for current level of welfare, $p > 0.05$.

3.3.11 Level of concern for Traveller/Gypsy horse welfare

When asked how concerned they were about the welfare of Traveller/Gypsy horses, 42.7 % ($n = 44$) of stakeholders indicated that they were very concerned (Figure 3.7).



There was a statistically significant effect of gender on level of concern, $t(99) = -3.491$, $p < 0.01$. Women ($\bar{x} = 5.08$, $\sigma = 1.16$, $n = 71$) had significantly higher levels of concern than men ($\bar{x} = 4.13$, $\sigma = 1.43$, $n = 30$). A statistically significant effect of occupation on level of concern was also found, $F(6, 96) = 4.18$, $p < 0.01$. Post hoc analysis revealed that equine services ($\bar{x} = 3.28$, $\sigma = 1.60$, $n = 7$) reported a significantly lower level of concern than AWOs ($\bar{x} = 5.21$, $\sigma = 0.85$, $n = 23$), $p < 0.01$, voluntary welfare ($\bar{x} = 5.08$, $\sigma = 1.16$, $n = 12$), $p = 0.03$ and 'other' occupations ($\bar{x} = 5.69$, $\sigma = 0.75$, $n = 13$), $p < 0.01$. There was no statistically significant effect of age groups and region of practice on level of concern, $p > 0.05$.

The overall mean of the factors 'Considerate owners', 'Inadequate practices', 'Health care', 'Management', 'Poor practices' and 'Good practices', in addition to factors that measured health/welfare/management issues, 'Health/welfare issues' and 'Management issues' were used for multiple regression analysis. There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.19. The model was a significant predictor of level of welfare, $F(25, 77) = 7.28$, $p < 0.01$, $adj.R^2 = 0.606$. Results show that the

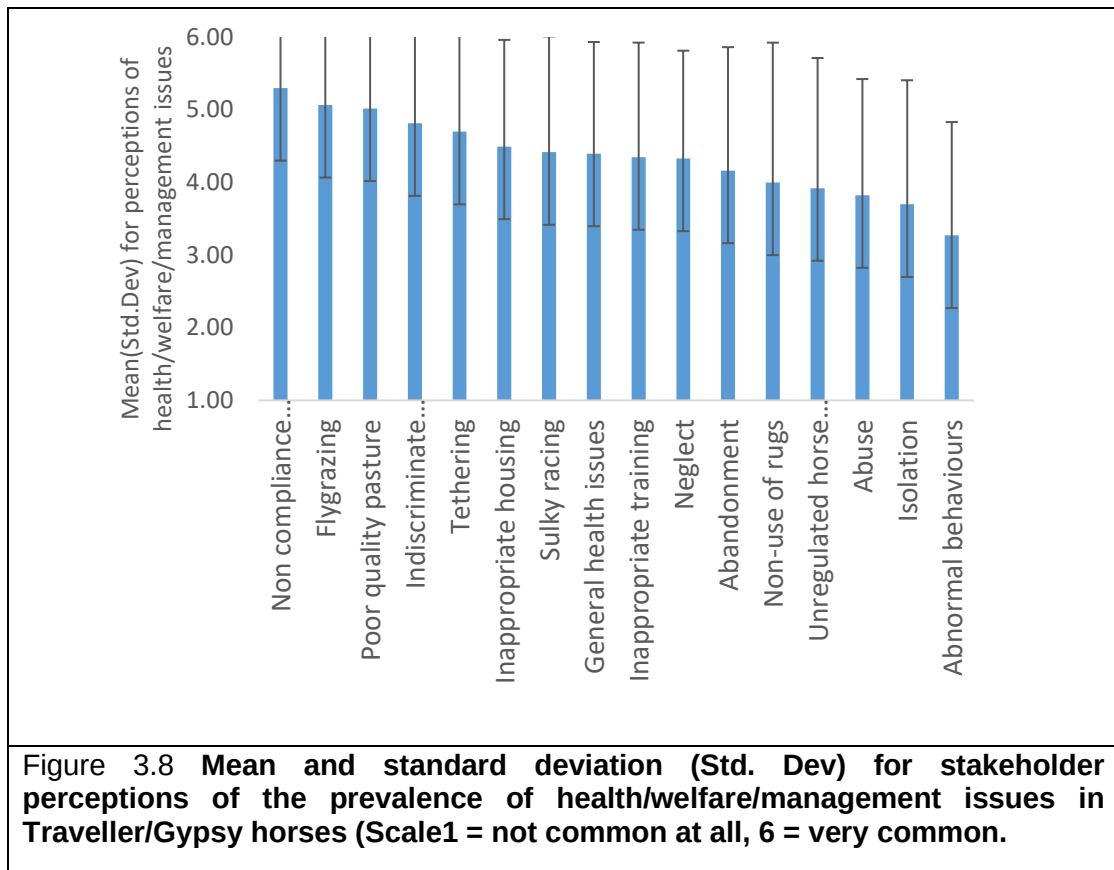
variables age, gender (woman) and health/welfare issues had significant positive regression weights, indicating that women were more concerned about Traveller/Gypsy horses and as respondents age and perceptions of health/welfare issues increased, their level of concern for Traveller/Gypsy horses also increased. The remaining variables were not statistically significant predictors of level of concern, *Table 3.10*.

Table 3.10 Multiple regression analysis on the factors that influence stakeholders' level of concern for Traveller/Gypsy horses. Significant results are bolded ($p < 0.05$).

Predictors	B	t	p
Age	.029	3.173	0.01
Gender (Woman)	.563	2.310	0.02
Region (Connacht)	-.628	-1.422	0.16
Region (Leinster)	-.289	-.804	0.42
Region (Midlands)	-.043	-.123	0.90
Region (Munster)	.125	.355	0.72
Region (Nationwide)	.464	1.389	0.17
Region (North England)	-.446	-1.540	0.13
Region (Scotland/Northern Ireland)	-.721	-1.694	0.09
Region (South West)	-.336	-.606	0.55
Region (Wales)	-.379	-.694	0.49
Occupation (council/trading standards official/police)	-.305	-.922	0.36
Occupation (equine education/trainer)	-.116	-.344	0.73
Occupation (equine services)	-.456	-1.097	0.28
Occupation ('other')	-.133	-.401	0.69
Occupation (veterinarian)	-.103	-.344	0.73
Occupation (voluntary welfare)	.018	.051	0.96
Considerate owners	-.254	-1.726	0.09
Inadequate practices	-.060	-.668	0.51
Health care	.154	.765	0.45
Management	-.257	-1.199	0.23
Health/welfare issues	.470	3.274	0.01
Management issues	.073	.532	0.60
Poor practices	-.021	-.156	0.88
Good practices	-.132	-.893	0.37

3.3.12 Health/welfare/management issues

Stakeholders responded to 16 statements on health, welfare and management issues that they perceived to be prevalent in Traveller/Gypsy horses. Non-compliance with microchipping and passport regulations was agreed by stakeholders to be the most common issue, followed by fly-grazing and poor pasture. The least common issue was abnormal behaviours, *Figure 3.8*.



PCA was run on the items that measured health/welfare/management issues. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.870. Analysis identified two factors, accounting for 54.8% of the variance. Factor 1, accounting for 45.6% of the variance was labelled 'Management issues' where items were associated with horse owner management practices. Factor 2, accounting for 9.2% of the variance was labelled 'Health/welfare issues' where items were related to horse health care practices. Loadings from the exploratory factor analysis are displayed in *Table 3.11*.

Table 3.11 **Factors extracted from Principal Component Analysis that measured health/welfare/management issues, with loadings for each factor. Coefficients which load together are bolded**

Statements	Management Issues	Health/welfare issues
General horse health issues	.189	.807
Neglect	.180	.884
Abandonment	.168	.797
Tethering	.457	.489
Indiscriminate breeding	.265	.549
Fly-grazing	.531	.353
Abuse	.590	.507
Inappropriate training practices	.789	.206
Sulky racing	.825	.119
Inappropriate housing	.712	.264
Abnormal behaviours	.735	.202
Non-compliance (microchipping, passports)	.669	.267
Unregulated horse fairs	.569	.277
Poor quality pasture	.544	.527
Non-use of rugs	.328	.476
Isolation	.443	.483

A reliability analysis using Cronbach's alpha for each factor was conducted, internal consistency reliability of these factors was `Management issues` 0.878 (10 items) and `Health/welfare issues` 0.847 (6 items).

The overall mean score for health/welfare/management issues was 4.36 ($\sigma = 1.03$). The mean score for `Management issues` was 4.45 ($\sigma = 1.05$) and `Health/welfare issues` 4.20 ($\sigma = 1.18$). There was a statistically significant effect of gender on the prevalence of the factor health/welfare issues, $t(99) = -3.550$, $p < 0.01$. Women ($\bar{x} = 4.46$, $\sigma = 1.10$, $n = 71$) had higher scores on Health/Welfare issues than men ($\bar{x} = 3.58$, $\sigma = 1.20$, $n = 30$). There was a statistically significant effect of occupation on the prevalence of health/welfare issues, $F(6, 96) = 3.174$, $p < 0.01$ and management issues, $F(6, 96) = 2.54$, $p < 0.01$. Post hoc analysis revealed lower scores were recorded by equine services ($\bar{x} = 2.80$, $\sigma = 1.09$, $n = 7$) on health/welfare issues than AWOs ($\bar{x} = 4.42$, $\sigma = 0.87$, $n = 23$), $p < 0.01$, equine education/trainer ($\bar{x} = 4.44$, $\sigma = 1.32$, $n = 12$), $p = 0.03$ and `other`

occupations ($\bar{x} = 5.50$, $\sigma = 1.12$, $n = 13$), $p < 0.01$. There were higher scores by `other` occupations ($\bar{x} = 5.07$, $\sigma = 1.23$, $n = 7$) on `Management issues` than by equine services ($\bar{x} = 3.52$, $\sigma = 1.09$, $n = 7$), $p = 0.02$. There were no statistically significant effects of age group, region of practice on factor scores, $p > 0.05$, *Appendix B6*.

The overall mean of the items that measured stakeholder perceptions of level of horse welfare, Traveller/Gypsy horse owners, awareness of the concept of animal welfare, Traveller/Gypsy horse owner care, difficulties Traveller/Gypsy horse owners encounter, likelihood of Traveller/Gypsy horse owners requesting advice from equine services and health/welfare/management issues, in addition to the overall mean of the factors `Management issues` and `Health/welfare` issues was used for multiple regression. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.85. The model was statistically significant predictor of the factor health/welfare/management issues, $F(23, 79) = 4.25$, $p < 0.01$, $adj.R^2 = 0.423$. Results showed that the variable perception of Traveller/Gypsy horse owner care significantly predicted health/welfare/management issues. This predictor had a significant negative weight, meaning that as the stakeholder perception of the quality of Traveller/Gypsy horse care decreases, their concern for health/welfare/management issues increases. The remaining variables did not statistically significantly predict health/welfare/management issues, $p > 0.05$, *Table 3.12*.

Table 3.12 Multiple regression analysis on the factors that influence stakeholders' perception of health/welfare/management issues. Significant results are bolded ($p < 0.05$).

Predictors	B	t	p
Gender (woman)	.179	.792	0.43
Region (Connacht)	.670	1.617	0.11
Region (Leinster)	.250	.771	0.44
Region (Midlands)	-.605	-1.916	0.08
Region (Munster)	.182	.573	0.57
Region (Nationwide)	.208	.642	0.52
Region (North England)	.262	.964	0.34
Region (Scot/NI)	.248	.613	0.54
Region (South West)	-.016	-.031	0.98
Region (Wales)	-.770	-1.511	0.14
Occupation (AWO)	.418	1.435	0.16
Occupation (equine education/trainer)	-.043	-.119	0.91
Occupation (equine services)	-.663	-1.655	0.10
Occupation ('other')	.185	.481	0.63
Occupation (veterinarian)	-.092	-.299	0.77
Occupation (voluntary welfare)	.578	1.581	0.12
Request advice from equine services	.076	.901	0.37
Level of horse welfare	-.189	-1.831	0.08
Age	-.013	-1.553	0.13
Perception of Traveller/Gypsy horse owners	-.225	-1.424	0.16
Aware of concept of animal welfare	-.122	-1.736	0.09
Perception of Traveller/Gypsy horse owner care	-.494	-2.924	0.01
Difficulties encountered by Traveller/Gypsy horse owners	-.124	-1.454	0.15

3.3.13 Health-related Issues

Stakeholders were presented with a number of horse health syndromes and conditions and asked how prevalent these conditions were in Traveller/Gypsy horses. The most issues perceived as being most prevalent were intestinal worms, hoof cracks, being underweight and mites, *Table 3.13*.

Table 3.13 Mean and standard deviation (Std. Dev) for perceived prevalence of health-related issues in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Highest mean in each of the grouped conditions is bolded.

Health condition	n	Mean	Std. Dev
Respiratory diseases	90	3.20	1.28
Cough	83	3.17	1.50
Equine Flu	80	2.84	1.55
Herpes Virus	77	2.65	1.43
Strangles	88	4.00	1.59
Allergic respiratory disease	84	2.83	1.41
Other respiratory	53	3.04	2.11
Skin diseases	94	3.63	1.20
Mud fever	90	3.79	1.63
Rain scald	93	4.25	1.55
Sweet itch	88	3.52	1.36
Lesions wounds	90	4.52	1.36
Dermatitis	88	3.52	1.45
Ringworm	86	3.30	1.56
Sarcoids	83	2.90	1.37
Melanoma	83	2.43	1.33
Other skin diseases	48	2.79	2.06
Eye problems	85	2.77	1.23
Cataracts	76	2.24	1.22
Corneal ulcers	81	2.60	1.34
Conjunctivitis	82	3.28	1.38
Glaucoma	74	2.16	1.23
Blocked tear ducts	76	2.57	1.43
Ocular discharge	80	3.31	1.55
Uveitis	77	2.75	1.40
Other eye	45	2.16	1.58
Dental disease	89	3.86	1.60
Requires dental care	87	4.21	1.60
Requires vet care	88	3.89	1.73
Other dental conditions	45	2.56	2.01
Hoof problems	94	3.86	1.19
Laminitis	89	3.30	1.60
Foot abscess	86	3.70	1.44
Hoof cracks	92	4.85	1.16
Hoof splits	92	4.70	1.34
Diverging hoof wall	84	3.62	1.52
Imbalance	88	4.24	1.59
Club foot	82	2.70	1.48

Thrush	82	3.61	1.56
White line disease	80	3.30	1.52
Other hoof problems	49	2.69	2.08
Non-foot conditions	89	3.24	1.25
Arthritis	84	2.90	1.50
Tendon swelling	87	3.61	1.55
Ligament injury	86	3.60	1.48
Degenerative joint disease	83	3.12	1.50
Development orthopaedic disease/angular limb deformities	84	3.04	1.41
Other non-foot conditions	46	2.52	1.98
Internal medical problems/behaviour issues	90	3.34	1.20
Gastric ulcers	73	2.95	1.59
Intestinal worms	87	5.29	1.21
Colic	84	3.63	1.38
Grass sickness	76	2.59	1.45
Cushings disease	80	2.36	1.35
Diarrhoea	85	4.48	1.54
Liver problems	85	4.15	1.75
Metabolic syndrome	77	2.64	1.52
Nervous system problems	77	2.70	1.49
Stereotypic behaviour	78	2.99	1.52
Headshaking	79	2.73	1.57
Muscle disease	74	2.64	1.54
Urinary diseases	76	2.61	1.33
Reproductive diseases	77	2.86	1.51
Other internal medical problems /Behaviour issues	43	2.23	1.73
External Parasites	94	4.09	1.41
Mites	93	4.76	1.49
Lice	92	4.55	1.56
Ticks	89	3.38	1.74
Other external parasites	47	2.60	2.15
Weight Problems	100	3.59	1.07
Underweight	100	4.82	1.35
Obesity	95	2.82	1.48
Other weight issues	43	1.74	1.31

Respiratory disease: There was a statistically significant effect of occupation on stakeholder perceptions of the prevalence of overall respiratory diseases with 'other' occupations ($\bar{x} = 4.13$, $\sigma = 1.40$, $n = 12$) considering the prevalence of respiratory diseases to be significantly higher than voluntary

welfare workers ($\bar{x} = 2.42$, $\sigma = 1.01$, $n = 8$), $F(6, 83) = 2.498$, $p = 0.02$. Women considered the prevalence of general and individual respiratory diseases to be significantly higher than men, $p < 0.05$, Table 3.14. There was no statistically significant effect of age group, occupation and region of occupational practice on the overall perceived prevalence of respiratory diseases, $p > 0.05$.

Table 3.14 Mean and standard deviation (Std. Dev) for the effects of gender and occupation on the perceived prevalence of respiratory diseases. (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$).							
Respiratory disease	Gender	n	Mean	Std. Dev	t	df	p
Overall respiratory diseases	Man	26	2.65	1.30	2.751	87	0.00
	Woman	63	3.44	1.20			
Cough	Man	24	2.33	1.04	-3.599	80	0.00
	Woman	58	3.55	1.51			
Flu	Man	24	2.33	1.04	-2.110	77	0.03
	Woman	55	3.09	1.54			
Herpes virus	Man	23	2.17	1.48	-2.086	74	0.04
	Woman	53	2.89	1.02			
Strangles	Man	25	3.12	1.61	-3.686	85	0.00
	Woman	62	4.40	1.40			
Allergic/hypersensitive respiratory diseases,	Man	24	2.29	1.08	-2.395	81	0.01
	Woman	59	3.08	1.46			
Other respiratory diseases	Man	19	2.11	1.96	-2.395	50	0.02
	Woman	33	3.48	2.01			

Skin disease: There was a statistically significant effect of occupation on the perceived prevalence of individual skin diseases, $F(6, 76) = 3.503$, $p < 0.01$. Veterinarians ($\bar{x} = 4.29$, $\sigma = 1.79$, $n = 7$) considered the prevalence of sarcoids to be significantly higher than education/trainers ($\bar{x} = 2.18$, $\sigma = 1.16$, $n = 11$), $p < 0.01$ and equine services ($\bar{x} = 1.75$, $\sigma = 0.95$, $n = 4$), $p = 0.03$. There was a statistically significant effect of gender on the perceived prevalence of overall and individual skin diseases with women considering skin diseases to be significantly higher than men, Table 3.15. There were no statistically significant differences found on other occupations, age groups

and region of occupation practice and the perceived prevalence of skin diseases, $p > 0.05$.

Table 3.15 Means and standard deviations (Std. Dev) on the effect of gender on the perceived prevalence of skin diseases in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$).

Skin disease	Gender	n	Mean	Std. Dev	t	df	p
Overall skin disease	Man	27	3.03	1.22	-3.433	91	0.01
	Woman	66	3.91	1.07			
Mud fever	Man	26	2.77	1.36	-4.327	87	0.05
	Woman	63	4.25	1.51			
Rain scald	Man	26	3.27	1.56	4.395	90	0.05
	Woman	66	4.68	1.31			
Sweet itch	Man	25	3.00	1.35	-2.503	85	0.01
	Woman	62	3.77	1.28			
Lesions/ wounds	Man	25	4.00	1.68	-2.390	87	0.01
	Woman	64	4.75	1.16			
Dermatitis	Man	24	2.96	1.30	-2.446	85	0.01
	Woman	63	3.78	1.43			
Ringworm	Man	24	2.75	1.39	-2.206	83	0.03
	Woman	61	3.56	1.56			
Sarcoids	Man	24	2.38	1.05	-2.419	80	0.01
	Woman	58	3.16	1.42			
Melanoma	Man	24	2.29	1.12	-0.694	80	0.49
	Woman	58	2.52	1.41			
Other skin diseases	Man	19	2.00	1.82	-2.378	45	0.22
	Woman	28	3.39	2.06			

Eye Problems: There was a statistically significant effect of gender on the perceived prevalence of eye problems. Women considered the prevalence of corneal ulcers, conjunctivitis and ocular discharge to be significantly higher than men, *Table 3.16*. There was no statistically significant effect of age, region of practice and occupation on the perceived prevalence of individual eye problems, $p > 0.05$.

Table 3.16 Means and standard deviations (Std. Dev) on the effect of gender on the perceived prevalence of eye problems in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$).

Eye problems	Gender	n	Mean	Std. Dev	t	df	p
Cataracts	Man	22	2.00	1.11	-1.161	73	0.24
	Woman	53	2.36	1.25			
Corneal ulcers	Man	22	2.09	0.97	2.244	78	0.02
	Woman	58	2.83	1.41			
Conjunctivitis	Man	23	2.74	1.21	-2.435	79	0.01
	Woman	58	3.53	1.36			
Glaucoma	Man	21	2.19	1.12	0.054	71	0.95
	Woman	52	2.17	1.29			
Blocked tear ducts	Man	21	2.38	1.20	-0.773	73	0.44
	Woman	54	2.67	1.51			
Ocular discharge	Man	22	2.55	1.22	-2.991	77	0.01
	Woman	57	3.65	1.55			
Uveitis	Man	22	2.27	1.16	-2.042	74	0.45
	Woman	54	2.98	1.44			
Other eye problems	Man	16	1.88	1.54	-0.968	42	0.33
	Woman	28	2.36	1.61			

Dental disease: There was a statistically significant effect of gender on the perceived prevalence of dental disease. Women considered the prevalence of overall dental disease, $p = 0.05$, `requires equine dental care`, $p = 0.05$, `requires veterinary care`, $p = 0.01$, and `other dental`, $p = 0.02$ to be significantly higher than men, Table 3.17. There was no statistically significant effect of age group, region of practice and occupation on the perceived prevalence of individual dental disease, $p > 0.05$.

Table 3.17 Means and standard deviations (Std. Dev) on the effect of gender on the perceived prevalence of dental disease in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$) Significant results are bolded ($p < 0.05$).

Dental disease	Gender	n	Mean	Std. Dev	t	df	p
Overall dental disease	Man	25	2.92	1.54	-3.903	86	0.05
	Woman	63	4.28	1.44			
Requires equine dental care	Man	24	3.17	1.52	-4.329	84	0.05
	Woman	62	4.66	1.40			
Requires veterinary care	Man	24	2.96	1.48	-3.410	85	0.01
	Woman	63	4.29	1.67			
Other dental	Man	17	1.71	1.61	-2.425	42	0.02
	Woman	27	3.15	2.08			

Hoof Problems: Gender had a statistically significant effect on the perceived prevalence of individual hoof problems with women considering the perceived prevalence of individual hoof problems to be significantly higher than men, $p < 0.05$, Table 3.18.

Table 3.18 Means and standard deviations (Std. Dev) on the effect of gender on the perceived prevalence of hoof problems in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$).							
Hoof Problems	Gender	N	Mean	Std Dev	t	df	p
Laminitis	Man	24	2.75	1.53	-2.129	86	0.04
	Woman	64	3.55	1.57			
Foot Abscess	Man	24	3.17	1.34	-2.343	83	0.22
	Woman	61	3.95	1.40			
Hoof Cracks	Man	25	4.08	1.22	-4.387	89	0.01
	Woman	66	5.17	0.98			
Hoof Splits	Man	25	3.88	1.45	-4.252	89	0.01
	Woman	66	5.06	1.06			
Diverging hoof wall	Man	24	3.13	1.59	-2.075	81	0.41
	Woman	59	3.86	1.42			
Imbalance	Man	25	3.28	1.64	-4.092	85	0.01
	Woman	62	4.68	1.35			
Club Foot	Man	23	2.17	1.02	-2.126	79	0.37
	Woman	58	2.93	1.57			
Thrush	Man	24	2.96	1.51	-2.670	79	0.09
	Woman	57	3.93	1.48			
White Line Disease	Man	24	2.96	1.39	-1.454	77	0.15
	Woman	55	3.49	1.53			
Other hoof problems	Man	17	2.18	1.97	-1.369	46	0.17
	Woman	31	3.03	2.12			

There was a statistically significant effect of occupation on the perceived prevalence of hoof cracks, $F(6, 85) = 2.276$, $p = 0.04$, hoof splits $F(6, 85) = 2.594$, $p = 0.02$, club foot, $F(6, 75) = 4.163$, $p < 0.01$. Post hoc analysis revealed that council/trading officials/police ($\bar{x} = 4.10$, $\sigma = 1.66$, $n = 10$) considered the prevalence of hoof cracks as significantly lower than `other` occupations ($\bar{x} = 5.67$, $\sigma = 0.88$, $n = 12$), $p = 0.02$ and council/trading officials/police ($\bar{x} = 3.70$, $\sigma = 1.88$, $n = 10$) also considered the prevalence of hoof splits as significantly lower than `other` occupations ($\bar{x} = 5.58$, $\sigma = 0.90$, $n = 12$), $p < 0.01$.

`Other` occupations ($\bar{x} = 4.30$, $\sigma = 1.63$, $n = 10$) considered the prevalence of club foot to be significantly higher than veterinarians ($\bar{x} = 2.27$, $\sigma = 0.93$, $n = 22$), $p < 0.01$, AWOs ($\bar{x} = 2.74$, $\sigma = 1.28$, $n = 23$), $p = 0.04$, equine services ($\bar{x} = 3.67$, $\sigma = 1.86$, $n = 4$) $p < 0.01$ and voluntary welfare ($\bar{x} = 1.67$, $\sigma = 1.21$, $n = 6$), $p < 0.01$. There was no statistically significant effect of age and region of practice on the perceived prevalence of individual hoof problems, $p > 0.05$.

Non-foot ligament conditions: There was a statistically significant effect of occupation on the perceived prevalence of overall non-foot conditions, $F(6, 82) = 3.266$, $p < 0.01$. `Other` occupations ($\bar{x} = 4.36$, $\sigma = 1.15$, $n = 12$), considered the prevalence of overall non-foot conditions to be significantly higher than AWOs ($\bar{x} = 2.82$, $\sigma = 0.96$, $n = 23$), $p < 0.01$ and voluntary welfare ($\bar{x} = 2.37$, $\sigma = 1.17$, $n = 7$), $p < 0.01$. There were statistically significant effect of region of practice on the perceived prevalence of ligament injury, $F(9, 76) = 2.320$, $p = 0.02$, with respondents from Leinster ($\bar{x} = 2.63$, $\sigma = 1.18$, $n = 8$) considering ligament injury to be significantly lower than respondents from Munster ($\bar{x} = 4.80$, $\sigma = 1.31$, $n = 10$), $p = 0.04$. There were statistically significant effects of occupation on the perceived prevalence of arthritis, $F(6, 77) = 3.047$, $p < 0.01$, tendon injury, swelling, inflammations, $F(6, 80) = 2.529$, $p = 0.02$, ligament injury/swelling/inflammations, $F(6, 79) = 2.830$, $p = 0.02$, degenerative joint disease, $F(6, 76) = 2.145$, $p < 0.01$ and development orthopaedic diseases/angular limb deformities, $F(6, 77) = 3.418$, $p < 0.01$. `Other` occupations considered the prevalence of arthritis, ligament injury/swelling/inflammations, degenerative joint disease and development orthopaedic diseases/angular limb deformities to be significantly higher. Veterinarians considered the prevalence of arthritis to be significantly higher than AWOs. Council/trading standards official/police considered the prevalence of development orthopaedic diseases/angular limb deformities to be significantly higher than voluntary welfare, *Table 3.19*.

Table 3.19 Means and standard deviations (Std. Dev) on the effect of occupation on the perceived prevalence of non-foot problems in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$).

Non foot conditions	Occupation	n	Mean	Std. Dev	p
Overall non-foot conditions	`Other` occupations	12	4.36	1.15	0.01
	AWO	23	2.82	0.96	
	`Other` occupations	12	4.36	1.15	0.01
	Voluntary welfare workers	7	2.37	1.17	
Arthritis	Veterinarians	22	3.45	1.43	0.03
	AWO	22	2.14	1.08	
	Veterinarians	22	3.45	1.43	0.02
	`Other` occupations	11	3.82	1.60	
Tendon injury, swelling, inflammations	AWO	23	3.04	1.39	0.01
	`Other` occupations	12	4.83	1.33	
Ligament injury/swelling/ inflammations	`Other` occupations	12	4.83	1.33	0.03
	AWO	23	3.26	1.28	
	`Other` occupations	12	4.83	1.33	0.03
	Voluntary welfare	7	2.71	1.70	
Degenerative joint disease	`Other` occupations	10	4.20	1.54	0.03
	Voluntary welfare	6	1.83	1.32	
Development orthopaedic diseases/angular limb deformities	`Other` occupations	11	4.36	1.36	0.01
	Veterinarians	22	2.68	0.89	
	Council/trading standards official/police	10	2.40	1.57	0.01
	Voluntary welfare	6	2.00	1.26	

Internal Medical Problems/Behaviour issues: There was a statistically significant effect of gender on the perceived prevalence of internal medical problems/behaviour issues, with women considering conditions to be significantly higher than men, *Table 3.20*.

Table 3.20 Means and standard deviations (Std. Dev) on the effect of gender on the perceived prevalence of Internal medical problems/Behavioural issues in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded, ($p < 0.05$).

Internal medical Problems/Behavioural issues	Gender	N	Mean	Std. Dev	t	df	p
Gastric ulcers	Man	19	2.05	0.91	-3.109	70	0.01
	Woman	53	3.30	1.65			
Intestinal worms	Man	21	4.23	1.70	-5.341	84	0.01
	Woman	65	5.64	0.73			
Colic	Man	20	3.00	1.16	-2.578	81	0.01
	Woman	63	3.87	1.36			
Grass sickness	Man	20	2.35	1.34	-0.947	73	0.34
	Woman	55	2.70	1.48			
Cushings disease	Man	20	1.95	0.94	-1.663	77	0.10
	Woman	59	2.52	1.44			
Diarrhoea	Man	21	3.09	1.44	-6.008	82	0.01
	Woman	63	5.00	1.19			
Liver problems	Man	21	3.19	1.91	-3.224	82	0.01
	Woman	63	4.52	1.54			
Metabolic syndrome	Man	20	2.25	1.25	-1.408	74	0.16
	Woman	56	2.80	1.58			
Nervous system problems	Man	21	2.19	1.20	-1.96	74	0.05
	Woman	55	2.92	1.54			
Stereotypic behaviours	Man	20	2.45	1.19	-1.964	75	0.05
	Woman	57	3.21	1.57			
Headshaking	Man	20	2.40	1.46	-1.179	76	0.24
	Woman	58	2.87	1.60			
Muscle disease	Man	19	2.05	1.07	-2.036	71	0.04
	Woman	54	2.87	1.62			
Urinary diseases	Man	20	2.25	1.20	-1.487	73	0.14
	Woman	55	2.76	1.36			
Reproductive diseases	Man	20	2.50	1.50	-1.327	74	0.18
	Woman	56	3.01	1.49			
Other Internal med/behaviour problems	Man	15	1.66	1.49	-1.689	40	0.09
	Woman	27	2.59	1.80			

Age had a statistically significant effect on the perceived prevalence of internal medical problems/behaviour issues, $F(3, 80) = 3.324$, $p = 0.02$. Respondents in the age group 35 – 44 years ($\bar{x} = 4.28$, $\sigma = 1.45$, $n = 25$) considered the prevalence of internal medical problems/behaviour issues to be significantly higher than 45 – 55 years ($\bar{x} = 3.26$, $\sigma = 1.57$, $n = 23$), $p = 0.04$, and significantly higher than the 56+ age group ($\bar{x} = 3.08$, $\sigma = 1.38$, $n = 13$), $p = 0.04$ on the prevalence of colic. Region of practice had a statistically significant effect on the perceived prevalence of diarrhoea, $F(9, 67) = 2.745$, $p = < 0.01$, liver problems, $F(9, 63) = 3.328$, $p < 0.01$ and metabolic syndrome, $F(9, 67) = 2.153$, $p = 0.03$, Table 3.21.

Table 3.21 Means and standard deviations (Std. Dev) on the significant effects of region of practice on the perceived prevalence of Internal medical Problems/Behavioural issues in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$).					
Internal medical problems	Region	N	Mean	Sd	p
Diarrhoea	Leinster	7	2.86	1.57	0.01
	South East	22	5.09	1.15	
Liver problems	Leinster	7	1.86	1.06	0.01
	Midlands	11	5.00	1.34	
	Leinster	7	1.86	1.06	0.01
	South East	22	4.86	1.55	
	Leinster	7	1.86	1.06	0.02
	Nationwide	9	4.67	1.22	
Metabolic syndrome	North England	11	3.36	1.74	0.03
	South East	17	3.12	1.49	

There was a statistically significant effect of occupation on the perceived prevalence of gastric ulcers, $F(6, 66) = 5.414$, $p < 0.01$, intestinal worms, $F(6, 80) = 7.401$, $p < 0.01$, diarrhoea, $F(6, 78) = 3.367$, $p < 0.01$, liver problems, $F(6, 78) = 3.318$, $p < .01$, nervous system problems, $F(6, 70) = 2.705$, $p < 0.01$ and stereotypic behaviours, $F(6, 71) = 3.428$, $p < 0.01$. `Other` occupations considered the prevalence of gastric ulcers, intestinal worms, diarrhoea, liver problems and nervous system problems to be significantly higher, Table 3.22.

Table 3.22 Means and standard deviations (Std. Dev) on the significant effects of occupation on the perceived prevalence of Internal medical problems/Behavioural issues in Traveller/Gypsy horses (Scale 1 = not at all prevalent, 6 = highly prevalent). Significant results are bolded ($p < 0.05$.)

Internal medical problems	Occupation	n	Mean	Sd	p
Gastric ulcers	Veterinarian	19	2.37	1.11	0.01
	`Other` occupations	10	5.00	1.24	
	AWO	18	2.61	1.42	0.01
	`Other` occupations	10	5.00	1.24	
	Council/trading standards official/police	7	2.43	1.51	0.01
	`Other` occupations	10	5.00	1.24	
	Equine services	4	1.75	0.50	0.01
	`Other` occupations	10	5.00	1.24	
	Voluntary welfare	7	3.00	1.52	0.01
	`Other` occupations	10	5.00	1.24	
Intestinal worms	Veterinarian	22	5.23	1.19	0.01
	Council/trading standards official/police	8	3.5	1.77	
	AWO	22	5.68	0.64	0.01
	Council/trading standards official/police	8	3.5	1.77	
	Equine education/trainer	11	5.55	0.68	0.01
	Council/trading standards official/police	8	3.5	1.77	
	Voluntary welfare	8	5.63	0.74	0.01
	Council/trading standards official/police	8	3.5	1.77	
	`Other` occupations	12	5.92	0.28	0.01
	Council/trading standards official /police	8	3.5	1.77	
	Equine services	4	3.75	1.89	0.01
	AWO	22	5.68	0.64	
	Equine services	4	3.75	1.89	0.04
	Equine	11	5.55	0.68	

	education/trainer				
	Equine services	4	3.75	1.89	0.04
	Voluntary welfare	8	5.63	0.74	
	Equine services	4	3.75	1.89	0.01
	`Other` occupations	12	5.92	0.28	
Diarrhoea	Veterinarian	22	4.41	1.46	0.04
	Council/trading standards official/police	8	2.63	1.40	
	AWO	23	4.91	1.08	0.01
	Council/trading standards Official /police	8	2.63	1.40	
	Equine education/trainer	10	4.8	1.22	0.03
	Council/trading standards official /police	8	2.63	1.40	
	`Other` occupations	11	5.09	1.64	0.01
	Council/trading standards Official/police	8	2.63	1.40	
Liver problems	Council/trading standards official/police	8	3	2.26	0.02
	`Other` occupations	11	5.45	0.82	
	Equine services	4	2.25	1.89	0.02
	`Other` occupations	11	5.45	0.82	
Nervous system problems	Voluntary welfare	6	1.67	1.21	0.02
	`Other` occupations	10	4.1	1.72	
Stereotypic behaviours	Veterinarian	22	2.73	1.31	0.03
	`Other` occupations	10	4.40	1.35	
	AWO	21	2.67	1.15	0.03
	`Other` occupations	10	4.40	1.35	

External parasites: There was a statistically significant effect of gender on the perceived prevalence of mites, $t(90) = -4.697$, $p < 0.01$ and lice, $t(89) = -3.979$, $p < 0.01$. Women ($\bar{x} = 5.20$, $\sigma = 1.15$, $n = 66$) considered the prevalence of mites to be significantly higher than men ($\bar{x} = 3.73$, $\sigma = 1.75$, $n = 26$), and women ($\bar{x} = 4.95$, $\sigma = 1.26$, $n = 65$) also considered the prevalence of lice to be significantly higher than men ($\bar{x} = 3.62$, $\sigma = 1.83$, $n =$

26). There was a statistically significant effect of region of practice on the perceived prevalence of lice, $F(9, 82) = 2.578$, $p < 0.01$. Post hoc analysis revealed that Leinster ($\bar{x} = 2.63$, $\sigma = 1.06$, $n = 8$) considered the prevalence of lice to be significantly lower than Munster ($\bar{x} = 5.40$, $\sigma = 1.57$, $n = 10$), $p < 0.01$, North of England ($\bar{x} = 5.08$, $\sigma = 1.53$, $n = 13$), $p < 0.01$ and the Midlands ($\bar{x} = 4.91$, $\sigma = 1.51$, $n = 11$), $p = 0.03$.

There was a statistically significant effect of occupation on the perceived prevalence of mites, $F(6, 86) = 3.892$, $p < 0.01$ and lice, $F(6, 85) = 2.966$, $p < 0.01$. Post hoc analysis revealed that AWOs ($\bar{x} = 5.35$, $\sigma = 1.02$, $n = 23$) considered the prevalence of mites to be significantly higher than Council/trading standards official/police ($\bar{x} = 3.45$, $\sigma = 1.91$, $n = 11$), $p < 0.01$, and significantly higher than equine services ($\bar{x} = 3.33$, $\sigma = 1.75$, $n = 11$), $p = 0.03$. AWOs ($\bar{x} = 5.09$, $\sigma = 1.24$, $n = 23$) considered the prevalence of lice to be significantly higher than Council/trading standards official/police ($\bar{x} = 3.45$, $\sigma = 2.01$, $n = 11$), $p = 0.04$. There was no statistically significance effect of age on the perceived prevalence of external parasites, $p > 0.05$.

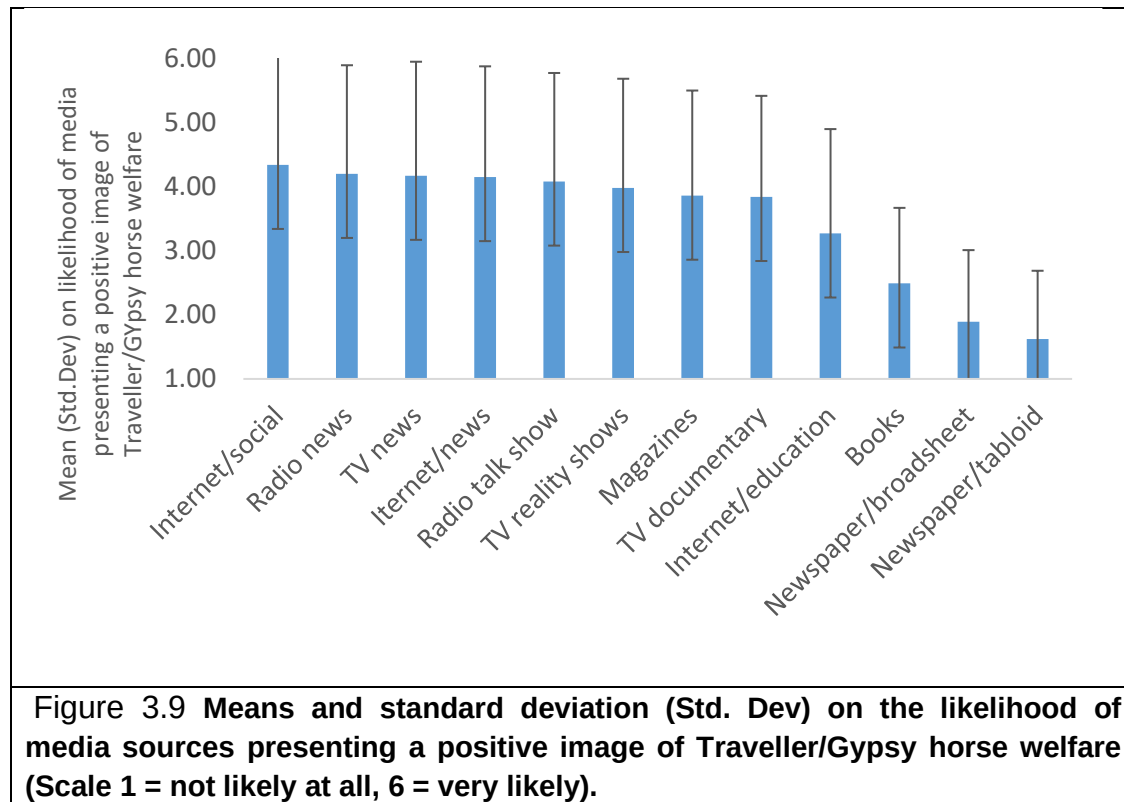
Weight Problems: There was a statistically significant effect of gender, on the perceived prevalence of individual weight problems, $t(97) = -2.548$, $p < 0.01$. Women ($\bar{x} = 5.07$, $\sigma = 1.17$, $n = 69$) considered the prevalence of being underweight as significantly higher than men ($\bar{x} = 4.36$, $\sigma = 1.44$, $n = 30$). There was a statistically significant effect of age on the perceived prevalence of obesity, $F(3, 91) = 3.156$, $p = 0.02$. Post hoc analysis revealed that respondents aged 20 – 34 years ($\bar{x} = 3.48$, $\sigma = 1.50$, $n = 23$), considered the prevalence of obesity to be significantly higher than those aged 45 – 55 years ($\bar{x} = 2.28$, $\sigma = 0.98$, $n = 25$), $p = 0.02$.

There was a statistically significant effect of region of practice on the perceived prevalence of underweight horses, $F(9, 90) = 2.007$, $p = 0.04$ and obesity, $F(9, 85) = 2.768$, $p < 0.01$. Post hoc analysis revealed that respondents from Leinster ($\bar{x} = 3.55$, $\sigma = 1.87$, $n = 9$) considered the prevalence of underweight horses to be significantly lower than those from

the North of England ($\bar{x} = 5.33$, $\sigma = 0.81$, $n = 15$), $p = 0.04$. Stakeholders from Scotland/NI ($\bar{x} = 4.60$, $\sigma = 1.67$, $n = 5$) considered the prevalence of obesity to be significantly higher than those from Leinster ($\bar{x} = 1.88$, $\sigma = 1.35$, $n = 8$), $p = 0.02$ and Munster ($\bar{x} = 1.64$, $\sigma = 1.02$) ($n = 11$), $p < 0.01$. Stakeholders from Munster considered the prevalence of obesity to be significantly lower than those from the Midlands ($\bar{x} = 3.55$, $\sigma = 1.63$) ($n = 11$), $p = 0.04$. Occupation also had an effect on the perceived prevalence of obesity, $F(6, 88) = 2.686$, $p < 0.01$ with `other` occupations ($\bar{x} = 1.85$, $\sigma = 0.80$, $n = 13$) considering the prevalence of obesity as significantly lower than veterinarians ($\bar{x} = 3.36$, $\sigma = 1.70$, $n = 22$), $p = 0.04$ and AWOs ($\bar{x} = 3.35$, $\sigma = 1.46$, $n = 23$), $p = 0.04$.

3.3.14 Media sources and image of Traveller/Gypsy horse welfare

Twelve media sources were presented, and respondents were asked whether these media sources were likely to present a positive image of Traveller/Gypsy horse welfare. An overall mean score of 3.94 ($\sigma = 0.78$) was reported for these 12 media sources, indicating that respondents agree that overall, media sources present to some extent a positive image of Traveller/Gypsy horse welfare. Media sources agreed to most likely to present a positive image were social internet sites, followed by radio news and TV news. Tabloid newspapers were cited as least likely to present a positive image of Traveller/Gypsy horse culture, *Figure 3.9*.



There was a statistically significant effect of gender on media sources and image of Traveller/Gypsy horse welfare, with women having a higher mean score in the four statistically significant media sources than men, $p < 0.05$, Table 3.23.

Table 3.23 Gender differences on media sources and image of Traveller/Gypsy horse welfare. Significant results are bolded ($p < 0.05$).

Media sources	Gender	n	Mean	Std. Dev	t	df	p
Newspaper (Broadsheet)	Man	30	1.90	0.84	-0.63	99	0.95
	Woman	71	1.91	1.22			
Newspaper (Tabloid)	Man	30	1.43	0.72	-1.221	99	0.22
	Woman	71	1.71	1.18			
TV news	Man	30	3.56	1.69	-2.139	99	0.03
	Woman	71	4.38	1.76			
TV documentaries	Man	30	3.33	1.42	2.271	99	0.02
	Woman	71	4.09	1.59			
TV reality programmes	Man	30	3.46	1.52	-2.007	99	0.04
	Woman	71	4.19	1.72			
Radio news	Man	30	4.00	1.70	-0.804	99	0.42
	Woman	71	4.29	1.68			
Radio talk programmes	Man	30	3.83	1.70	-0.913	99	0.42
	Woman	71	4.16	1.68			
Internet sites (educational)	Man	30	2.80	1.51	-1.927	99	0.57
	Woman	71	3.46	1.61			
Internet sites (social)	Man	30	4.13	1.85	-0.847	99	0.39
	Woman	71	4.45	1.66			
Internet sites (news)	Man	30	3.93	1.79	-0.891	99	0.37
	Woman	71	4.26	1.68			
Books	Man	30	2.30	0.91	-1.089	99	0.27
	Woman	71	2.57	1.26			
Magazines	Man	30	3.36	1.56	-2.011	99	0.04
	Woman	71	4.07	1.62			

There was a statistically significant effect of age, $F(3, 99) = 3.572$, $p < 0.01$ on media sources and image of Traveller/Gypsy horse welfare. Post hoc analysis revealed that respondents aged 35 – 44 years ($\bar{x} = 4.53$, $\sigma = 1.63$, $n = 30$) had significantly higher agreement on the likelihood of magazines portraying a positive image of Traveller/Gypsy horse welfare than 45 - 55 years ($\bar{x} = 3.25$, $\sigma = 1.43$, $n = 28$), $p < 0.01$. There was a statistically significant effect of occupation on the likelihood of broadsheet newspapers $F(6, 96) = 2.407$, $p = 0.03$ and tabloid newspapers, $F(6, 96) = 2.536$, $p = 0.02$ presenting a positive image of Traveller/Gypsy horse welfare. Post hoc analysis revealed that 'other' occupations ($\bar{x} = 2.92$, $\sigma = 1.70$, $n = 13$) had significantly higher agreement on the likelihood of broadsheet newspapers

presenting a positive image of Traveller/Gypsy horse welfare than AWO's ($\bar{x}$ =1.73, σ = 0.86, n = 23), p = 0.03. `Other` occupations ($\bar{x}$ =2.53, σ = 1.80, n = 13) also had significantly higher agreement on the likelihood of tabloid newspaper presenting a positive image of Traveller/Gypsy horse welfare than council/trading standards official/police ($\bar{x}$ =1.22, σ = 0.54, n 18), p < 0.1.

3.3.15 Information sources on Traveller/Gypsy culture

All respondents (n = 103) replied to the section on where they source their information on Traveller/Gypsy culture. Magazines and tabloid newspapers were the most used information sources and community agencies and Traveller/Gypsy organisations, (Table 3.24)

Table 3.24 Means and standard deviations (Std. Dev) for sources used to obtain information on Traveller/Gypsy culture (Scale 1 = not at all, 6 = always).		
Information sources	Mean	Std. Dev
Magazines	5.26	1.47
Newspapers (The Sun)	4.62	1.75
Radio talk programmes	4.42	1.66
Internet sites (news)	4.29	1.70
TV Reality programmes	4.26	1.78
Internet sites (social)	4.25	1.79
TV Documentaries	3.94	1.58
Council/local authority	2.88	1.71
Have friends/neighbours in these communities	2.69	1.78
Government departments	2.15	1.32
Newspapers (The Times)	2.06	1.14
Traveller/Gypsy Organisations	2.05	1.41
Community agencies	2.03	1.29
Internet sites (educational)	1.93	1.35
Books	1.39	0.77

There was a statistically significant effect of region on where respondents source their information on Traveller/Gypsy culture $F(9, 93) = 3.279$, p < 0.01. Post hoc analysis revealed that respondents from the Munster region of Ireland ($\bar{x}$ = 5.15, σ = 1.28, n = 26) had higher agreement on TV

documentaries than those from the South East of England ($\bar{x} = 3.53$, $\sigma = 1.63$, $n = 26$), $p = 0.04$.

There was a statistically significant effect of occupation on the following sources of information used, government departments $F(6, 96) = 2.51$, $p = 0.02$, council/local authority departments, $F(6, 96) = 6.69$, $p < 0.01$, tabloid newspapers, $F(6, 96) = 2.59$, $p = 0.02$ and internet sites (educational), $F(6, 96) = 2.51$, $p = 0.02$. Council/trading standards official/police had higher agreement than veterinarian, equine services and voluntary welfare on sourcing information from government departments and had a higher level of agreement on sourcing information from council/local authority departments than veterinarians, AWOs, equine services and `other` occupations. Veterinarians had significantly higher agreement on the use of tabloid newspapers than voluntary welfare and veterinarians had significantly lower agreement than AWOs on the use of educational internet sites as an information source, *Table 3.25*.

Table 3.25 Means and standard deviation (Std. Dev) for significant effects of occupation on information sources used to obtain information on Traveller/Gypsy culture, (Scale 1 = not at all, 6 = always). Significant results are bolded ($p < 0.05$).

Information Source	Occupation	n	Mean	Std dev	p
Government departments	Council/trading standards official/police	18	3.22	1.47	0.01
	Veterinarians	22	1.59	0.79	
	Voluntary welfare	8	1.25	0.70	
	Equine services	7	1.14	0.37	
Council/local authority departments	Council/trading standards official/police	18	3.22	1.47	0.01
	Veterinarians	22	2.04	1.29	
	AWOs	23	2.65	1.36	
	Equine services	7	1.28	0.48	
	`other` occupation	13	1.61	1.12	
Tabloid newspapers	Veterinarians	22	2.50	1.26	0.04
	Voluntary welfare	8	1.12	0.35	
Educational internet sites	AWOs	23	2.73	1.51	0.01
	Veterinarians	22	1.36	0.65	

There was no statistically significant effect of gender, age group on information on Traveller/Gypsy culture was received, $p > 0.05$.

3.3.16 Likelihood of requesting advice from stakeholder occupation

Stakeholders were asked how likely Traveller/Gypsy horse owners would request the advice of their occupation. A mean score of 2.16 ($\sigma = 1.32$, $n = 103$) was obtained, indicating that Traveller/Gypsy horse owners were not likely to request the advice of their occupation. There was a statistically significant effect of age on the likelihood of Traveller/Gypsy horse owners requesting advice of their occupation, $F(3, 99) = 3.776$, $p < 0.01$. Respondents in the youngest age bracket ($\bar{x} = 2.60$, $\sigma = 1.30$, $n = 23$) had significantly higher agreement on the likelihood that advice would be requested than respondents aged 35 - 44 years ($\bar{x} = 2.53$, $\sigma = 1.56$, $n = 30$), $p = 0.04$ and 56+ years ($\bar{x} = 1.59$, $\sigma = 0.28$, $n = 22$), $p = 0.04$. There was no

statistically significant effect of gender, region of practice and occupation and likelihood of requesting advice, $p > 0.05$.

Nineteen stakeholders commented on the question on how likely Traveller/Gypsy horse owners are to request the advice of their occupation. There were ten references to positive relationships between services and Traveller/Gypsy horse owners while three references referred to a non-existent relationship. There were three references to cost of services as a deterrent to requesting advice of a service and one reference relating to a referral from a welfare organisation as the reason for Traveller/Gypsy engagement with their service.

3.3.17 Perception of who is responsible for Traveller/Gypsy horse welfare

The vast majority of respondents strongly agreed that Traveller/Gypsy horse owners are themselves responsible for their horse's welfare. There was also strong agreement for the statement that Traveller/Gypsy horse owners themselves are responsible but with support from the mentioned agencies support, *Table 3.26*.

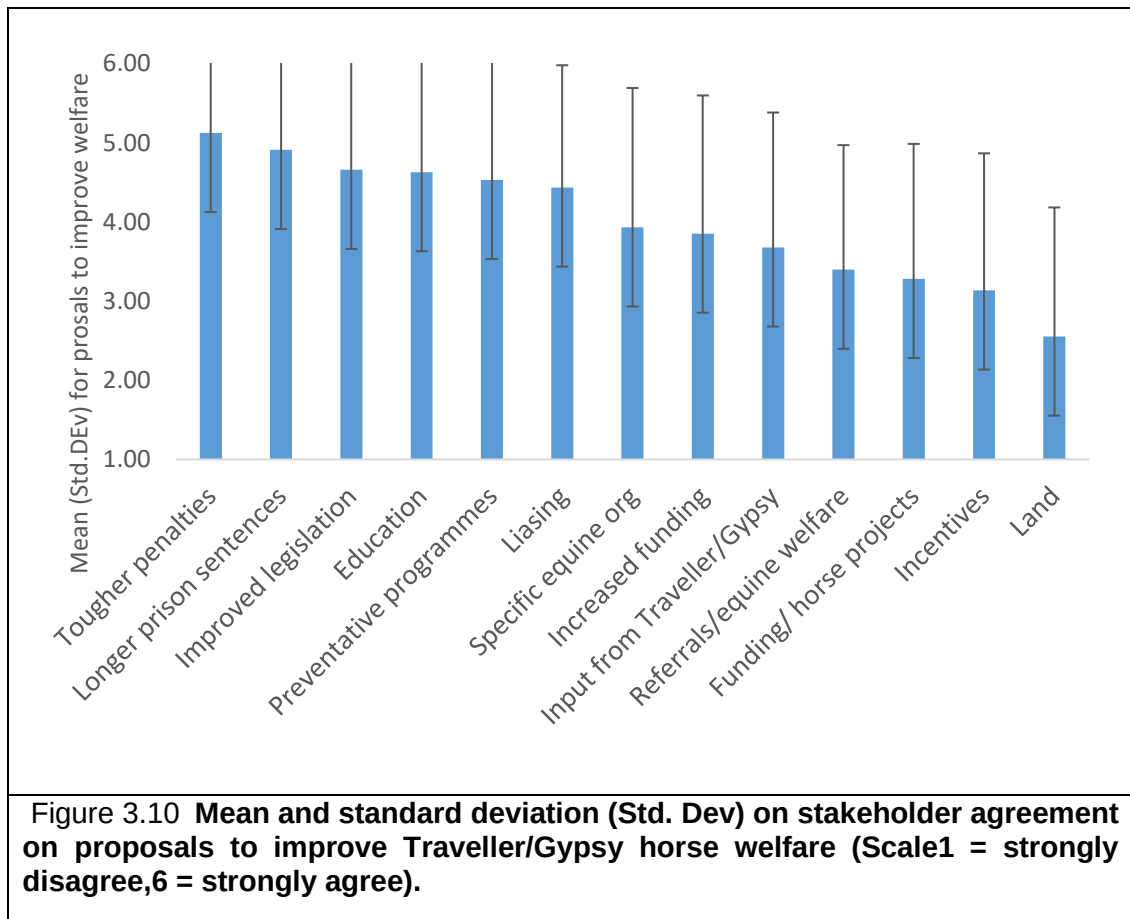
Table 3.26 Mean and standard deviation (Std. Dev) on stakeholder perceptions of who is responsible for Traveller/Gypsy horse welfare, (Scale1 = strongly disagree, 6 = strongly agree)

Responsibility	Mean	Std. Dev
Traveller/ Gypsy horse owners themselves	5.64	0.71
Government Body	2.85	1.61
Local authority/Council	2.75	1.65
AWO	2.66	1.65
Horse Sector	2.58	1.50
Police	2.54	1.56
Traveller/Gypsy with support	4.93	1.57
Other Structures	1.44	1.94

There was a statistically significant effect of region of practice on who is responsible for Traveller/Gypsy horse welfare, $F(9, 93) = 3.236, p < 0.01$. Post hoc analysis revealed that stakeholders from the Midlands ($\bar{x} = 4.36, \sigma = 1.50, n = 11$) had significantly higher agreement with the statement 'local authority/council' than those from Leinster ($\bar{x} = 1.66, \sigma = 1.41, n = 9$), $p < 0.01$ and North of England ($\bar{x} = 1.86, \sigma = 1.30, n = 15$), $p < 0.01$. There was also a statistically significant effect of occupation on responsibility for Traveller/Gypsy horse welfare, $F(6, 96) = 2.204, p = 0.04$. Post hoc analysis revealed that council/trading standards official/police ($\bar{x} = 2.05, \sigma = 1.25, n = 18$) had significantly lower agreement with the 'local authority/council' as being responsible for Traveller/Gypsy horse welfare than 'other' occupation ($\bar{x} = 3.84, \sigma = 1.77, n = 13$), $p = 0.04$. There were no statistically significant differences between gender and region of practice on responsibility for Traveller/Gypsy horse welfare, $p > 0.05$.

3.3.18 Proposals to improve horse health and welfare

Stakeholders rated their level of agreement with a number of proposals to improve the health and welfare of Traveller/Gypsy horses, if necessary. Tougher penalties for equine abuse and neglect received the highest rate of strongly agree and provision of land received the lowest agreement, *Figure 3.10*.



There was a statistically significant effect of gender and occupation on individual proposals to improve welfare. Women ($\bar{x} = 4.91$, $\sigma = 1.46$, $n = 71$) had significantly higher agreement on `improved legislation` than men ($\bar{x} = 4.03$, $\sigma = 2.05$, $n = 30$), $t(99) = -2.442$, $p < 0.01$. Women ($\bar{x} = 5.16$, $\sigma = 1.35$, $n = 71$) also had significantly higher agreement on `longer prison sentences` than men ($\bar{x} = 4.30$, $\sigma = 1.87$, $n = 30$), $t(99) = -2.617$, $p < 0.01$. There was a statistically significant effect of occupation on individual proposals to improve welfare, $F(6, 96) = 2.786$, $p < 0.01$. Post hoc analysis revealed that Equine services ($\bar{x} = 3.00$, $\sigma = 1.52$, $n = 7$) had significantly lower agreement on the use of `preventative programmes` than Education/training ($\bar{x} = 5.58$, $\sigma = 0.66$, $n = 12$), $p < 0.01$. There was no statistically significant effect of age group and region of practice on proposals to improve Traveller/Gypsy horse welfare, $p > 0.05$.

3.4 Discussion

The overall aim of this study was to assess equine stakeholders' perceptions of Traveller/Gypsy horse ownership and horse health and welfare to determine stakeholder knowledge, understanding and engagement with this ethnic horse-owning group.

3.4.1 Perception of Traveller/Gypsy Horse Owners

This study identified several stakeholder perceptions regarding Traveller/Gypsy horse owners. Firstly, stakeholders perceived that the low market value of horses has allowed for the purchase of more horses than Traveller/Gypsies can care for and that they are more likely to indiscriminately breed from their horses. A possible explanation for this perception may be that these issues are routinely cited as current horse welfare key concerns and were highlighted in a report 'Left On The Verge: In the grip of a horse crisis in England and Wales' (The Royal Society for the Prevention of Cruelty to Animals (RSPCA) et al., 2013). Both issues were recognised as one of the main contributors to the UK Horse Crisis in that report. However, it must be pointed out that these practices were not directly assigned to Traveller/Gypsy horse owners in the 'Left on the Verge' report (RSPCA et al., 2013).

Stakeholders in the current study were of the view that Traveller/Gypsy horse owners did not provide suitable land for their horses, which is a requirement for sufficient and appropriate nutrition (Dalla Costa et al., 2016). However, results of the present study also show that stakeholders recognised that this horse-owning community has difficulties in accessing land for their horses. There were, however, regional differences in this result with stakeholders from Munster and Connacht in Ireland acknowledging that accessing land was a difficulty than those from South East (England). Access to land has been cited as a barrier to horse ownership in studies and reports in Ireland (Burke Wood, 2019, Pavee Point, 2019, Rowland et al., 2019); and

consequently, stakeholders in these regions may be more aware of this issue.

Stakeholder occupation also significantly influenced the perceived difficulty of land accessibility. Of particular importance is the finding that AWOs and council/trading standards official/police were of the view that land accessibility was an obstacle as it implies that they recognise that land accessibility is a barrier to Traveller/Gypsy horse ownership. Moreover, stakeholders with these professional backgrounds are responsible for enforcing horse welfare legislation, and therefore, an understanding of the difficulty Traveller/Gypsies face in accessing adequate land for their horses is required to support Traveller/Gypsy horse owners in addressing horse welfare concerns. For this reason, horse projects were set up in Ireland to secure grazing land for Traveller horses (Rowland et al., 2019) and to address the land accessibility problem. These projects received support from local authorities, Gardai and equine welfare organisations. Thus, it is encouraging that stakeholders in the present study also acknowledged the difficulty of land availability for Traveller/Gypsy horse owners since this understanding may translate into similar horse projects as the ones being introduced in Ireland.

While it is important to provide access to land for horse management, it was not one of the proposals which received a lot of support from stakeholders in the present study but that may have been due to misinterpretation of the wording. Perhaps, access rather than provision would have been a better choice of word as provision may have been interpreted as providing land for free. In addition, horse projects also received limited support, however horse projects are unique to Ireland, therefore, it may be that stakeholders in the UK are unfamiliar with these projects. The value of horse projects was highlighted by Pavee Point (2019), with research participants from Traveller organisations stating that Traveller horse owners must be instrumental in the development and operation of such projects.

Stakeholders also recognised to some extent that Traveller/Gypsy horse owners experience further difficulties in maintaining their tradition of horse ownership. Occupation and gender had a significant influence on these perceptions. Council/trading standards official/police perceived the difficulty of affording horse care for Traveller/Gypsy horse owners to be more prevalent than stakeholders who did not choose any of the predefined occupation groups (hereafter referred to as `other` occupations). It may be that some members of the former professions have a better understanding of the cost of horse care as they are more involved in horse welfare enforcement than `other` occupations. `Other` occupations were more likely to work in administration posts, therefore, may not be as familiar with the particulars of horse ownership.

Men recognised that Traveller/Gypsy horse owners experience difficulties in affording horse care more so than women, perhaps suggesting that men perceive the cost of horse care differently. In fact, financial behaviour and knowledge was found to differ by gender, with men found to be more financially informed than women (Theodos et al., 2014). There was greater agreement by council/trading standards official/police on the difficulty for Traveller/Gypsy horse owners to comply with the COHA than `other` occupations. The former occupational group is responsible for the implementation of this Act, therefore, an understanding of the difficulties the COHA creates for Traveller/Gypsy horse owners is encouraging. However, council/trading standards official/police were also of the view that the local authority/council did not have responsibility for Traveller/Gypsy horse welfare. Under the Animal Welfare Act (2006), the enforcement of animal welfare is not the responsibility of any one agency but of various agencies who work together. These include local authorities, police and the RSPCA. Therefore, it is likely that council/trading standards official/police view their role in the context of a wider agency approach to animal welfare accountability and enforcement. Further, the Animal Health and Welfare Strategy for Great Britain (Department for Environment, Food and Rural

Affairs, 2004), states that best practice for improved animal welfare can only be achieved when there is co-operation and collaboration between animal owners and animal services.

While innovative, the inclusion of Traveller/Gypsy horse owners in stakeholder partnerships is recommended as through a collective approach, Traveller/Gypsy horse owners will have the opportunity to work with other stakeholders towards a common goal which is improved horse welfare. Additionally, stakeholder perceptions of this horse owning group were likely to be enhanced when difficulties encountered by Traveller/Gypsy horse owners such as access to land improved. This information is important for the development of policies on horse welfare of which stakeholders are participants as recognition of these difficulties may influence the content of these policies. Therefore, policies that help support rather than penalise Traveller/Gypsy horse owners' tradition of horse ownership will be fostered.

A minority of stakeholders perceived Traveller/Gypsy horse owners to be considerate owners. These stakeholders included veterinarians, AWOs, equine services and voluntary welfare workers. Differences were present between the different occupation groups and may be attributed to the more direct involvement with Traveller/Gypsy horse owners by specific professions such as veterinarians, AWOs, and equine service workers. This finding is consistent with that of Butler et al. (2019) who also found that different equine stakeholder roles were found to have different views on equine concerns, for example, veterinary surgeons and racehorse trainers perceived the prevention of diseases of greater importance than that of owners and stable staff.

The consensus in the current study was that Traveller/Gypsy horse owners applied inadequate practices in the management of their horses. In previous studies, stakeholders considered Traveller horses to be one of the main groups to be subjected to horse owners' inadequate care practices (Collins et al., 2009, Horseman et al., 2016). Stakeholders' perceptions of horse owners'

inadequate practices in the current study may be related to most stakeholders' view that Traveller/Gypsy horse owners are generally unaware of the concept of horse welfare. However, the concept of animal welfare is complex. Many characterisations defining animal welfare have been developed over the years, and, therefore, it can denote different meanings to different people (Hewson, 2003). In fact, equine stakeholders were found to understand the concept of animal welfare in various ways, for example, resource provision, natural behaviour and the avoidance of negative states were some of the constructs cited (Horseman et al., 2016). As such, stakeholders in the current study may have based their perception on Traveller/Gypsy horse owner understanding of the animal welfare concept on this information. However, a recent study investigating a small group of Traveller/Gypsy horse owners found that their participants had a good knowledge of the animal welfare concept and understood it in relation to horse care and management, health, resource provision and emotional state (Rowland et al., 2020). These results show that perceptions between stakeholders and this ethnic minority group differ, and further research is needed to investigate the understanding and conceptualisation of animal welfare in different groups.

In addition, stakeholders view of Traveller/Gypsy horse care practices as inadequate may be related to stakeholders' perception in this study that Traveller/Gypsy horse owners were viewed negatively within their own occupation, with prejudices and stereotypes quoted as the main reason for negative perceptions. Accounts of being unlawful, high crime rates, violence and dishonesty were cited and support previous studies as outlined in Chapter 1 (Dahlgreen, 2015, Fraser, 1995). However, seven stakeholders in this study reported positive reasons for stakeholder perceptions of Traveller/Gypsy horse owners with a recognition that horse welfare issues can occur in all horse owning communities. Collins et al. (2012) too supports the supposition that horse welfare issues are found within a subset of all horse owning communities. These results highlight that many people, in this

case stakeholders, base their views on stereotypes which are not related to equine management. This, in turn, results in negative perceptions of Traveller/Gypsy equine management practices which are not scientifically proven. If stakeholders rely on these stereotypes, it will reinforce the negative perception of Travellers in many areas of their lives and will augment inequalities experienced by this ethnic minority group further. Therefore, there is a need for stakeholders to deepen their knowledge and understanding of Traveller/Gypsy culture and horse culture in order to eliminate the impact of stereotyping of this horse owning community.

In this study, stakeholders stated that perceptions of Traveller/Gypsy horse owners were often based on their lack of engagement with equine services, with most stakeholders agreeing that Traveller/Gypsy horse owners were unlikely to request the advice of their occupation. These results support the view that the Traveller/Gypsy community is less likely to engage with services in general, with key reasons cited for poor engagement including prejudice, stigmatisation, lack of cultural understanding, hostility and discrimination (Matthews, 2008; Cemlyn et al., 2009; Francis, 2013). Further, stakeholders viewed Traveller/Gypsy horse owners as ultimately responsible for their horse's welfare. However, relevant accessible services need to be available for horse owners to maintain this responsibility. Therefore, there is a need for the development of cultural competence at an individual and organisational level to improve Traveller/Gypsy horse owners' engagement with these services. Nevertheless, the present study found that younger respondents did think that Traveller/Gypsy horse owners were seeking advice although older respondents thought otherwise. This finding is encouraging as younger stakeholders are the current and future advisors on equine issues and may be able to keep engaging with this ethnic minority group in the future to ensure better utilisation of the services they offer. This view supports the findings that, overall, young people are more accepting of racial differences and diversity in the UK than previous generations (Janmaat and Keating, 2017). Therefore, an investigation into the relational factors that

affect the utilisation of equine services by Traveller/Gypsy horse owners is required and may ultimately result in improved relationships between both Traveller/Gypsy horse owners and equine stakeholders.

3.4.2 Perception of Traveller/Gypsy horse owner care and management

Evaluating Traveller/Gypsy horse owner care and management, stakeholders agreed that Traveller/Gypsies provide their horses with social contact with other horses and that they are responsible horse owners. This finding may be related to stakeholders' first-hand experience of working with Traveller/Gypsy horse owners. Good horsemanship was also cited by stakeholders in a study on a Native American Reservation in South Dakota (Gebhart and Botts, 2013). However, in the present study the ratings for the provision of horse social contact and responsible ownership were rather low, indicating that these are not perceived to be very common among Traveller/Gypsy horse owners. This result could be related to how important stakeholders perceive both social contact and responsible ownership as these issues are related to positive welfare. However, there is often a focus on the negative aspects of welfare (Mellor, 2016), and this is perhaps more likely with enforcement organisations.

Stakeholders also perceived the uptake of strangles vaccinations to be poor. In addition, strangles was cited as the most prevalent respiratory disease in Traveller/Gypsy horses. There have been various attempts to develop a strangles vaccine that is safe and protects against infection, it is only with the recent development of *Streptococcus equi* vaccine (recombinant proteins) (Strangvac)¹ that this is assured (Robinson et al., 2018). Therefore, the perception of low uptake may be due to the novelty of this specific

¹ *Streptococcus equi* vaccine (recombinant proteins), EMEA/V/C/005309, Intervacc AB

vaccination in addition to, the inefficacy of previous vaccines, and this should also apply to all other horse owning communities. Research to document the uptake of this recent strangles vaccination is recommended and this will help determine the risk of this health condition in the future.

Overall, stakeholder perception of Traveller/Gypsy horse owner care and management was negative with most practices perceived to be poor, a finding supported by Horseman et al. (2016). Stakeholders referred to neglect, cruelty and poor welfare as the main reasons for negative perceptions within the industry. While Traveller/Gypsy horse owner management was viewed as slightly better than their health care practices, both were not perceived positively. These results are consistent with research showing that Traveller horse welfare concerns varied from inadequate management to inadequate routine health care (Horseman et al., 2016).

In the present study, the highest contributing predictor of stakeholders' perception of horse owner care was level of welfare, with the current level of welfare of Traveller/Gypsy horses perceived to be poor. This finding supports previous studies where stakeholders associated Traveller/Gypsy horses with a low level of welfare (Horseman et al., 2016; Collins et al., 2009). Veterinarians, AWO's, and equine services perceived horse welfare to be better than 'other' occupations. These former stakeholders are more likely to be the frontline workers and providing horse welfare services and support. Therefore, it is probable that these stakeholders also have more experience of assessing the level of horse welfare than 'other' occupations, who were more likely to work in administration rather than being directly involved with Traveller/Gypsies and/or horses. However, the status of Traveller/Gypsy horse welfare has not been scientifically assessed or recorded and differences in perceptions may exist as discussed before. Therefore, there is no scientific foundation to stakeholders' perceptions of the current low level of horse welfare. Nevertheless, the level of horse welfare was a predictor of stakeholder perceptions of Traveller/Gypsy horse owner care in this study.

A further contributing predictor of stakeholders' perceptions of better horse owner care was their region of practice (from Munster). These observed findings may be related to the fact that there are two Traveller specific horse projects in Munster, Shannon Horse Project and Travellers' North Cork Horse Project. Together with Traveller horse owners, horse projects are generally set up with the input and support of equine stakeholders and are subsequently involved in supporting horse owners in the health care of horses in these projects. The influence of area of residence and occupation on how horse care is perceived is supported by previous studies (Horseman et al., 2016, McNeill et al., 2018). The identification of these demographic factors will provide for opportunities to promote positive changes in stakeholder perceptions of Traveller/Gypsy horse care as relevant information on Traveller/Gypsy culture can be targeted to specific stakeholders.

A further possible explanation for stakeholders' negative perceptions of Traveller/Gypsy horse owner care and management may be the different media used to source information about this horse owning community. In the current study, stakeholders were found to source general information on Traveller/Gypsy culture from magazines, tabloid newspapers and TV reality shows, such as 'My Big Fat Gypsy Wedding' which can be summarised as tabloid journalism. In general, there is limited information about Traveller/Gypsy horse culture in these resources and other information with regards to Travellers/Gypsies seems to be presented in an exaggerated way (Powell, 2008). TV reality programmes presenting Traveller/Gypsy culture are often condemned for their sensationalist accounts and negative representation of Traveller/Gypsy culture (Tremlett, 2014). Therefore, the use of tabloid journalism to source information about Travellers/Gypsies may confirm and as a result strengthen negative stereotypes of Traveller/Gypsy culture in addition to horse culture rather than provide stakeholders with accurate and legitimate information.

It is not surprising that council/trading standards official/police were more likely to source information from government departments and council/local authority departments than veterinarians, equine services, voluntary welfare and other. These information sources are within the former groups own departments, and may, therefore, be more accessible to these groups. Moreover, these departments are instrumental in the development of policies, strategic plans and progress reports on Traveller/Gypsy communities, such as, the Scottish Government and Local Authorities' joint strategic plan on 'Improving the lives of Gypsy/Travellers: 2019 – 2021'. However, there are only few references to Traveller/Gypsy horse ownership within these documents and would, therefore, need to be updated to include additional information on Traveller/Gypsy horsemanship to provide reliable information to stakeholders. It must be highlighted that the media is in some part responsible for the unsubstantiated negativity surrounding Traveller horse ownership (Pavee Point, 2019). Identifying resource- seeking behaviours of stakeholders is crucial to address the widely- held negative perceptions of Traveller/Gypsy horse culture which can be targeted through specific media sources, in addition to specific stakeholders.

3.4.3 Stakeholder perception of Traveller/Gypsy horse health and welfare

Results of the present study show that stakeholders view Traveller/Gypsy horse welfare to be poor. Stakeholders consider fly-grazing, the neglect of horses' basic physical needs and abandonment of horses as the main welfare issues in Traveller/Gypsies which supports previous studies (Collins et al., 2009; Cullinane et al., 2015; Horseman et al., 2016). In addition, Traveller/Gypsy horses were perceived to be subjected to poor practices such as abuse, neglect and indiscriminate breeding. It needs to be noted that in the current study, Equine services reported a lower level of animal welfare concern for Traveller/Gypsy horses than AWO's, welfare volunteers and 'other' occupations. This result indicates that stakeholders working in equine services were less concerned about Traveller/Gypsy horse welfare. These

differences can be explained in part by the different roles these agencies have in horse care and welfare. For example, equine services are more likely to provide their services to Traveller/Gypsy horse owners who they already have a good relationship with, therefore, horses in their care of these owners are likely to be perceived as having better management. Conversely, for enforcement agencies such as AWOs, it is their role to be concerned about welfare of animals. Additionally, a culture of prejudice within some agencies may increase their level of concern for Traveller/Gypsy horses. Experiences of prejudice and discrimination towards Traveller/Gypsy communities is reported as commonplace (The Traveller Movement, 2017).

Differences between age groups revealed that younger participants held more positive views of Traveller/Gypsy horse practices. It is probable that this is due to young peoples' less prejudiced views (Franssen et al., 2012) and may, therefore, be less likely to assign poor welfare practices to Traveller/Gypsy horses. In the study by Franssen et al., (2012) investigating age related variations in ethnic prejudice, the results also showed that younger participants were less discriminatory and held fewer ethnic prejudices than older participants. On these grounds it can be suggested that it is important to strengthen the positive views of younger stakeholders to Traveller/Gypsy horse culture and horsemanship. These young stakeholders may be the entry point for successful communication and information dissemination strategies. Predictors of 'Good practices' varied from stakeholders who had higher perceptions of Traveller/Gypsy horse owners and level of welfare, perceiving practices as good to stakeholders from Munster and North England and AWOs having lower perceptions of practices being good. While the use of demographic information can provide a better understanding of stakeholder perceptions of Traveller/Gypsy horse culture, it is also useful in that it can help to differentiate between those stakeholders who view Traveller/Gypsy horse culture differently. This information can then be used to address underlying factors that lead to these differing views.

The present study also investigated stakeholder perceptions of horse welfare representation in the media. Participants cited tabloid newspapers to be the medium least likely to present a positive image of Traveller/Gypsy horse welfare although stakeholders agreed that overall, media sources such as social internet sites and radio/TV news present to some extent a positive image of Traveller/Gypsy horse welfare. These results correspond with a previous study on newspaper representation of minority ethnic groups (Jedidi, 2014). However, the view that there are media outlets who present positive imagery of Traveller/Gypsy horse welfare is reassuring as these representations can be strengthened and used to promote Traveller/Gypsy horse culture. Nevertheless, the results of this study are contrary to previous findings where Traveller/Gypsy support agencies found that the media is one of the platforms that is responsible for the unfounded negativity surrounding Traveller horse ownership (Pavee Point, 2019). Stereotyping and discriminatory practices stemming from negative media discourse of Traveller/Gypsy communities is supported by a study on the effect of different types of discourse has on these communities (Richardson, 2006).

Stakeholders in the present study reported that the above-mentioned horse welfare issues formed their own occupations' negative perceptions of this horse owning group. However, no work on the specific topics of abandonment and fly-grazing has been done in relation to Traveller/Gypsy horse welfare, therefore, empirical studies are necessary to determine the accuracy of these perceptions. Hence, should stakeholder perceptions be found to be inaccurate, correct information would need to be disseminated to stakeholders to prevent the spread of misinformation and to help ease the stigmatising of this group.

3.4.4 Perceptions of health conditions in Traveller/Gypsy horses

In addition to management practices, the present study also investigated how stakeholders perceive the health of Traveller/Gypsy horses. There were several health conditions that stakeholders perceived to be prevalent in

Traveller/Gypsy horses. The most prevailing conditions cited were external parasites, dental diseases and hoof problems. Worm burdens, hoof cracks and low bodyweight issues were emphasised as the most common individual health issues. Strangles was viewed to be the most prevalent respiratory disease. Cough was rated as second highest with veterinarian's perceiving its prevalence as higher than equine education/trainer and volunteers. It is to be expected that the veterinary profession is perhaps more aware of this condition. There are approximately 600 outbreaks of strangles in the UK each year (Parkinson et al., 2011) however, there are no records of any horse-owning groups being more susceptible to this disease. Nevertheless, strangles is a highly contagious disease and can increase the risk of serious or life-threatening complications (Taylor et al., 2006). Current best practice in the management of strangles refers to improved biosecurity, isolation of infected horses and prevention of movement (Rendle et al., 2021). Further recommendations by Rendle et al. (2021) refer to the provision of well-defined and consistent information and training on strangles prevention.

In the present study, stakeholders advocated for education programmes to be available to the Traveller/Gypsy community which is in accordance with previous reports. According to Teagasc (2009), horse owner education is essential to improve horse welfare with Collins et al. (2012) advocating for education across all horse owning communities. However, education programmes need to be culturally appropriate and need to account for varying literacy levels to be successful. Although, it must be noted that education programmes alone are not sufficient for behaviour change; personal, social and environmental factors are all recognised as instrumental in human behaviour change (Gifford and Nilsson, 2014).

Stakeholders perceived the prevalence of lesion/wounds to be widespread, reflecting those of the NEHS (Blue Cross, 2018), where the most prominent health condition reported in UK horses were skin problems. Sweet itch and mud fever obtained a relatively high score in both the NEHS (Blue Cross, 2018) and the current study. Therefore, these skin conditions appear to be

common in all horse owning communities. Ocular discharge was the most prevalent eye problem reported in the present study, followed by conjunctivitis. These findings also align with eye problems reported in other horse communities (Blue Cross, 2018). Stakeholders cited that Traveller/Gypsy horses require equine dental technician care, with the lack of professional dental care having a negative affect from a horse welfare perspective. However, dental disease was one of the lowest reported syndromes in horses in the UK (Blue Cross, 2018), although high levels of dental disorders were observed in post-mortem studies of horses (Brigham and Duncanson, 2000). Therefore, determining the prevalence of dental issues in Traveller/Gypsy horses would indicate whether dental care differs between horse owning communities.

Hoof cracks and hoof splits were the most widespread hoof conditions reported. Poor hoof conditions and foot care were identified as key issues for horses in the UK (Horseman et al., 2016; Thirkell and Hyland, 2017). The prevalence of hoof cracks was perceived to be higher and hoof splits to be lower by council/trading officials/police than respondents in `other` occupation roles. As hoof cracks/splits are often visible, these may be more perceptible to the former occupations due to their outdoor role and engagement with Traveller/Gypsy horse owners. Further, horses that are attended to by council/trading officials/police are more likely to be neglected as their roles are often associated with the enforcement of animal welfare, therefore, they may have a better indication of the extent of these conditions. While the true incidence of hoof conditions in Traveller/Gypsy horses requires assessment, support with farrier and bare foot trimmers' services would help to reduce any conditions that may be present. However, equine services were least supportive of horse health and welfare community programmes. One plausible explanation for this result is that these programmes may provide subsidised services such as farriery, for example, the BHS in collaboration with other agencies delivers a subsidised health programme to vulnerable horse owners and communities. As such, equine

service stakeholders may not have a favourable view of these events because of the financial impact on their own services. Pritchard et al. (2018) acknowledged that the provision of free or subsidised services to horse owners may have a negative effect on the sustainability of local animal health services.

The presence of tendon injury/swelling/inflammations and ligament injury were commonly reported. This may be attributed to the common practice of sulky racing in Traveller/Gypsy culture where horses and owners often partake in on-road racing. Tendon and ligament injuries can happen during exercise or because of trauma in addition to extreme forces put on a joint (Tamura et al., 2018). Therefore, racing on hard surfaces as in on-road racing may be perceived as causing a high rate of these injuries in Traveller/Gypsy horses. Traveller horse owners cited lack of access to harness racing tracks as a reason for partaking in on-road racing (Pavee Point, 2019). While empirical evidence is not available on the prevalence of non- foot conditions in on-road horses, this activity needs to be examined further with Traveller/Gypsy horse owners, stakeholders and the relevant harness racing authorities in the context of horse welfare in addition to access to appropriate resources for Traveller/Gypsy horse owners to participate in this cultural activity.

Stakeholders regarded worms as the most widespread issue in Traveller/Gypsy horses. Considerable worm burdens were also perceived to be prevalent within the UK horse population (Rioja-Lang et al., 2020), therefore, this suggests that this issue is not unique to the horse population in this study. In addition to worm burdens, stakeholders also perceived other common issues to be prevalent in Traveller/Gypsy horses such as diarrhoea, liver problems and metabolic syndrome. Results show regional differences which may be explained by the number of horses' stakeholders care for in their location which ranged from one to 100 with those with more horses to care for more likely to have greater exposure to these conditions. Results also show that stakeholders such as veterinarians and AWOs perceive

gastric ulcers, liver problems, and nervous system problems to be more prevalent than stakeholders who seem to have less clinical expertise as these disorders require expert identification and diagnosis.

The present study revealed that stakeholders perceive mites and lice to be very common external parasites in Traveller/Gypsy horses. As lice infestations are often related to horses in poor condition (Gawler et al., 2005), the finding in the current study may be explained by stakeholders overall high level of concern for Traveller/Gypsy horses. Nearly half of the stakeholders in this study indicated that they were very concerned for the welfare of Traveller/Gypsy horses. This finding supports previous studies where equine stakeholders have associated Traveller/Gypsy horse owners with reduced horse welfare (Collins et al., 2009; Horseman et al., 2016). Parasite control was also found to be a concern by stakeholders on a Native American Reservation (Gebhart and Botts, 2013). However, empirical evidence is missing about the actual prevalence of external parasites in Traveller/Gypsy horses and therefore, it is difficult to estimate the real prevalence of those parasites.

Stakeholders regarded being underweight as the most prevalent horse weight problem, suggesting that malnourished horses are common in Traveller/Gypsy horse community. A possible explanation for this perception might be that underweight horses are more likely to be reported and investigated and are also more likely to be portrayed in the media, in particular social media, therefore, it is probable that stakeholders who work with Traveller/Gypsy horse owners have more experience of this issue. Underweight horses were also reported by Horseman et al. (2016) although this was not exclusive to the Traveller/Gypsy community. There were demographic differences in agreement on the perceived prevalence of horse obesity with younger stakeholders and stakeholders from Scotland/NI, the Midlands and veterinarians and AWOs considering horse obesity to be more prevalent in Traveller/Gypsy horses than stakeholders aged 45 – 55 years, from areas in Ireland and other workers. The possible inference of this finding

is that the health and welfare implications of obesity in horses may not be recognised as a health concern by the different roles within the equine industry (Butler et al., 2019). With the prevalence of horse obesity increasing (Carter et al., 2009), it is probable that younger stakeholders acknowledge the health and welfare implications of this issue to a greater extent than their older counterparts. Therefore, the younger generation of equine stakeholders can be helpful in communicating the adverse effects of horse obesity to horse owners and possibly reducing the incidence of such. Throughout the study, female participants generally perceived higher prevalence of most of the health conditions which reflects that of other studies where women were found to be more concerned about horse welfare than men (Visser and Van Wijk-Jansen, 2012).

3.4.5 Limitations

While this study obtained data on stakeholder perceptions of Traveller/Gypsy horse culture, there are limitations to this study. Firstly, the questionnaire was extensive, therefore, respondents may not have remained fully engaged for the full survey or questions may be answered superficially. Stakeholders who provided responses may have been guided by social desirability rather than providing authentic responses. Further, the use of a questionnaire may have limited respondents on the information they can provide, therefore, data may lack depth although there was the opportunity to add additional information. Qualitative methodology may have provided greater insight into the basis of answers. Finally, the sample size was relatively small, therefore generalisations cannot be made.

3.5 Conclusion

The aim of the present study was to examine stakeholder perceptions of some of the key issues to Traveller/Gypsy horse health, welfare and horse ownership. Overall, the data show that horse owner care and management in Traveller/Gypsy horse culture was viewed as inadequate and the current level of welfare of Traveller/Gypsy horses was perceived to be poor. A high

level of concern for horse welfare was expressed and Traveller/Gypsy horse owners were perceived to have a low level of awareness of the animal welfare concept. Most stakeholders were of the view that Traveller/Gypsy horse owners were perceived negatively with motives based on prejudices and stereotypes, horse welfare issues and lack of engagement with equine services. The study identified various health issues perceived to be prevalent in Traveller/Gypsy horses although stakeholders in other studies also recorded many of these issues in the wider horse population. Therefore, overall incidence of health issues in Traveller/Gypsy horses reflects that of the general horse population and similar preventative measures need to be place.

It was evident that stakeholders in this study are influenced by stereotypes as there is very little evidence of the extent of the real problems. These stereotypes were further strengthened by their support for tougher penalties for equine abuse and neglect which may be explained by their role in the advancement of animal welfare strategies. For example, the RSPCA was instrumental in the advancement of Animal Welfare (Sentencing) Bill (2021) that was recently passed in Parliament. This bill advocates for an increase in sentencing for animal abuse from the current six months to five years. However, penalties for equine abuse and neglect currently exist, therefore, it may be the enforcement of these penalties rather than the penalties themselves that are the issue. Further, Pavee Point (2019) advocates for measures that are beneficial such as education programmes rather than those that penalise Traveller/Gypsy horse owners.

References were made by stakeholders in the present study to good horse ownership for this ethnic minority and they recognised that some aspects of Traveller/Gypsy horse culture are difficult such as access to land and complying with COHA. In particular, the bodies who enforce the COHAs were found to understand these difficulties. These results provide great entry points for the development of evidence-based interventions with the aim to aid communication between stakeholders and Traveller/Gypsy horse owners.

As such, a better understanding and an inclusive approach to this horse owning community and the issues they encounter may be achieved. In addition, younger stakeholders were found to be less prejudiced and more open to Traveller/Gypsy horse culture, therefore, there is potential to include these stakeholders in efforts to reduce stigmatisation by engaging and empowering Traveller/Gypsy horse owners to access equine services. Thus, better services to horse owners and their horses which contribute to improved horse welfare. Moreover, it would be useful and interesting to evaluate Traveller/Gypsy horse culture from a Traveller/Gypsy perspective, therefore, their views on, and approach to horse care and management should be a subject of investigation.

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Chapter 4: Traveller/Gypsy horse owner views on, and approach to horse care and management.

4.1 Introduction

Today, Travellers and Gypsies lead a less nomadic life than they would have had in previous generations. Nevertheless, the horse remains central to Traveller/Gypsy lives (Irish Traveller Movement (ITM), 2002) with owning, breeding, and selling of horses' commonplace and horses used for recreational activities such as sulky racing (harness racing) and trotting. Horse fairs are also an important feature in Traveller/Gypsy horse owners' calendars (Travellers Times, 2018). These events are annual gatherings where Travellers/Gypsies horse owners show, trade and barter in horses. However, the subject of Traveller/Gypsy horse ownership has been given little attention within empirical studies and scientific literature.

While welfare issues can be found in all sectors of the horse industry (Collins et al., 2012), Traveller horse owners have been identified as one of the main contributors to poor horse welfare by equine stakeholders (Collins et al., 2010; Horseman et al., 2016). The limited literature indicates that common practices such fly-grazing, tethering and abandoning animals are associated with Traveller horse ownership (Gmelch, 1975). This literature dates to nearly fifty years ago and with few empirical studies since, it is evident that perceptions are based on very old literature. Further, knowledge of Traveller/Gypsy horse ownership and horse welfare has until recently relied on stakeholders, public perceptions and media reporting of this horse-owning community (Collins et al., 2009, 2012; Horseman et al., 2016). These practices are considered to contribute to compromised Traveller horse welfare (Cullinane et al., 2015) and were also emphasised in a report 'Left On The Verge: In the grip of a horse crisis in England and Wales (The Royal Society for the Prevention of Cruelty to Animals, (RSPCA) et al., 2013) as

key horse welfare concerns. The Control of Horses Act (COHA: Ireland 1996; Wales, 2014; England, 2015) was introduced because of a perceived increase in the number of horses being fly grazed on private and/or public/common land and aimed to prevent wandering, abandoned and neglected horses, and property damage. However, there are no empirical data to support this inference. Nevertheless, this legislation presents many challenges to Traveller/Gypsy horse owners as they are often more susceptible to the consequences of this Act (Pavee Point, 2019). For example, the practice of fly-grazing may be utilised by Traveller/Gypsy horse owners because of lack of land accessibility, which remains one of the most significant issues for Traveller horse ownership (Rowland et al., 2019, Pavee Point, 2019). Further, fly-grazing may result in impoundment with substantial costs of retrieving horses from impoundment (Pavee Point, 2019). In addition, there are the costs of licensing, microchipping and passporting which are all required by COHA. Additionally, horse tethering is often associated with Traveller/Gypsy horse ownership and is not deemed to be good horse care practice (RSPCA, n.d.). Although not confined to any one horse-owning community, indiscriminate horse breeding is another practice often assigned to Traveller/Gypsy horse ownership. While there was some recognition, in a recent study on Traveller horse ownership, of irresponsible breeding by Traveller horse owners (Pavee Point, 2019), there has been no detailed investigation into the practice of indiscriminate breeding within the Traveller/Gypsy horse industry.

While these practices were typically attributed to Traveller/Gypsy horse ownership, Horseman et al. (2016) did recognise that stakeholders had a propensity to associate welfare concerns with management and contexts that they perceived to be different or were unfamiliar with. The authors proposed that an objective approach is required when identifying welfare issues rather than a focus on minority welfare concerns. In addition, a multifaceted approach, which includes acknowledgement of economic and social limitations and efficiency in addition to the lack of appropriate advice and

resources is required when assessing how owners treat their working horses (Upjohn et al., 2014). As a minority horse-owning community, Traveller/Gypsy horse owners are often subject to social and economic limitations, therefore, these same principles as proposed by Upjohn et al. (2014) may apply.

4.1.1 Traveller/Gypsy horse care and welfare

Historically, Traveller/Gypsy horse owners had little input into research and decision-making processes (Conway, 2004; Rowland et al., 2019), therefore, questions remain about Traveller/Gypsy horse owners' approach to horse care and management. More recently, however, research has consulted with Traveller horse owners on the issue of horse ownership and management, with findings providing a somewhat more comprehensive account of Traveller horse culture (Burke Wood, 2019, Pavee Point, 2019, Rowland et al., 2019). While the Rowland et al. (2019) study provided an overview of Traveller horse owners approach to horse care and management, the study only investigated a small sample of horse owners, therefore it cannot be assumed that findings are representative of the Traveller/Gypsy horse-owning community as a whole. Both Burke Wood (2019) and Pavee Point (2019) included members of the Traveller community in their studies investigating the significance of horses in the Traveller community and the impact of control legislation on Irish Travellers. Burke Wood (2019) concluded that the COHA has resulted in increasing restrictions on horse ownership for this community while Pavee Point (2019) identified barriers to compliance with COHA legislation which included the lack of conditions necessary for horse welfare, for example, land accessibility and lack of recognition of the cultural significance of the horse within the Traveller community. It must be noted that these studies were conducted with Irish Travellers in Ireland, therefore, the results may not be directly applicable to the UK. To the best of the author's knowledge, the only study in the UK that included Traveller/Gypsy horse owners was that of Rogers et al. (2016). These authors interviewed Traveller/Gypsy horse owners at Appleby Horse Fair in Cumbria, England to

gather information on horse management, trends in horse trade in addition to, the societal issues encountered by the horse-trading community in the UK. They found that most interviewees were life-long horse owners from horse-trading families, with Cobs the most popular horse breed owned. Lack of available grazing was cited by participants as one of the main difficulties to horse ownership. Further, Traveller/Gypsy horse owners were generally interested in horse related educational provision.

In the aforementioned studies, the use of interview methodology with Traveller/Gypsy horse owners permitted for perspectives on horse ownership, care and management practices to be explored in-depth. Semi-structured qualitative interviews are flexible for both researcher and participant (Bernard, 2005). In contrast to the more structured methodologies of questionnaires and structured interviews, semi-structured interviews are valuable for exploring and discussing unexpected data (O'Leary, 2014). Furthermore, the flexibility of semi-structured interviews allows for the investigation of ethnic cultural perspectives (Groth-Marnat, 1999) and are recommended when assessing culture (Grieger and Ponterotto, 1995). Therefore, the semi-structured interview is an approach that appears to be compatible with research into Traveller/Gypsy horse culture.

4.1.2 Rationale

It is evident that there is a void in knowledge on the subject of Traveller/Gypsy horse owners' views on and approach to horse care and management. According to Mellor (2016), people have the ability to compromise or improve an animal's welfare by both the decisions they make and/or their behaviour towards animals. Therefore, there is a need to understand Traveller/Gypsy horse owner views on their tradition of horse ownership, as well as their approach to horse husbandry and management practices. This study focused on this research gap by utilising semi-structured interviews, which allowed for the exploration of views, narratives and experiences, to examine Traveller/Gypsy horse owners' views, knowledge and approaches to horse care and management. Thematic

analysis identified Traveller/Gypsy horse owners' relationship with horses, including their attitudes to and knowledge of horse care and management. Further, this study aimed to examine how responses varied across different horse owners and for different horse management practices.

4.2 Methodology

This study was approved by the Human Ethics Review Committee, The Royal (Dick) School of Veterinary Studies, The University of Edinburgh (Ref no. HERC_180_18)

4.2.1 Interview questions design

A number of open-ended questions formed the basis of the semi-structured interviews, and these questions are presented in *Appendix C1*. Questions were primarily based on a previous study (Rowland et al., 2019) in addition to the literature review. The semi-structure interview consisted of 18 sections and is summarised in *Table 4.1*

Table 4.1 Semi-structured interview format	
Demographic information	The first section consisted of statements pertaining to the participants' age, ethnicity and region and county of residence.
Introduction	The second section asked questions about participants' lifestyle, number/breed of horses owned and whether they were horse breeders
Equine Health	This section comprised of questions regarding participants' understanding of a healthy horse and knowledge of horse health problems. Vaccination and worming practices and oral health were also covered in this section.
Horse management	Participants were invited to respond to questions about traditional healthcare practices, management of ragwort and manure, and the use of rugs on horses.
Farriery	This section related to care of hooves, main problems that affect a horse's hooves, causes/management and frequency of farrier use.
Nutrition	This section concerned a horse's diet and access to pasture.
Shelter	Participants were asked about their horse shelter practices in this section.
Exercise	How participants exercised their horses was explored here.
Training methods	Training methods and age of the horse when beginning training were the questions asked in this part of the questionnaire.
Social Interactions	This section related to bonds between horses and their owners in addition to horses living preferences such as outdoors.
Breeding	This section refers to participants' breeding practices and the consequences of the current low prices for horses.
Behaviour	Here, participants were asked about different horse behaviour problems and the management of these problems.
Sentience	Participants' understanding of horse sentience was explored in this part of the interview.
Welfare	Participants' understanding of the concept of horse welfare and responsibility for a horse's welfare was the focus of this section.
The Control of Horses Act (COHA)	This section focused on the COHA and asked for participants' opinions about the impact of the COHA on horse ownership and practices such as fly-grazing and microchipping of horses.
Land availability	The next part of the interview researched participants' experiences of leasing land, support that may be required to Traveller/Gypsy horse owners and finally, their views on a specific Equine Welfare Organisation for Traveller/Gypsy horse owners.
Difficulties encountered	Participants were asked about any difficulties they have/had encountered as a horse owner.
Horse Project	The final section was aimed at participants who were members of Horse Projects and questions related to their involvement in such, in addition to the benefits of these projects.

The interview concluded by asking participants about the horse welfare assessment protocol that was used in this study to assess horse welfare and is discussed in more detail in Chapter 5 and if they had any further comments.

To explore Traveller/Gypsy views about horse care and welfare at horse fairs and clinic days, the interview questions were reviewed and revised for these circumstances (*Appendix C2*). The rationale underlying this was that participants would be required to spend less time in the interview process. Experience at the primary horse fair attended indicated that while participants were willing to engage in the process, time constraints did not always allow for participation. This was due to reasons such as social activities, horse care and management and horse sales and purchasing. The key changes to the interviews conducted in the Horse Fair/Clinic were a reduction in the number of questions in each section and questions on Horse Fairs/Clinics replaced the section on Horse Projects. The methodology adopted followed the previous work on interview construction and schedule but with fewer semi-structured questions.

In recognition of Traveller/Gypsy low literacy levels, language used in interview questions was considered for cultural sensitivity and comprehension. The language of questions varied to accommodate understanding, rephrasing and repeating of questions when and if required. Probing questions were used for more detailed responses, to check for relevance of responses and to clarify understanding. Open-ended probing questions were used and usually started with 'what', 'when', 'where', 'why', and 'how'. Interview questions and schedule were pre-tested with Traveller horse owners in a previous study by the PhD researcher (Rowland et al., 2019).

4.2.2 Recruitment and participants

Seventy-one Traveller/Gypsy horse owners were recruited for this study. Participants were recruited through direct conversation with horse owners at horse fairs, horse health clinics, horse projects and at Traveller support organisations. Assistance with the recruitment process was sought from organisations already working with Traveller/Gypsy communities and horse owners and this proved to be valuable in identifying relevant venues and participants. Organisations included Redwings, Scottish Society for the Prevention of Cruelty to Animals (SSPCA), Irish Society for the Prevention of Cruelty to Animals (ISPCA), British Horse Society (BHS), Shannon Horse Project and Travellers of North Cork. The author was the sole interviewer. The interview sample included Irish Travellers, English Gypsies/Travellers, Scottish Travellers/Gypsies and Welsh Gypsies/Travellers. A sample was sought through the application of snowball sampling, where existing participants recruit/recommend further participants for the research study. Recruitment and interviews were conducted over a thirteen - month period between May 2018 and June 2019.

4.2.3 Procedure

Participants were given either a verbal or written outline of the study aims, and objectives as follows:

Aim: The main aim of the interviews is to consider Traveller/Gypsy horse owners' views and knowledge of horse care and management and horse welfare.

Reason: The reason for this study is that, to date, there is no study with Traveller/Gypsy horse owners on the topic of horse care and well-being and I would like to know more about the Traveller/Gypsy horse culture. Your information will help me understand how you care for your horses, the ways that you manage your horses and what your views are on horse welfare.

Participants were then provided with information on confidentiality, voluntary participation, recording of interview, note taking and storage of data

(Appendix C3). Participants were asked to give their consent to participate in interviews in writing by either signing their name, initials or with an X-mark signature (Appendix C4). This latter signature is made in lieu of a signature and allows for circumstances of illiteracy. Face-to-face interviews were conducted and lasted 30 to 60 minutes. Interviews were voice recorded when consent was given on a Lenovo Tab 2 A10 – 70 Tablet. With consent from participants, brief notes were also taken. When consent was declined to record interviews, responses were recorded in writing by the interviewer. To ensure that the flow of conversation was not interrupted, all notes and written responses were taken in a discrete way.

All interviews were conducted by the author and took place at participant's homes, at Traveller/Gypsy support organisations, at Appleby and Ballinasloe Horse Fairs and at BHS horse clinic settings. Participants were approached randomly at horse fairs and at horse health clinics. An assistant supported the lead researcher and helped record notes on one day at the second year of attendance at Appleby Horse Fair.

4.2.4 Interview analysis

The interview data formed the basis of thematic analysis. All interviews were transcribed by the interviewer/lead researcher. The transcription process is an effective method of familiarising yourself with the data (Riessman, 1993). Interviews were transcribed into an NVivo 12 (QSR International, Melbourne, Australia), compatible format. This software programme is designed for qualitative data analysis and was used to visualise the data and obtain and query fundamental ideas and classify themes present in the transcripts. Transcripts were read intensively, and coding was influenced by the interview questions. Each stage of coding and thematic analysis was conducted by the PhD researcher and proposed themes were discussed within the supervisory team, with ten final themes agreed on. The PhD researcher then divided data into nodes according to agreed themes. The final analysis determined important concepts that were evident and relevant to the aims and objectives of the study. In total, ten themes and 43 sub-themes were categorised.

Participants did not contribute to every question, therefore the proportion of the sample who answered questions, is presented in the results.

4.3 Results

Results are described according to their sub-themes. Participants expressed their views and indicated their understanding in either one or more of the sub-themes. Participants' quotes are presented in italics. If a participant stated any identifiable names, locations or any reference that may identify a person/place, it was transcribed as follows [NAME] or [PLACE].

4.3.1 Demographic information

The study comprised of 71 Traveller/Gypsy horse owners. Of these, 25 (35.2%) were English Gypsies, 25 (35.2%) were Irish Travellers, eight (11.3%) were Welsh Gypsy/Travellers, five (7%) were Scottish and eight (11.3%) were other, such as urban horse owners. Age groups ranged from 18 – 25 years (4.2%, n = 3), 26 – 35 years (38%, n = 27), 36 – 45 years (21.1%, n = 15), 46 – 55 years (18.3%, n = 13) and 56 + years (18.3%, n = 13).

The greatest number of participants were from Ireland (32.4%, n = 23), followed by Northern England (19.7%, n = 14), Southern England (14.1%, n = 10), Wales (15.5%, n = 11), Midlands (England) (8.5%, n = 6), Scotland (7%, n = 5) and Northern Ireland (2.8%, n = 2). As there were so few female Traveller/Gypsy horse owners interviewed in this study, a gender comparison was not conducted. Further, sensitive information regarding names, locations, or any reference that may identify a person/place was anonymised.

Number of horses: Eleven participants (15.5%) followed a nomadic way of life while the remaining 60 (84.5%) participants did not. The largest proportion of owners (43.7%, n=31) had 5 -11 horses, 22.5% (n = 16) had < 5 horses and 18.3 % (n = 13) had 11 – 20 horses. A small number of owners (15.5%, n = 11) had > 20 horses.

Breed of horses: Cobs (46.5%, n = 33) were the most frequent breed of horse owned, followed by Cobs and Trotters (16.9%, n = 12), Trotters (14.1%, n = 10), Cobs & other (11.3%, n = 8) and other types of horses (n = 5.6%, 4). A small number of owners (4.2%, n = 3) had a variety of horse

breeds while one owner (1.4%) did not own any horses at present. Most horse owners bred the horses themselves (66.2%, $n = 47$), and 22 (31%) stated that they did not breed their horses. Over 50% ($n = 36$) of participants have bred horses all their lives.

Reasons for owning horses: Owners (45.1%, $n = 32$) were most likely to state they drive and trot their horses, 31% ($n = 22$) breed, buy and sell horses and the remaining 22.5% ($n = 15$) have their horses for other reasons such as showing, leisure or just to have horses.

4.3.2 Themes

Thematic analysis resulted in 10 Themes with 43 sub-themes (*Table 4.2*)

Table 4.2 List of themes/sub-themes following thematic analysis.	
Themes	Sub-themes
Tradition	Intergenerational ownership Horse breeding
Horse Health	Common illness Healthy horse Sick horse Vaccination practices Anthelmintic practices Oral health
Horse management practices	Hoof condition Exercise Nutrition Ragwort Manure
Natural behaviour/Natural environment	How horses prefer to live Pasture access Shelter Rug use Sentience Bonds with horses/owners Behaviour problems
Animal welfare concept	Horse health Care of horse Resource provision Emotional state Need/role of Animal Welfare Organisations Unaware of meaning Responsibility
The Control of Horses Act	Impact Fly grazing of horses Tethering of horses Microchip/Passport
Perception/Use of equine services	Use of equine services Relationships
Challenges	Access to land Seizure of horses
Discrimination	Control of Horses Act Land Horse care Difficulties
Horse events/support structures	Horse fairs Horse projects Horse health/education clinics Traveller/Gypsy horse welfare organisation

4.3.3 Tradition of horse ownership

This theme related to Traveller/Gypsy horse culture. There were 97 references from 61 participants on the tradition of horse ownership within the Traveller/Gypsy culture. Two sub-themes were identified.

Intergenerational ownership: There were twenty-four references to horse ownership within the Traveller/Gypsy community as intergenerational with horses bred within the family lineage, *`It's what we do, same as our fathers and Grandfathers`* and *`In our blood. Our grandfathers and great grandfathers did it and we will continue it`*.

Horse breeding: On the subject of tradition, horse breeding was overwhelmingly stated by participants to be a cultural and traditional aspect of the Traveller/Gypsy community (n = 47), *`It is our tradition to breed horses`* and *`Culture, brought up with it`*. The horse's bloodline was at the core of responses as to the reasons why breeding horses was common within their culture (n = 13), *`Bred them for years. I continue on from my father and I have his bloodlines now. I learned everything from him`* and *`For one reason like, people continue the bloodline. You would be training the children to do the same`*. A minority referred to the breeding of horses for profit (n = 4), for attending fairs to show their horses (n = 7) and for status (n = 1). There was one reference to the cost of horse castration as a reason for keeping their horses/s entire, *`Price of gelding too expensive`*.

4.3.4 Horse health

This theme relates to different horse health-related conditions and preventative health care practices. Sixty-six participants responded to this section with a total of 528 references. In total, six sub-themes were identified.

Common illnesses: Data from 64 participants who identified common horse health-related illnesses are presented in *Table 4.3*. The most common health issues mentioned were foot problems, strangles, colic, and flu/colds.

Table 4.3 No of participant references to different health conditions	
Health condition	No of references
Foot problems	32
Strangles	30
Colic	28
Flu/Cold	26
Teeth/mouth issues	17
Worms	16
Skin issues	10
Behaviour problems	6
Weight (under/over-weight)	5
Diarrhoea	4
Stomach problems	3
Ocular issues	3
Leg wounds	3
Heart problems	3

Healthy horse: When questioned on their understanding of horse health, there were 77 references about participants' understanding of a healthy horse. Ten participants referred to good overall health in general as an indicator of a healthy horse, *'A horse in a good state of health'*. The vast majority (n = 45) referred to a horse's body condition with 40 of these references relating to a healthy body condition and five on a fat horse being a healthy horse, *'Good body condition'* and *'A good fat horse. I like them with weight on, you know what I mean. I don't like them skinny; I like them with weight on'*. References were made to a horse's coat condition (n = 25) with all stating that a good, shiny coat was necessary, *'A healthy horse is a good coat'*, and *'colour and shine to coat'*. There were 20 references to a healthy horse having bright/clear eyes, *'Bright and clear eyes'*. All of those who responded (n = 17) agreed that healthy hooves and feet were a requirement for a horse good health, *'An old saying, no foot no horse'* and *'hooves looked after'*. On the subject of oral health, there were 14 references to a healthy mouth and teeth, *'Good teeth'* and *'Mouth good'*.

There were 25 references to the provision of adequate feed and water to ensure a horse is healthy, *'eating plenty, drinking well'*. A horse's happiness

was considered crucial for horse health (n = 22), *'A healthy horse is a happy horse'*. The view that a horse needed to be fit was cited by seven participants, *'They are lively, they are exercised and they are getting fit'*. Anthelmintic practices were considered necessary for a horse's health by six participants, *'You got to worm it regularly, just that's part and parcel of the job, of having horses'*. A minority referred to the absence of parasites such as lice and mites (n = 5), *'You want to check for lice and mites'*.

Sick horse: When asked 'how can you tell if a horse is sick?', 63 participants cited clinical signs and behaviours that a sick horse may exhibit. It was commonly stated by participants (n = 46) that a horse's mood was an indicator of illness, *'He would be down in himself'*. The view that a change in a horse's overall behaviour was a sign of a sick horse was identified by nine horse owners, *'Change in behaviour'*, with a further 23 references to a horse having its *'head down'* when sick. Twenty-three participants cited that a horse's eating pattern signifies illness, *'Change in feeding'* and *'Not eating and drinking'*. There were seven references to a horse's eyes and five references to a horse's coat condition, *'Eyes dull, dull coat'*, and two references to a horse's gums, *'gums pale'*. Pain was identified by seven participants in a horse who is sick, *'If it's colic, he would be rolling in pain'*. Participants (n = 29) related to their own ability to identify when a horse is sick by visual observation, *'You can tell by looking at it every day'* and *'I can always tell if there is something wrong with my horses'*.

Vaccination practices: Participants (n = 60) stated that they vaccinate their horses against the following illnesses: Tetanus (75%, n = 45), Flu (51%, n = 31), Strangles (7%, n = 5), 36% (n = 22) were unaware whether a vaccine was available or not. All participants were unaware of Equine Herpes.

Anthelmintic administration: Fifty-eight participants stated that they used anthelmintic practices on their horses while three participants stated that they did not. Of those who deworm their horses, 26 provided a dewormer every three months, 21 participants every six months and two participants every 12

months. Five participants used anthelmintic practices every 6 weeks while two participants stated that they apply these practices on a regular basis.

Oral Health: Forty-four participants used the services of a dentist/dental technician and seventeen participants stated that they used the veterinarian for their horse's dental treatment. Of these, the majority ($n = 40$) had their horse's teeth checked once or twice a year. There were three references to not having their horse's teeth checked, while a further three stated that they would do it themselves. Floating was identified as the most common dental procedure ($n = 26$), followed by removal of wolf teeth ($n = 16$). Eleven participants used the dental services of either a vet or dental technician when needed while eleven used it for a check-up on their horse's teeth.

4.3.5 Horse management

This theme identified with participants' horse husbandry and management practices in the care of their horses. In total, there were 765 references with input from 65 participants. Five sub-themes were identified

Hoof condition: When asked what are the main problems that affect a horse's hooves, participants ($n = 62$) identified the conditions in *Table 4.4*. The most common hoof conditions were hoof cracks and over-grown hooves.

Table 4.4 Number of participants references to different hoof conditions	
Hoof condition	No of references
Hoof Cracks (Sand cracks)	48 (17)
Over-grown hooves	17
Frog issues (stones, gravel etc)	13
Hoof breakages	13
Hoof abscess	12
Laminitis	12
Thrush	11
Hoof splits	6
Bruising	4
Shoes falling off	3

The most common cause cited for the presence of hoof conditions was neglect (n = 22), and hard ground/road surfaces (n = 20). References were also made to the effects of wet land (n = 3), being overweight (n = 2), environmental hazards (n = 1) and `don't know` (n = 1). Forty participants stated that they used a farrier to manage hoof conditions while eighteen participants did it themselves. Only a small number of participants (n = 2) indicated that a friend/family member would provide this service. Of those who responded (n = 58), the majority (n = 43) stated that not all horses need to be shod and the remainder (n = 15) agreed that horses worked on hard surfaces need to be shod.

Exercise: Participants (n = 61) referred to various forms of exercise that they used with their horses, *`We drive, ride. We do a bit of lunging`*. The most common form of exercise was to drive their horses, *`Drive, love going out for a drive`*, (Table 4.5).

Table 4.5 Types/frequency of exercise used by horse owners	
Type of exercise	No of references
Drive	31
Natural (in a field, running about)	24
Trot	13
Ride	11
Lunge	11
Swim	4
Hack	3
Play (Ball)	2
Work	1

Nutrition: Sixty-four participants responded to the subject of nutrition with a combination of food groups utilised, *`Grass, hay and molasses`*. Pasture (grass) was the most common food group with 63 references, *`We leave them out grazing all day`*, Table 4.6.

Table 4.6 Different food groups referred to by participants	
Type of feed	No. of references
Pasture (grass)	63
Energy feeds (barley, oats)	42
Fibre (hay, haylage)	37
Vegetables and fruit	19
Other (treats etc)	8

Water: Fifty-one participants replied to the question on the amount of water a horse requires in a day. The majority (n = 34) stated ‘as much as they want’, 14 said 4/5 gallons, one suggested 50 litres (10 gallons) and there was one reference to both 15 gallons on a hot day and 40 gallons.

Ragwort: The presence of ragwort was referenced by 65 participants. The majority (n = 60) stated that they would clear the fields by digging/ripping/spraying ragwort while one participant would leave it. Of those who clear their fields of ragwort, there were three references to using sheep to achieve this. There were eight references to not putting their horses into fields with ragwort and five stated that they do not have ragwort in their fields.

Manure: Fifty-nine participants responded to the question on manure management. The participants (n = 25) reported using manure as a fertiliser by spreading it while there were 15 references to giving away manure or it was taken away by the landowner. Twenty-one participants pile manure in a heap/pit while the remaining five participants leave it to nature.

4.3.6 Natural behaviour and natural environment

The horse’s natural behaviour and natural environment was answered by 63 participants with 642 references. In total, seven sub themes were identified.

How horses prefer to live: From the 51 participants who responded to the question on how horses prefer to live, all stated that horses preferred to live outside (n = 51) and fifty stated in groups, ‘*They are social animals, so they like to live together*’, and ‘*Outside in the fresh air, in a group*’. The preference for horses to live outside and in herds was considered to be natural for horses, ‘*Outside, it’s natural. Anything natural, they love*’ and ‘*Herd is the*

natural way`*. One participant claimed that their horse preferred to live alone but that all horses are different, *`They are all different. Mine is on his own but has the kids`.

Pasture access: Horses should have constant access to pasture was the view of 47 respondents, while there were six references to *`as much as possible`*. References were also made to pasture access during *`turn out`*, (n = 3), daytime access (n = 4), depends on the type of horse (n = 2) and the difficulty in accessing pasture for their horses (n = 2).

Shelter: There were 61 references on the different types of shelter used by horse owners (n = 54), (Table 4.7). Trees/hedges were the most common type of shelter used.

Table 4.7 Different shelter types referred to by participants	
Type of shelter	No. of references
Trees/hedges	47
Stables	27
Shed/barn (in field)	18
Bank/bridge	2

Rug use: There were 102 references to the use of rugs from 64 participants. Just over half of the participants claimed they had never used rugs (n = 35) with a further 24 references to using rugs if the weather warranted it, 16 references to when a horse is sick and six references to when a horse is old. Ten participants stated that that they rugged their horses. However, three of these participants stated that rugs are only used on trotters. One participant referred to using a rug when a horse is outside while another stated that a rug is only used when a horse is inside. There were eight references to *`Depends`* without giving further explanation.

Sentience: There was unanimity across participants (n = 66) that horses have feelings, *`Yeah, yeah, I will tell you about feelings. I once took one out for a drive and I like the big brown mare. I bought her from these people. They had her from a foal. They couldn't get her to eat, it just started sulking, it*

had been with these people all their lives. I bet it was 3 months before they got it feeding properly. So they have feelings, haven't they?`. Feelings identified that horses may exhibit included `happiness`, `sadness`, `pain`, `fear`, `loneliness`, `fear`, `boredom` and `separation anxiety`. A minority referred to how feelings are reciprocated (n = 5), `They can experience when you are sad and if there is something up, like if I go in the stable`.

Bonds with horses/owners: Of the 56 who responded to the question on bonds between horses, participants overwhelmingly stated (n = 54) that horses form bonds with other horses, *'Yes, most definitely. My 3 stallions have good bonds. I had a horse out on loan. When he returned, one horse galloped towards him. He was delighted to see him` and `Of course they do. They are often in twos or small groups`.* One sentiment expressed frequently (n = 35) was that friendships were evident between horses within their own horse groups, *`My two are friends, they follow each other around`, `He is happy with my brother's horses. They all get along together`.* One participant was of the opinion that horses do not form bonds with other horses while one participant was unsure. Fifty-four participants stated that horses form bonds with their owners, *`They get to know their owners. They know when I am coming, they know the noise of the car; they will be running down the field to meet me` and `Yes, done correctly. Good horse, good owner`.* There was one reference to a horse only forming bonds with whoever feeds them *`No, whoever feeds them`.*

Behaviour problems: When asked to identify behaviour problems in their horses, the vast majority (n = 47) stated that their horses did not exhibit any behavioural issues, *`None really. Horses are good if you are good to them`.* There were seven references to kicking, six references to bullying behaviour, five to both nervousness and biting, and four to aggressive behaviour, with stallions identified as the main exhibitors of aggressiveness, *`Stallions can be aggressive`.* Four references were made to both, stubbornness and cribbing/weaving, *`Although one is weaving because he was stabled`* and one participant identified boredom as a behaviour problem in horses. There

were 25 references to the management of horse behavioural problems, with the majority related to working with the horse themselves to correct any behavioural problems, *'Keep working with them'*. Six participants stated that they would separate horses, *'Get it sorted out with different places, on their own'*, two stated that they would exercise the horses, *'Drive them'*, four participants would reprimand the horse, *'If it is bad behaviour, then you have to reprimand them'* and one stated that behaviour problems are to be expected from stallions, *'You would expect stallions to be cranky, they will get over it'*. There were three references to the behaviours sorting themselves out without any intervention, *'I just leave her, she will come out of it'*.

4.3.7 Animal welfare concept

This theme explored participants understanding of the concept of animal welfare. In total, six sub-themes were identified (n = 64) with 153 references.

Horse health: Seventeen participants believed the concept of welfare related to the health of the horse. References to a healthy horse included both positive and negative health terms. Four participants expressed the view that good health is a prerequisite to good welfare, *'making sure it is in good health'*, while two participants claimed that good condition was an indicator for good welfare, *'Good condition'*. Two participants offered an alternative view in that they included negative health terms when conveying their understanding of the concept of welfare with both specifying that a thin horse equates poor welfare, *'not sick or thin'* and *'well covered, no ribs'*.

Care of the horse: A relative majority of Traveller/Gypsy horse owners understood animal welfare to refer to the care of the horse with 32 coded references made in this sub-theme, *'It means looking after them'* and *'Horse is looked after'*. One participant explains how horse welfare is positive for Traveller horse owners because they can care for their horses, *'It is very good for us because we can look after our horses well'*. They further explained that the horse's care was prioritised above his own *'I get up in the*

morning and go out and I will have my horses fed before I get a cup of tea myself. I would prefer to see the horse getting it first`.* Five references were made to horse management and maintenance, *`The care and the maintenance of it, you know`*, with the onus of this care placed onto the horse owner/carer by one participant *`Good owner, horse is well looked after`*. One sentiment expressed was the importance of the horse and being able to care for it, *`No one should keep a horse unless they can look after it. A horse is as important as anyone else. It's the same for a dog or any animal`*. There were two participants who varied on their responses with both expressing their view of welfare in terms of negative horse care *`When a horse is mistreated`* and *`Horse not looked after, it's not right`.

Resource provision: Twelve references were made by participants to the provision of resources. All participants expressed the view that resources such as water, feed and bedding need to be provided for optimal welfare, *`Make sure they are well fed & watered`*, *`Plenty to eat and drink`* and *`Looking after your horse, feeding it, taking care of it`*. One participant reported that resources have to be provided because the horse is unable to ask for these, *`You have to feed them, give them a good bed, water & look after their health because they can't speak for themselves`*.

Emotional State: Participants (n = 15) stated that the horse's emotional state relates to its welfare. Six participants referred to the happiness of the horse, *`Ensuring they are happy and healthy`*, and *`It is happy enough`*. The view that the horse's emotional state has an impact on human mental health was expressed by one participant, *`If my horse is down, I'm down`*.

Need and role of Animal Welfare Organisations: Only a very small proportion of respondents (n = 8) related the concept of welfare to the need and role of welfare organisations, *`The welfare looking out for horses and making sure they are looked after`* and *`Horse welfare is needed in this country`*. One respondent believed these organisations are a protective

component to the welfare of horses, *‘They are a safety net, someone to look out for them’*

Unaware of meaning: A minority (n = 4) stated that they were unaware of what the term welfare means, *‘I don’t know’* although one participant stated that he didn’t know but continued to describe aspects of welfare *‘I don’t know really, is it how they are, like in good health and that’*.

Responsibility for horse: All 53 participants agreed that the owner is ultimately responsible for the care and welfare of the horse, *‘The owner, 100% has to be responsible’*. Of these, there were two references to help from family members and two references to support from the council as horse care for Traveller/Gypsy horse owners was viewed as a solitary activity, *‘Owner, with support from councils. We are isolated in our care of horses’*. There was one reference to financial assistance, *‘The owners, support with financial help’*.

4.3.8 The ‘Control of Horses Act’ (COHA, Ireland, 1996, Wales, 2014, England, 2015)

This theme reflects participants (n = 67) views on ‘The Control of Horse Act’. In total, there were 447 references and four sub-themes identified.

Impact: There were 61 references from 52 participants on the impact of the control Act with varied responses on such. There were nine references to the need for COHA, *‘Got to come into force’*. However, one participant did go on to say that the act should not only target Traveller horses, *‘It’s good if it is done right. It should not be only for Traveller horses’*. A further four statements referred to participants mixed views of the Act and how they didn’t agree with all elements of the Act *‘I don’t agree with all aspects of the act’*. There were 26 references to the difficulties the Act creates for Traveller/Gypsy horse ownership, *‘It makes it difficult for Travellers’*. Reasons cited for these difficulties related to how the Act is used to impound horses (n = 16) agreeing with this viewpoint, *‘It is only used to take away our horses’*. A further motive for stating how the Act creates horse ownership

difficulties was that the cost of reclaiming impounded horses is extremely high (n = 12), *'They take horses, and we can't afford to get them back'* and *'It's against Travellers and it is a money racket'*. There were 18 references which focused on how the act is discriminatory towards Traveller/Gypsy horse owners with four references made to the use of the act to control Traveller/Gypsy culture, *'Brought in to control movement of Gypsies'*, and *'It's only against Gypsies/Travellers'*. There were five references to the Act as being ineffective with reasons of cost again cited, *'Not working, charge too much to get back...£2,000'*.

Fly-grazing of horses: Seventy participants answered the question on *'Why do Traveller/Gypsy horse owners fly-graze their horses?'*, with 70 references made to fly-grazing practices. Four participants stated that they do not fly-graze their horses while the remaining 66 agreed that they currently or have in the past used fly-grazing practices, *'I have done it all my life'*. There were three references made to fly-grazing on private land as being unacceptable but acceptable on public land, *'Don't agree on private land, fine on public'*. Difficulty in leasing land for horses was at the core of a great number of responses (61 statements) *'hard to get land'* while there were eight references to the cost of having horses *'Can't afford to feed them'* and *'Cost of land'*. Six references related to fly-grazing as necessary for grazing purposes while four references referred to the fear of horse impoundment or horse slaughter while fly-grazing, *'Need to be careful of pound taking them'*. While there were four references to fly-grazing being a good idea, one respondent was of the opinion that water needs to be supplied *'As long as they have a drop of water there'*. One participant was of the view that they had the right to fly-graze, *'Always have done, people always had the right'*. Eight participants expressed the view directly that Travellers/Gypsies fly-graze because they are unable to secure land because of their ethnic status, *'Land is hard to get, they don't want to give it to us, because we are Gypsies'*.

Tethering of horses: In total, there were 144 references to horse tethering (n = 67). The most common responses were related to tethering as a common and an acceptable practice within the Traveller/Gypsy horse owning community (32 statements), *`I do believe in tethering`*. While tethering was viewed as an acceptable practice, a common viewpoint was that tethering horses needs to be done appropriately and safely (40 statements). Appropriate tethering referred to the horse needs to be supervised, have access to water, moved often, have suitable tethering equipment and are not tethered for long periods of time, *`as long as tethered right, water available, move it and don't break the law`*. One participant stated that tethering of horses ensured that they were visible, *`Gypsy/Traveller horses are visible`* and went on to say that keeping horses locked away was cruel *`horses kept behind closed doors is cruel`*. However, two participants expressed the view that they were not in favour of horse tethering, *`I don't believe in it, I like to see them run free`*. Twelve participants referred to tethering of horses as both natural and good for horses, with various reasons given, *`Horses have always been tethered or running free. It's natural`*. There were six references to the fact that the horses were outdoors, *`Horses would prefer to be outside`*. Eight references were made to improved horse behaviour *`Tethered horses have better manners`*, and three statements referred to horses becoming accustomed to various stimuli through tethering, *`Good, it quietens them. They are good with traffic, noise, people`*. Four participants believed that tethering is a good training device for horses, *`It's also good for training a horse`*. Fourteen references related to the need to tether for horse grazing, *`Have to do it for grazing`* while there were eleven references to the suitable grass that is available at tethering locations, *`If I see a good bit of grass, I will take them down the [PLACE] or wherever and tether them for the day. A further reason given for tethering horses was because of Traveller/Gypsy horse owners' inability to lease land (n = 11 references), `have to do it for grazing' and `it's because I have no land`*

Microchip/passports: When asked 'Do you think it is necessary to microchip and passport horses?' most participants (n = 41) agreed that microchipping was necessary while 13 participants disagreed with microchipping, '*Yeah, to be honest with you, they all come with microchips and passports at the minute*' and '*No, absolutely not. Doesn't keep up with business*'. Four participants were undecided on the necessity of microchipping horses. Of those in agreement with microchipping horses, two participants stated that microchips should only be required if you are selling/dealing in horses while two further participants were of the view that microchipping is only necessary if you are keeping rather than selling horses and vice versa, '*Only if you are going to sell them*' and '*I suppose like, the ones you are keeping. There is no point in doing the ones that you might be getting rid of*'. There was a degree of variety in participants' responses as to why microchipping was essential. The reason cited were traceability of horses (n = 12), '*Yes, if the horse is stolen*', proof of ownership (n = 7), '*The microchip is good if the horse is stolen*' and that it is the law (n = 5), '*Got to be done, it's the law*'. Of those who were not in favour of microchipping horses, there were 11 references to the cost of the procedure, '*It's another money-making thing*'.

Three participants agreed that passports were needed while eighteen disagreed with the necessity of passporting horses. The view that passports should only be required if you are travelling to another country was cited by two participants, '*passports should only be for horses going over to England, like dogs, that's what a passport is*'. There were eight references to the ineffectiveness of the horse microchip and passport process. The reason cited were lack of verification (n = 2), '*Doesn't work, they are not checked here*', the act is not enforced (n = 2) '*Waste of time, no one oversees it, not enforced*' and that a database does not exist (n = 1), '*No, there is no UK data base. Aren't worth it*'. There was one reference to the procedures inability to trace horse owners, '*because half the time they can't trace the owners back anyway. Even if they do trace the owners, they say I sold the horse and when*

they say who to, they say they don't know. So they may be chasing five or six people down the line, and they can't find them, you know what I mean & stuff like that`.

4.3.9 Perception/use of equine practitioners

This section is generally focused on the various equine services utilised, in addition to, how equine practitioners are perceived by Traveller/Gypsy horse owners. Sixty- seven horse owners replied to this section with 178 references and two sub-themes identified.

Use of equine services: When asked what they would do if their horse was sick, the vast majority stated they would call a vet (65 references). There were seven references to treating the horse themselves in the first instance while there were four references that it depended on the nature of the illness although all participants did state that they would call a vet if the condition was serious. As previously stated, forty-four participants used the services of a dentist/dental technician. Forty participants stated that they used a farrier while eleven horse owners used a bonesetter, and one used a physiotherapist. There were 18 references to providing various horse-related services themselves, although the majority (15 references) did state that they would contact the necessary professional to treat their horse if they were unable to do so themselves, *`I do the hooves myself, but the blacksmith will come if there is something I can't do`*. Two participants used the services of a friend/family to treat their horses.

Relationships: In total, there were 31 references that related to either a positive or negative relationship between the horse owner and different equine services. There were 15 references to a positive relationship between horse owner and their veterinarian, *`I have a good relationship with the vet, he knows me well`*. Five participants had a negative perception of veterinarians with reasons such as cost and poor practice given, *`The vet charges too much`* and *`We got the vet and the vet jagged him and he died`*. A positive view of the farrier used was given by five horse owners, *`I know*

him (the farrier) well and he is good` and two participants viewed their dental practitioner favourably, `A dentist, he is a personal friend of mine`. There were three references to a good relationship with Animal Welfare Organisations, `I have a good relationship with the RSPCA`. One participant demonstrated a negative view of these agencies, and `RSPCA, hassle us`.

4.3.10 Challenges

This theme identified the challenges Traveller/Gypsy horse encounter. There were 207 references from 55 participants. Two sub-themes were identified.

Access to land: References overwhelmingly related to the leasing of land as the main difficulties for horse ownership (n = 47), *`The land is the main one`, and `Land is hard to get, they don't want to give it to us`*. Eighteen statements alluded to discrimination against Traveller/Gypsy horse owners as the reason for their inability to lease land, *`Hard to get land because we are Gypsies` and `Gypsies can't get land`*.

Seizure of horses: Sixteen statements related to the COHA creating difficulties for horse ownership with all citing impoundment of horses, *`Taking our horses`*. References to harassment because of ethnic background was cited by 3 participants, *`Harassment and thinking all Gypsy horse owners don't look after their horses`*.

4.3.11 Discrimination

This theme pertains to discrimination of Traveller/Gypsy horse owners and was a thread that ran through other themes. In total, there were 47 references from 36 participants that related to direct discrimination of Traveller/Gypsy horse owners. Participants varied on their responses with discrimination towards Traveller/ Gypsy horse owners cited to occur within different areas of horse ownership. In total, four sub-themes were identified.

Control Of Horses Act (COHA): There were 21 references to discrimination practices within the COHA. A consistent viewpoint was that it is used to impound Traveller/Gypsy horses (16 references). *`It's against Travellers`*

because they take our horses without giving us a chance`*, while a further five statements referred to the COHA as a control mechanism for Traveller/Gypsy nomadic lifestyle, *`Brought in, to control movement of Gypsies`.

Access to land: Twenty seven of the 36 participants agreed that they are unable to secure land for their horses because of their ethnicity, *`People don't want Traveller & Gypsies on their land. They don't`* and *`I have some rented. It is not easy because we are Gypsies`*.

Horse Care: There were 14 references on how Traveller/Gypsy horse owners care for their horses, *`People think we cannot look after our horses`*, while one participant was of the view that all Gypsy horse owners are blamed for horse neglect, *`thinking all Gypsy horse owners don't look after their horses`*.

Difficulties: Eleven participants revealed that discriminatory practices contribute to difficulties for Traveller/Gypsy horse ownership in general, *`Not easy to have horses, Gypsies are discriminated against`*. And on the subject of discrimination towards Traveller/Gypsy horse owners, one participant claimed that *`it won't stop us (owning horses)`*.

4.3.12 Horse events/support structures

This theme concerned events and structures that are predominately Traveller/Gypsy related with 207 references from 48 participants. Four sub-themes emerged.

Horse fairs: All participants (n = 31) gave a reason for their attendance at both Appleby and Ballinasloe Horse Fairs with horse fairs being a Traveller/Gypsy tradition, *`It's a yearly pilgrimage, our tradition`* and a social occasion, *`I come every year, meet friends and family that I haven't seen since last year`* cited by the majority. The provision of plenty of water, fields for grazing and the river for washing their horses were highlighted as positive points (n = 18). Participants at Ballinasloe Horse Fair (n = 10) stated that they were happy with the facilities available with adequate water and tethering

points available. One horse owner did refer to the need for extra space for horses at Ballinasloe Horse Fair. However, the following suggestions were made by horse owners at Appleby Horse Fair, *`more water troughs in the top fields`*, *`water available half-way down the hill`* and *`a few more fields, just for horses`*. In addition, with the river closed last year because of flooding, it was suggested that *`maybe having water down around there would be good`*. The issue of the road closure by the river also caused concern for their horse's welfare (n = 11), *`Shut off this road, so strenuous for horses as longer to go` (around the town)*.

`The Best in Show` was cited by over 55% (n = 18) of participants as a positive practice at Appleby Horse Fair. In 2018, there were five references to the initiative when asked about good practices at the fair, *`it's good to have the rosettes (Best in Show) too as the children love to win something for their horses`*. In 2019, reference to the *`Best in Show`* increased with thirteen references praising the programme for its recognition of *`well cared for`* and *`good`* horses within the Traveller and Gypsy horse owning community, *`Best in Show, good to show that our horses can win something`*.

Of the 15 participants who referred to AWOs, eleven considered the presence of animal welfare organisations as good practice although a minority (n = 4) claimed that some of the animal welfare organisations were too severe. One participant claimed that welfare organisations were a waste of space, he then went on to say *`but (they) need to be at the fair`*. Finally, the presence of veterinary care was acknowledged (n = 5), *`you can get your horse looked at by a vet if you are worried`*. Participants (n = 29) agreed that most horses were well cared for whilst at the fair although there were four references to horses being driven too young, *`some welfare issues, driven too young`* and *`foals and yearlings in harnesses, going too hard`*. A small number of participants (n = 3) claimed that the flashing lane should be monitored better, *`the flash could be monitored better`*. Two stated that work needed to be done with young people on horse welfare such hitting their

horses too hard, *`A couple of young fellows a bit too hard with the stick maybe`*.

Horse projects: There were nine references from five participants to the need for horse projects to support horse ownership. The most common (n = 4) reason cited was that a horse project would help secure land and stables for horses, *`Hoping to get land and stables`*. All (n = 5) referred to participation in horse projects as an opportunity to work together with other horse owners, *`It is great for us to get together, we talk about the horses and have a bit of banter`*.

Horse health/education clinics: There were 34 references to horse health clinics from 13 participants. Participants (n = 12) agreed that the services available at the clinic were of benefit to horse owners, *`The service they are providing is helpful to a lot of people`*. All 13 cited that the cost of services was a support to them as horse owners, *`It's cheap to get things done` and `It's cheap, castration, microchipping is good price and wormers were for free, they are usually £28`*. On the subject of the organisations who coordinate the equine health clinics, there were eight references to a positive relationship with the personnel providing the services on the day, *`Happy with today. Good relationship with the organisations`*.

Traveller/Gypsy horse welfare organisation: Sixteen respondents replied to the suggestion of a separate organisation for Traveller/Gypsy horses. Fifteen agreed with the proposal and one participant was of the view, *`Don't think it will work, people think they know more than they do, can go down the wrong route`*

4.4 Discussion

This study examined Traveller/Gypsy horse owners approaches to horse care, management and wellbeing. The overall findings identified horse ownership as a tradition within the Traveller/Gypsy culture, with the intergenerational feature of horse ownership highlighted by some participants. This study strengthens the view that the horse is significant in Traveller/Gypsy culture and that horse ownership is a family tradition where horse lineage is passed through generations. The significance of horse ownership in Traveller culture was emphasised in a report by Pavee Point (2019) and in that report, participants also recounted the multi-generational facet of horse ownership in their community. In addition, horse breeding was emphasised by participants in this study to be part of the cultural and traditional aspect of horse ownership, therefore, implying that breeding is not only for business purposes. However, there were some references to the breeding of horses for profit, for attending fairs, which is a cultural event, to show their horses and for status. These findings suggest that breeding of horses primarily for cultural reasons is common in Traveller/Gypsy culture and is supported by Conway (2004).

While indiscriminate horse breeding is a practice often associated with Traveller/Gypsy horse ownership (Cullinane et al., 2015), it is not confined to any one horse-owning community (Collins et al., 2012). While horse owners in the present study did not refer to overbreeding of horses within the Traveller/Gypsy community, there was some recognition of irresponsible breeding by Traveller horse owners in a recent study on Traveller horse ownership (Pavee Point, 2019). In that study, reasons cited for overpopulation of horses were the high costs associated with castration of colts, in addition to the difficulty that Traveller/Gypsy horse owners have culling their horses because of their owners' connection to them. Traveller horse owners in that study also presented solutions for overbreeding where they were of the view that 'breed from the best and cull the rest' would help control for quality (Pavee Point, 2019). In Rowland et al. (2019), Traveller

horse owners' opinions differed on horse breeding with some participants recommending a breeding control strategy to ensure optimal health while others cited a complete ban at the present time because of the over population of horses.

4.4.1 Horse health

Most participants identified common horse health- related illnesses suggesting that they were aware of these health conditions. Participants also identified a horse's body condition, shiny coat, healthy hooves and good oral health as being indicators of good health. The horse's health has been the focus of various studies and was found to be dependent on a number and combination of different factors. For example, the majority of participants in a study by Visser and Van Wijk-Jansen (2012) reported that a shiny coat, lively ears and good performance were indicators of good horse health and subsequent good welfare. This supports the findings in this study that Traveller/Gypsy horse owners have a good knowledge of what constitutes a healthy horse.

A minority of horse owners in the current study referred to a fat horse as being a healthy horse. Body condition is an indicator of horse health (Dugdale et al., 2010) and today an obese or fat horse is an increasing horse welfare concern. In fact, Rioja-Lang et al. (2020) identified obesity as one of the most significant welfare issues affecting horses in the UK. Previous research has found that overweight horses and ponies are more susceptible to medical concerns, including laminitis (Trieber et al., 2006.), osteoarthritis (Schlueter and Orth, 2004) in addition to a greater risk of insulin resistance (Hoffman et al., 2003). While some participants in the present study defined a fat horse as a healthy horse, owners in other horse-owning communities are equally unaware of the adverse health and welfare implications for obese/fat horses. In fact, obesity in horses is a prevalent issue across other horse owning communities, for example, Stephenson et al. (2011) identifying obesity in leisure horses.

Therefore, in addition to appropriate educational materials on the impacts of obesity in horses, there is a need for tailored human behaviour change interventions to be implemented across all horse owning communities.

Replying to the question on 'how can you tell if a horse is sick?', most participants identified appropriate clinical signs and behaviours that a sick horse may present. Visible indicators associated with a sick horse included a change in a horse's mood, behaviour, eating patterns and physical condition such as poor coat condition and dull eyes. These indicators support the literature on detecting sickness in horses (Burn et al., 2010, Hausberger et al., 2016), thus indicating that Traveller/Gypsy horse owners are aware of such. Hausberger et al. (2016) specified that horses behave differently to environmental stimuli when sick and Burn et al. (2010) noted physical measures such as changes in coat condition and eyes. Further, participants in the present study referenced their own ability to identify when a horse is sick by visual observation. An implication of this finding is the possibility that participants may not always identify when an animal is sick as overexposure to individual horse behaviours was found to be a catalyst for under estimation of horse related problems (Lesimple and Hausberger, 2014). In fact, McGowan and Ireland (2016) found that owners did not recognise or did not understand the significance of clinical signs of sickness in geriatric horses.

The application of vaccinations for tetanus and equine influenza (flu) in this study was found to be somewhat lower than the national average, which is reported at 87% for both flu and tetanus (Zoetis Inc, 2019). A possible reason for a lower uptake of horse vaccinations by Traveller/Gypsy horse owners may relate to the number of horses owned by participants in this study, with the majority owning more than five horses. Vaccination rates for equine influenza was highest among horse owners in the UK when they only owned one horse with rates of vaccinations decreasing when more than five horses were owned (Bambra et al., 2020). Vaccination against strangles (*Streptococcus equi* var. *equi* infection) was found to be extremely low (7%), with nearly a third of participants in this study unaware of whether a vaccine

was available or not. However, it is only recently that a safe and promising vaccine has been developed and due to be rolled out in mid/late 2021 (Robinson et al., 2018). Further, the guidelines on the treatment, control and prevention of strangles focuses on horse screening and biosecurity measures rather than vaccinations (Boyle et al., 2018). Therefore, it is understandable that misunderstandings on strangles vaccinations exist. Nevertheless, Traveller/Gypsy horse owners are aware of this disease which is a good starting point for the roll-out of the strangles vaccination in this horse owning community as strangles is a highly contagious respiratory disease and can increase the risk of serious or life-threatening complications (Taylor et al., 2006). Therefore, the vaccine will be an additional measure to prevent strangles in addition to other measures mentioned above.

All participants demonstrated a lack of awareness of Equine Herpes Virus (EHV) although this unfamiliarity is in accordance with an EHV horse owner survey by Zoetis Inc. (2019), whereby UK horse owners in that survey demonstrated a lack of awareness of the risks of EHV to their horse and over half of participants were unaware of the EHV vaccine. Nevertheless, equine vaccinations information and application needs to be promoted within Traveller/Gypsy horse owning community, in addition to, the horse owning community in general.

Anthelmintic practices were used for parasite control by most participants, indicating that deworming was considered crucial to horse health. This finding is consistent with a study in Ireland on attitudes to helminth parasite control with horse owners and managers of equine businesses found to be aware of the need for deworming (O'Meara and Mulcahy, 2002). In both studies, there were varying references to frequency of use with the most common responses in this study at three- or six-month intervals. A possible explanation for the variation in the regularity of deworming practices may be associated with participants' age. As anthelmintic practices are revised and updated (Nielsen et al., 2014), differing strategies may result in inconsistencies between the generations. Further, Rowland et al. (2019)

explained that these discrepancies may be related to the current less nomadic lifestyle of Traveller/Gypsy horse owners, therefore, the possibility of sourcing veterinary advice on deworming horses is more probable. In fact, in the present study there were a greater number of Traveller/Gypsy horse owners who did not live a nomadic lifestyle than those who did. It is also worth mentioning that there is a move towards the practice of faecal egg count (FEC) rather than routinely worming horses although this method was not raised by participants in the present study.

In this study, participants used either the services of a dentist/dental technician or veterinarian for their horse's dental treatment with more prevalent utilisation of a dentist cited. Common dental procedures such as floating and removal of wolf teeth were mentioned. The use of bi-yearly or yearly dental checks is consistent with the veterinary literature in the prevention and management of dental conditions (Dixon and Dacre, 2005). While most horse owners in the present study used professional services for horse oral issues, a minority claimed that they would provide oral care themselves or not at all. Similarly, in a survey on the provision of horse dental care in Great Britain and Ireland, 7% of horse owners, trainers and equestrian managers stated that they did not provide dental care at all for their horses and 10% only provided it when needed (Dixon et al., 2004). The lack of adequate and preventative horse dental care may be associated with owners' level of awareness of dental disorders and the importance of routine clinical oral examination. In fact, the root cause of poor welfare was found to be a lack of knowledge and understanding of a horse's needs (Horseman et al., 2016, Rioja-Lang et al., 2020). Dental disorders in horses may contribute to oral ulcers, pain and discomfort, and may result in dysphagia, quidding, weight loss and training issues (Dixon et al., 1999; Dixon, 2000; Dixon and Dacre, 2005; Pagliosa et al., 2006; Easley and Dixon, 2010). Therefore, routine evaluation of horse's oral health is necessary for horse health and welfare.

4.4.2 Horse management

Participants identified a number of potential hoof problems and the key causes of these were recognised. Hoof cracks, overgrown hooves and frog issues were the most prevalent hoof conditions cited. Thirkell and Hyland (2017) also reported hoof problems in their study on equine hoof management, with abscess and cracks and splits the most common conditions cited by horse owners in the UK. Participants in the current study also referred to equine laminitis, which is a non-infectious disease of the hoof, where inflammation is present in the sensitive laminae. Laminitis was one the leading health conditions found in UK horses (Blue Cross, 2018). Further, the prevalence of laminitis and the resulting severe pain was identified as a considerable welfare concern for equine stakeholders (Viñuela-Fernández et al., 2011). While most horse owners used a farrier to manage hoof disorders, there were references to handling hoof problems themselves. This may be explained in part by Traveller/Gypsy horse owners' views on the need to shoe horses or not. Therefore, there may be a tendency for horse owners to provide hoof care themselves if horses are unshod. Nevertheless, it was evident that most horse owners in this study reported the use of a farrier, which is consistent with farrier use by horse owners in the UK (Thirkell and Hyland, 2017).

Different forms of exercise were cited with driving, trotting and natural exercise the most prevalent with horse owners utilising a combination of these modes of exercise. These are common recreational activities in this horse owning community. This finding supports the concept of exercise as a necessary component of horse husbandry with feral horses found to roam up to 80km daily in their natural environment (Duncan, 1980). In contrast to Traveller/Gypsy horse owner preference to house their horses outdoors in herds, common management approaches tend to restrict exercise with horses often confined to individual stalls or small paddocks (McGreevy et al., 1995; Williamson et al., 2007; Werhahn et al., 2011). The effect of lack of exercise is likely to result in the development of stereotypic behaviours

(McGreevy et al., 1995; Cooper et al., 1998; Sarrafchi and Blokhuis, 2013), behaviours that horse owners in the present study did not identify with in their horses. In addition, lack of exercise may limit social interaction, and this could affect the health status of the horse (Rogers et al., 2012). Therefore, the need for exercise as stated by horse owners in the current study indicates a good understanding by Traveller/Gypsy horse owners of these specific needs which is consistent with good horse welfare (Sarrafchi and Blokhuis, 2013).

The dominant view of participants was that horses need forage (grass) with additional forage such as hay and concentrates such as oats also required. These findings indicate that Traveller/Gypsy horse owners in the current study have sufficient knowledge of appropriate nutrition and the need to pasture horses. An adequate supply of forage is essential for a horse's physiological and behavioural needs and benefits the horse's health and welfare by reducing nutritional-related disorders and abnormal behaviours (Edouard et al., 2008; Hoskin and Gee, 2004). In addition, nutrients in forage are dependent on a variety of factors such as fertilization and management, therefore, foraging on good pasture is a prerequisite to adequate nutrition and calorie intake (Harris et al., 2017). Consequently, with land availability cited as a major difficulty for Traveller/Gypsy horse owners (Pavee Point, 2019; Rowland et al., 2019), barriers for this horse owning community to access land to ensure sufficient grazing practices and horse nutritional needs requires further investigation and support from the relevant agencies and authorities.

Water is also an important requirement, and it was evident that horse owners in the present study recognised the need for water provision with the majority stating that horses should be supplied with 'as much as they want'. Others specified different units. The need for constant access to clean palatable water to prevent dehydration has been recognised as an indicator of good welfare (Popescu et al., 2014). In fact, free access to water is important to mitigate against the risk of colic in horses (Reeves et al., 1996).

The outcome of the current study differs to that of Rogers et al. (2016) who asked participants in their research at Appleby Horse Fair *‘how much water do you think a horse needs in a day?’* They reported that the greatest percentage of participants were unaware of the quantity of water a horse requires. While not specifying a particular measure, it is evident that there is a good understanding by Traveller/Gypsy horse owners in the current study that a constant water supply needs to be available for horses.

Most horse owners reported clearing fields by digging/ripping/spraying ragwort with others stating that they would not use fields with ragwort present. This result indicates that Traveller/Gypsy horse owners have a good knowledge of the impact of ragwort on horses. Ragwort ingestion is one of the most common causes of poisoning in horses in the UK (Crews and Anderson, 2009). Ingestion of ragwort seedlings with other forage, in contaminated hay and from grazing on poor pasture is the most common form of consumption (Crews and Anderson 2009; Vandenbroucke et al., 2010). Therefore, by removing ragwort from horse grazing areas, horse owners in this study are applying appropriate management practices to eliminate this weed. Very few participants reported using sheep to manage ragwort. While ragwort is not poisonous to sheep, this method can only be applied as a temporary measure to remove ragwort as they were found to only eat ragwort to some extent (Schmidl, 1972). Consequently, this information needs to be disseminated to those horse-owners who use this system for ragwort removal.

Management of manure varied from using it as a fertiliser, piled onto heaps, giving it away for fertiliser or leaving it to nature. Correct manure management is necessary from an environmental and horse health perspective as it can harbour pathogens and parasites and can pollute the environment if not managed properly (Dijak et al., 2020). While the results of the current study imply that most horse owners apply appropriate and sustainable methods, a minority stated that they leave manure management to nature. In a survey on manure management practices on equine farms in

New Jersey, USA, 8% of farm owners too stated that they leave manure on pastures or exercise areas (Westendorf et al., 2013). However, in the current study it is not clear whether Traveller/Gypsy horse owners continue to have horses in these areas where manure is left to nature or whether they no longer use these areas for their horses. Nevertheless, the practice of leaving manure to nature is not the best strategy for manure management because of environmental and health impacts. Therefore, a practical proposal for the improvement of husbandry and management practices as discussed above, the development and dissemination of suitable education materials, implementation of training programmes in addition to tailored human behaviour change interventions to be implemented across all horse owning communities is required.

4.4.3 Natural behaviour/natural environment

Traveller/Gypsy horse owners promoted the notion of natural behaviour and natural environment of the horse in this study. Therefore, this population of horse owners appear to be much more horse aware as a result of these findings. For example, participants overwhelmingly agreed on horse's preference to live outside and in herds and have constant access to pasture. These management approaches were considered to be natural for horses. This finding corresponds with that of Rowland et al. (2019) who found that horse owners in their study agreed on and applied these natural practices in the management of their horses. Jørgensen et al. (2016) found that regardless of weather conditions, there was a preference for horses to remain outside. Furthermore, feral horses spend up to 20 hours per day grazing and roaming up to 80 km, therefore, managing domestic horses in a similar way to feral horses as participants in this study have advocated may have a positive effect on their physiological and psychological well-being (Henderson, 2007). In fact, stereotypic behaviours which were not remarked on by participants in this study, were not observed in outdoor housed horses as this management practice resembles the horse's natural living condition (Crowell-Davis, 2007). However, whilst keeping horse's outdoors was the

preferred method of horse owners in this present study, the need for shelter was also recognised with the use of natural shelter such as trees/hedges mentioned by most horse owners. The use of sheds/barns in fields and stables were also cited. The majority of horses owned by participants were Cobs, therefore, the need for suitable shelter in the form specified should suffice. Heavily built horse breeds were found to be more adaptable to cold climatic conditions (Langlois, 1994) and horses regularly kept outdoors were found to adapt to their environmental conditions (Sjaastad et al., 2016). While Cobs have thick coats and are capable of living outside, there is a need for shelter, however, from climatic conditions such as prevailing winds and strong sun (Padalino et al., 2019; Mejdell et al., 2020).

There was a high degree of consensus on the non-use of rugs or their use only when warranted such as in very cold weather or on an old or sick horse. This is contrary to previous findings where the majority of participants in a study on livery yards in Scotland were found to rug their horses (Goodwin, 2015). In Rowland et al. (2019) Traveller horse owners expressed the view that the public were often critical of their non-use of rugs on horses, and this may explain why some Traveller/Gypsy horse owners currently rug their horses. However, there is an increasing awareness of the effects of over-rugging, with the British Horse Society (n.d.) currently providing information on inappropriate rugging. Previous studies have found that horses are able to withstand a suitable internal body temperature in temperatures as low as -30°C (Jørgensen et al., 2016), and heavy cold-blooded horses and northern ponies were found to manage well in cold climates (Fraser, 1992). In a study in Norway, horses were found to communicate a preference for rugs dependent on weather conditions, with horses opting to have a rug on when it was wet, cold and windy (Mejdell et al., 2016). In fact, horses are able to keep themselves warm through the digestion of forage, increased mobility and remaining close together (Autio et al., 2007). Therefore, in the temperate climate of the UK and Ireland, the non-use of rugs by Traveller/Gypsy horse owners is perhaps justified.

Rugging horses may prevent social grooming and self-grooming and natural behaviours such as scratching and itching necessary for healthy skin and coats (Hartmann et al., 2017). Additionally, over rugging horses is also reported to potentially contribute to obesity (Furtado et al., 2021). McGregor-Argo (2009) recognised the importance of seasonal variation in body condition with fat storage in the summer used as a buffer against winter feed shortage. As over rugged horses are less likely to have to expend energy to remain warm, weight gained in the preceding winter months is unlikely to be lost. Further, horses permanently kept outside were found to thrive in cold weather (Cymbaluk and Christison, 1990; Autio and Heiskanen, 2005; Mejdell and Bøe, 2005) and were unlikely to exhibit any behaviours indicating their discomfort in temperatures ranging from – 40 to 40 C (Cymbaluk and Christison, 1990). Interestingly, most governmental agencies do not address rugging in their directives although Swedish legislation on horse management and housing advocates the use of rugs in climate of low temperatures and precipitation or for insect protection (Swedish Board of Agriculture, 2007).

Overall, participants were of the view that horses are sentient, with several feelings identified and that horses need social contact and form friendships with other horses and also form bonds with their owners. These results contradict findings of studies on modern husbandry practices where horses may be stabled individually for up to 23h/day with their need for social contact often disregarded (van Dierendonck, 2006). This isolation can often result in stress and stereotypical behaviours (Visser et al., 2008); behaviours not observed by participants in the present study. Therefore, participants in this study recognised that horses are social animals (Goodwin, 1999). Lansade et al. (2004) found that the quality of the human–animal relationship had an influence on the horse's welfare. Therefore, bonds with owners as stated in this study can have a profound effect on the horse's wellbeing (Smith et al., 2016).

Horse behavioural issues were not a concern for most horse owners in this study although there were some references to behaviours such as kicking, bullying behaviour and nervousness. In contrast, abnormal behaviours were found to be evident in dressage horses (Cook, 2003 and Mills, 2005) and vaulting, eventing and jumping horses (Hausberger et al., 2009). However, as already mentioned overexposure to individual horse behaviours was found to be a catalyst for under estimation of horse behaviour problems. In a study on horses' stereotypic behaviours, only 5% of horse owners/carers reported any type of stereotypic behaviours in horses compared to 37% of ethological observations (Lesimple and Hausberger, 2014). Nevertheless, an explanation for the absence of behavioural problems may be due to participants management practices in that horses are outdoors and in herds. These findings support evidence from previous studies whereby stereotypical behaviours are less prevalent in horses that remain in an outdoor environment (Pell and McGreevy, 1999). Should behaviour problems exist, most participants in the present study stated that they worked with the horse themselves to correct these behaviours. However, while some of these behaviours can be addressed at an individual level, such as separating aggressive horses, an understanding of the origins and effects of abnormal behaviours is necessary to facilitate the best way to address them from the horse's perspective (Cooper and Mason, 1998).

4.4.4 Animal welfare

Participants understood the concept of animal welfare in various ways. A minority referred to animal welfare organisations as relating to their understanding of the concept of animal welfare, and a few did not know what the animal welfare concept referred to. However, the horse's health, care, management, emotional state and resource provision were the focus of most participants understanding of horse welfare, with all agreeing that the owner is ultimately responsible for the care and welfare of the horse. These results imply that Traveller/Gypsy horse owners have a relatively good understanding of these factors although emphasis on certain factors more

than others was observed. It should be stressed that horse welfare is dependent on a number and combination of different factors with these factors the focus of various studies and frameworks. For example, the absence of thirst, hunger, malnutrition, fear, distress, discomfort, pain and injury as outlined in the Five freedoms framework (FAWC, 1993) in addition to studies on an animal's subjective feelings (Dawkins, 2008; Mendl et al., 2009), health production and reproduction (Dawkins, 1998) and natural behaviours (Spinka, 2006). While different criteria are applied by different scientists when assessing animal welfare, the application of any one component alone does not constitute good welfare (Fraser, 2008). The reason is that different values and beliefs about animal welfare can lead to the development of different welfare assessment protocols with each maintaining validity supported by their own set of principles (Fraser, 2003). Nevertheless, it is evident from participants' husbandry practices, their appreciation of the horse's natural behaviour and environment and recognition of the horse as a sentient animal, that horse owners in the current study acknowledge these said factors contribution to improved horse welfare. Further, by stressing that the owner is ultimately responsibility for the horse/s in their care, horse owners in this study are aware of their obligation to care for their horse/s.

4.4.5 Challenges

The impact of the COHA identified difficulties that this Act creates for Traveller/Gypsy horse ownership. This finding is supported by previous research where this legislation was found to present many challenges to Traveller/Gypsy horse owners as they are often more susceptible to the consequences of these acts (Burke Wood, 2019; Pavee Point, 2019). Reasons for difficulties imposed by the COHA in this study included impoundment of horses, fly-grazing, costs of complying with legislation, discrimination and a minority stated that the Act is ineffective in its current format.

It became apparent that most participants fly-grazed their horses on public and private land with a minority agreeing that they have the right to do so and others fearful of the penalties of the Act. Fly-grazing is a practice that has been linked to Traveller/Gypsy horse management for generations (Gmelch,1975), though fly-grazing is illegal under the COHAs. Horse impoundment as a consequence of non-compliance with the Act and the costs of retrieving horses came in for widespread criticism. It is understandable that horse owners are apprehensive of impoundment as horses not retrieved are often euthanised (Department of Agriculture, (Control of horses' statistics), 2018). Since the introduction of the COHA in Ireland, horse impoundment remains a common practice although numbers of impounded horses have decreased. While impoundment of horses is not limited to Traveller horse owners, Traveller horses are more susceptible to this practice (Cullinane et al., 2015). The high cost of reclaiming impounded horses was referred to, with a figure of £2,000 cited by one respondent. A possible explanation for this might be that impoundment fees can vary between local authorities and horse pounds are often private enterprises operating on a profit basis (Burke Wood 2019, Pavee Point, 2019). Therefore, regulation is required to ensure transparency, monitoring of operations and to ensure equality in the enforcement of this facet of the COHA.

Difficulty in leasing land was at the core of a great number of responses and was cited as motives for fly-grazing horses. Further, participants were of the view that they are unable to secure land for their horses because of their ethnic status although a minority cited it was because landowners did not want horses on their land. These findings were also supported by Lynam and Dowdall (2008) and Rowland et al. (2019). In Rowland et al. (2019), a major barrier cited by Traveller horse owners was that of land availability, hence the need for the practice of fly-grazing. Land availability is essential for horse welfare as suitable land is a pre-requisite for good horse management. Today, land availability remains one of the most significant issues for

Traveller horse ownership with Traveller horse owners recognising that access to suitable land was fundamental to appropriate horse care (Pavee Point, 2019). Therefore, results of the present study provide support for further research into the barriers to land ownership in this horse owning community for these obstacles to be addressed.

A consistent viewpoint was that horse tethering was an acceptable management practice with some participants stating that it is both natural and good for horses as horses are outdoors and become accustomed to various stimuli through tethering, hence an effective training practice. However, the most common reason given for applying the practice of tethering referred to land unavailability, therefore, tethering is a requirement for horse grazing. While horse tethering is another practice often associated with Traveller/Gypsy horse ownership, it is not considered to be good horse care management (RSPCA, n.d.). Nevertheless, tethered horses were found to have fewer severe physical welfare issues and were less likely to be as thin as roaming horses in a study on the welfare of long-line tethered and free-ranging horses in South Wales by Mullan et al. (2014). Another study by Samuel et al. (2012) found that there were no significant differences on various welfare measures between tethered and free-ranging horses on the physical welfare of tethered and free-ranging horses housed on a public common in South Wales. Therefore, it could be argued that the findings of these studies are inconsistent with the view that tethering has an adverse impact on horse health and welfare. In fact, one participant in this study stated that tethering of horses ensured that they were visible and that *'horses kept behind closed doors is cruel'*. Perhaps, this supports Horseman et al. (2016) who alluded to stakeholders' propensity to associate welfare concerns with different or unfamiliar horse management frameworks.

On the subject of tethering, in the current study, the importance of appropriate and safe tethering was stressed by participants with reference to supervision, water availability, not tethering for long periods of time and the need for suitable tethering equipment. These recommendations indicate that

Traveller/Gypsy horse owners are aware and perhaps consider that they apply appropriate tethering practices. Compliance with some aspects of the tethering guidelines as set out by Welsh Assembly Government (2008) in the 'Code of Practice for the Welfare of Equines' was found to be high although in other areas, compliance was low or non-existent (Samuel et al., 2012). Under this Code of Practice, tethering of horses is allowed with recommendations and guidelines on animal suitability, tethering equipment, food and water provision, shelter, supervision and protection from malicious persons are provided. That study concluded that tethering as a management practice, had no significant negative effect on the horse's physical welfare although amended changes to management practices may improve welfare considerably. Therefore, adhering to the various Codes of Practice on tethering as outlined by Governments such as the Scottish Government, Welfare of Equidae code of practice and Horse Welfare organisations (BHS, Redwings Horse Sanctuary) will help ensure the welfare needs of the horse are met.

By far the most common response to microchipping legislation was an agreement that it was necessary. Participants were of the view that microchipping horses was useful for horse traceability, proof of ownership and that it is the law. In this instance, it would appear that horse owners are in favour of microchipping their horses, which is now compulsory in the UK and Ireland. However, a minority were of the view that this aspect of legislation should only be enforced for horse dealers or not at all. As in the previous case of horse impounding, costs again emerged as a key reason by those not in favour of microchipping horses. Economic constraints were considered by Horseman et al. (2016) to be at the core of horse welfare concerns. However, horse health clinics that provide free or reduced cost microchipping to horse owners who could not otherwise afford it have proved to be successful in improving levels of compliance (Pavee Point, 2019).

Opinions were divided on the issue of horse passports with only a minority agreeing that they are needed. Of those who disagreed, references were

made to the need for passports for international travel only. This finding may be explained by the language used as the term `passport` is associated with travel abroad, therefore, the need for a passport for identification purposes rather than travel may be poorly understood. Finally, the ineffectiveness of the equine identification regulations with respect to its lack of verification, non-enforcement and the absence of a data base was referred to. Whilst local authorities are responsible for the enforcement of these regulations, it has received low priority due to lack of resources (National Equine Welfare Council and Heath, 2014). It is highly likely the same situation applies today due to the current economic climate and COVID-19 restrictions. Further, the Central Equine Database is relatively new, therefore, horse owners may not yet be aware of this scheme. Therefore, alongside all horse owners, Traveller/Gypsy horse owners should continue to be targeted with relevant and appropriate information on the benefits of equine identification systems to help improve the implementation of this practice.

In general, participants maintained that the COHA is discriminatory towards Traveller/Gypsy horse owners, only focuses on Traveller horses and is in fact, used to control Traveller/Gypsy culture and their nomadic lifestyle. While these results are likely to be related to the difficulties encountered when complying with legislation, a further explanation may be that the relationship between the Traveller/Gypsy community and horses is greatly misunderstood by the community at large. Therefore, the tradition of Traveller/Gypsy horse ownership is likely to be impeded by both legislation and general misconceptions of this horse owning community (ITM, 2002). However, it must be stated that non-compliance with the COHA does not necessarily mean that horses are not well cared for.

4.4.6 Perceptions of equine professions

It was positive to note that most horse owners indicated that they utilised equine professional services when required with more prevalent engagement with the veterinary service. Dental and farrier services in addition to alternative therapies were also referred to although the latter was used by

only a few participants. These findings are in agreement with results from a study looking at veterinary service utilisation by horse owners in Australia where the majority of participants used a veterinarian when their horse was sick or injured (Thompson et al., 2018). However, the practice of employing equine services in a preventative capacity is further recommended by Thompson et al. (2018). A minority of horse owners did refer to attending to various horse health concerns themselves. While this practice is likely to be dictated by, amongst other factors, service costs, tradition and discriminatory attitudes towards this horse owning community, the lack of professional veterinary intervention is particularly concerning for horse health and wellbeing. Stakeholders reported horse owner's inability to recognise pain behaviour as a prevalent horse welfare issue (Rioja-Lang et al., 2020), therefore, engagement with healthcare providers is particularly important with regard to identification and treatment of the health issues in the pursuit of good horse care and welfare. It must be noted, however, that most horse owners did state that contact with the necessary professionals would be made if they were unable to treat the health issue themselves.

References were made to positive relationships to varying degrees between horse owner and veterinarians, farriers, dental practitioners and animal welfare organisations. Participants also referred to the good relations between horse owner and the personnel providing the services at the Horse Health and Education clinics. These relationships may be explained by the overall purpose for participation in the clinics by both parties which is the improvement of horse health and welfare. The veterinarian - client relationship was identified as an important veterinarian competency in a study undertaken with veterinarian clients in the UK and Australia (Hughes et al., 2018). However, a minority of participants in this study referred to a negative relationship with veterinarians, although the root cause of these references was in respect of cost of services and poor practice received. While it is evident that relationships between Traveller/Gypsy horse owners and equine professionals differ, work on breaking down the barriers that are

at the root cause of negative relationships is necessary. In addition, the promotion of positive interactions between agencies and horse owners is required in order to facilitate the recognition and understanding of the tradition of Traveller/Gypsy horse ownership and engage these horse owners with health care professionals in the management of their horses.

4.4.7 Horse events/support structures

Horse Fairs: Horse fairs were deemed a tradition and social occasion by most participants in the present study and were cited as motives for attendance. This contrasts with Rogers et al. (2016) study at Appleby Horse Fair where trading of horses was cited as one of the main reasons for attendance at horse fairs. While trading of horses is an important characteristic of horse fairs, the traditional and social aspect appears to be of equal importance to Traveller/Gypsy horse owners. At horse fairs which date back centuries, Traveller/Gypsy history and folklore is celebrated, family and friends socialise together, and traditional wares and goods are purchased (Hockensmith, 2006)

Most participants agreed that the facilities at the fair were sufficient for horses with horse owners at Appleby Horse Fair highlighting the provision of plenty of water, fields for grazing and the river for washing their horses as positive points. In addition, horse owners at Ballinasloe Fair stated that there were also ample tethering points. However, participants at Appleby Horse Fair stressed the need for additional water outlets in certain areas such as in the top fields or when the river is closed. As the fairs occur in the warmer months of the year, this finding supports the previous results where Traveller/Gypsy horse owners stated that horses should be provided with as much water as they want. Therefore, these horse owners fully understand the importance of water and are aware of the need for water to prevent dehydration (Popescu et al., 2014).

The greatest number of participants agreed that most horses were well cared for whilst at the fair. However, references to horses being driven too young,

the need for the flashing lanes to be monitored better and that work was needed with young people on horse welfare such as hitting their horses. Industry stakeholders associated the behaviours of horse owners and dealers as a key concern for horse welfare at horse fair events (Collins et al., 2010). Therefore, education programmes need to be initiated to improve the standards for horses presented at these fairs. Such programmes must be accessible and without-prejudice and should include the impacts of racing horses too young, effects of unnecessary physical abuse and horse welfare in general. Further, research is also required on behaviours such as whip use in horse culture in general with the aim of reducing unnecessary whip use overall.

The presence of equine welfare organisations appeared to be accepted by participants at both horse fairs. At Appleby Horse Fair, the RSPCA-led multi-agency operation oversees horse welfare at the fair whilst the ISPCA are in operation at Ballinasloe Horse Fair. At Appleby Horse Fair 2018, figures on welfare concerns were lower than previous years and the lowest since 2010 (Vilela, 2019). The possible reason for this may be horse owner's overall approval and engagement with equine welfare agencies at the event. However, a minority of participants claimed that some of the animal welfare organisations were too severe in their approach. While numbers of horses removed and/or horse owners cautioned has decreased, there are incidents of poor horse health and welfare at the Fair that required intervention by the welfare organisations (Vilela, 2019). This may explain the severity of 'some' agencies that horse owners expressed. Another possible explanation for this may be horse owners' previous or current experience with these animal welfare agencies.

The 'Best in Show' at Appleby Horse Fair awards prizes based on a horse's health, happiness & horsemanship with these accolades well received and cited as a positive practice by participants. The awarding of prizes was found to have an impact on human behaviour and considered an effective stimulus for change (Bruni et al., 2020). The presentation of Gaisce (The President's

Award) awards were found to have a positive impact on young people's lives in Ireland with increased self-esteem, social and personal skill development and improved psychological wellbeing (MacMahon and O'Reilly, 2015). Therefore, the presentation of awards that recognise horse care and welfare is likely to raise awareness, promote and encourage good horse health and welfare principles amongst horse owners.

Access to horse healthcare clinics were cited as a positive experience by horse owners and assistance with financial costs was emphasised by horse owners as a key reason for attendance. Affordable clinics were also cited as good incentive by participants in Ireland (Pavee Point, 2019). In the UK, the BHS works collaboratively with other equine charities to offer reduced cost horse healthcare to vulnerable horse owners and communities. To date, 28 BHS Healthcare and Education clinics have been held across the UK with approximately 50 horses attending each clinic with their owners. Services offered include horse health checks, dental and farrier services, anthelmintic treatment, castration, microchipping and passporting. Horse care charges have been a recurring theme in this study and has already been discussed in reference to the COHA, therefore, it is unexpected that these low-cost horse healthcare clinics are valued by participants. Further, education, advice and support is available at each clinic (BHS, n.d.). The provision of education and training to horse owners is supported by Collins et al. (2012) who advocated for horse care and welfare programmes to be available to all horse owning communities to improve the welfare of horses. However, it is important that materials designed are culturally appropriate and accessible to Traveller/Gypsy horse owners considering their reported low literacy levels (All Ireland Traveller Health Study, 2010)

While a minority of horse owners in this study were part of a horse project, all of these referenced the need for these initiatives to support horse ownership. The benefits of Traveller Horse Projects were also recognised in a study with Traveller horse owners in Ireland (Rowland et al., 2019). Horse projects are instrumental in providing facilities, such as land, which is a key barrier to

Traveller/Gypsy horse ownership as discussed above. In addition, the projects facilitate appropriate education and training programmes and increase skill development. There are various horse projects in Ireland and project structures vary according to the needs of horse owners in different areas. To the best of the author's knowledge, these schemes do not exist in the UK, but in Ireland where horse projects do exist, compliance with legislation was considered to be higher by participants in a study on Traveller horse ownership (Pavee Point, 2019). This finding indicates that supplementary to supporting horse owners in their tradition of keeping horses, horse projects are valuable in assisting owners to comply with relevant Acts and regulations. Therefore, the adoption of horse project programmes in the UK and the development of further horse projects in Ireland is proposed, with these initiatives developed in consultation with Traveller/Gypsy horse owners and in accordance with their horse ownership needs. However, the evaluation of these projects is essential in order to assess and improve their effectiveness.

The development of a separate horse welfare organisation for Traveller/Gypsy horse owners was the prevailing view in the current study although one participant expressed their scepticism of such a programme. The support for a distinct horse welfare body may originate from the lack of inclusion of the Traveller/Gypsy community in decision-making processes and policy development in matters that may impact their lives. For example, the government advisory group did not consult with or include Traveller horse owners or their representatives in the initial formation and subsequent execution of the COHA in Ireland (Rowland et al., 2019). The regulations enforced by this Act possibly have the greatest impact on Traveller horse owners as compliance with legislation is particularly difficult because of issues such as land inaccessibility, as outlined above. Under the Act, horses fly-grazed in public or private land are more susceptible to seizure by the authorities. Therefore, the development of a model that is steered by and inclusive of Traveller/Gypsy horse owners should be explored further with the

intention of creating conditions that embrace their tradition of horse ownership.

4.4.8 Limitations

There are limitations to the use of interviews for data collection. Interviews are time consuming as both the interviewing process and transcribing of the data is a long process. The subjectivity of the interview analysis also needs to be taken into consideration. Participant's may have also provided socially desirable responses to the interview questions. The use of convenience sampling may contribute to an inability to generalise the results to the population as a whole and the use of snowball sampling may have contributed to sampling bias as participants may have referred people who are similar to themselves.

4.5 Conclusion

The semi-structured interview format was successful in collecting information regarding Traveller/Gypsy horse culture, husbandry practices and challenges encountered. The observed findings of the above study provide a wealth of information on Traveller/Gypsy horse owners understanding of, approaches to and perceptions of horse care, management and welfare. Thematic analysis identified themes rich in participants understanding of horse health and welfare and their application of appropriate husbandry practices in the management of their horses. In particular, Traveller/Gypsy horse owner's promotion of their natural approach to horse management and their acceptance of the horse as a sentient animal is reassuring as there is an increased body of research and literature that recognises the importance of these constructs. However, Traveller/Gypsy horse owners have been consistently identified as having poor horse welfare, although they seem to espouse a lot of practices that are considered good for horse welfare (freedom, pasture access, natural behaviour, etc). These practices differ for the most part from leisure horses, who are more likely to be stabled, fed on concentrate and over-rugged. Therefore, a reasonable explanation for the

perception of poor welfare in Traveller/Gypsy horses may be related to the other aspects of horse care such as fly-grazing, tethering and on-road racing, aspects often more visible to the community. However, the fact that Traveller/Gypsy horse culture differs to that of the wider horse owning population does not render it substandard. Therefore, it is probable that a lack of understanding of and prejudices towards this horse owning community contributes to a perception of poor horse welfare. Further, there were many challenges expressed by participants to Traveller/Gypsy horse ownership. Challenges were found to be dependent on a number and combination of different factors although discrimination and finances were often at the core of these challenges. The regulations of the COHA were highlighted as particularly problematic for Traveller/Gypsy horse ownership because compliance with this legislation is often difficult on account of their inability to access land. Lack of access to land has enormous disadvantages for horse owners as horses are often fly grazed, an illegal practice under the COHA. As a result, horses may be seized and have to be recovered at a high cost if at all, only for them to be returned to the practice of fly grazing again. In effect, this is a revolving door scenario with no prospect of reviewing and resolving this situation to date. In addition, it appears that the significance of the horse and the tradition of horse ownership in the Traveller/Gypsy community is not considered or included in the development of these Acts. Therefore, the inclusion of Traveller/Gypsy horse owners is advised at both the inception and evaluation of any legislation and policies that may have an impact on their lives. The topic of this study is a novel area of research, therefore, further investigation on horse ownership in Traveller/Gypsy communities is advised with participation of Traveller/Gypsy horse owners in on-going relevant research recommended. In addition, the inclusion of Traveller/Gypsy horse owners will help identify their needs on issues that require support and/or concerns that need to be addressed to maintain and/or improve horse welfare. Above all, the findings indicate that adequate support, understanding and access to necessary resources are essential to sustain the tradition of Traveller/Gypsy horse culture whilst ensuring horse

welfare. While the findings on Traveller/Gypsy horse owners' knowledge and attitudes are largely very positive, there is a need to assess the welfare of the Traveller/Gypsy horses to determine whether participants had a tendency to report a socially acceptable response or whether the knowledge and attitudes reported in this study translates to appropriate horse management practices.

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Chapter 5: Welfare assessment of Traveller/Gypsy horses

5.1 Introduction

The horse industry in the UK and Ireland is significant with 847,00 horses recorded in the UK (Boden et al., 2012) and approximately 159, 000 in Ireland (Health, 2015). This industry has a considerable economic impact, contributing £8bn to the national UK national economy (Equine Sector Council for Health and Welfare, 2017) and €816 million to the Irish economy (Corbally and Fahey, 2017). Horses are engaged in various capacities within the horse industry. In the past, horses had many purposes and were most often engaged in work, transport and in military roles (Ruse, 2017). Today, the role of the horse is primarily for use in the sporting and recreational industry with these roles ranging from elite sports to leisure activities such as trekking and hacking. Horses are also utilised in therapeutic situations and in social exclusion and criminal rehabilitation schemes (Burgon, 2011, Mickelsson, 2019). Further, the horse is commonplace within the Traveller/Gypsy communities which are the subject of study in the current research project. The horse is central to the Traveller/Gypsy culture and is viewed as one of the last links to their nomadic way of life.

As domesticated horses are being kept and utilised by humans, we have a moral obligation towards them (Broom, 2006). Therefore, animal welfare has been recognised as an important facet of the equine industry. As such, the introduction of equine legislation and codes of practice all advocate for the duty of care towards domesticated equines. At the core of legislation and non-statutory guidelines is the wellbeing of the horse with the horse owner/keeper responsible for adhering to and implementing the defined regulations. However, despite these regulations and legislation relating to the care and management of domesticated horses, their welfare remains a

subject of concern and an increasing number of horses require assistance from charities (World Horse Welfare, 2021). Indiscriminate breeding, neglect and abandonment have been documented as general welfare concerns in a charity report 'Left On The Verge: In the grip of a horse crisis in England and Wales (The Royal Society for the Prevention of Cruelty to Animals (RSPCA) et al., 2013).

Research studies have aimed to investigate the scale of horse welfare problems and understand the risk factors of poor horse welfare. While relevant, these studies have been limited in their focus with research on health-related concerns, abnormal behaviours and transport more commonplace (obesity, Giles et al., 2014; stereotypic behaviours, McGreevy et al., 1995; transportation, Waran et al., 2007). Further, the National Equine Health Study (NEHS), (Blue Cross, 2018) identified the most frequently owner reported horse health issues in the UK. Broad categories included skin problems, lameness, metabolic and respiratory diseases and individual categories/conditions included proximal (non-foot) limb lameness, laminitis, mud fever, sweet itch and pituitary pars intermedia dysfunction.

More recent studies have been more comprehensive in their exploration of various factors that may have an impact on horse welfare. For example, horse rugging was examined by Hartmann et al. (2017), horse behaviour by Hothersall and Casey (2012) and housing management by Hartmann et al. (2012). Further areas of research that may affect the health and welfare status of horses include the presence/absence of resources (Popescu and Diugan, 2013) and pasture access (Hockenhull and Whay, 2014). Owner attributes (Leckie, 2001; Pearson, 2004) and human-horse relations (Søndergaard and Halekoh, 2003; Lansade et al., 2004) have also been examined. Various horse health and welfare issues have been prioritised by equine stakeholders using a Delphi approach or semi-structured interviews. In Ireland, stakeholders stated that horse disposal and unregulated events were associated with poor horse welfare (Collins et al., 2009, 2010). In the UK, unsuitable environments, insufficient knowledge and financial constraints

were identified (Horseman et al., 2016). Rioja-Lang et al. (2020) identified delayed euthanasia, obesity, fear and stress, poor nutrition, worm burdens and poor understanding of horse welfare needs and the recognition of pain behaviour as the most important horse health and welfare issues. Both Horseman et al. (2016) and Collins et al. (2009, 2010) studies identified Traveller horses as being particularly vulnerable to reduced welfare. However, a review of the literature suggests that with no official data, the number of Traveller/Gypsy horses is unknown and empirical studies on the health and welfare of Traveller/Gypsy horses is similarly lacking. Hence, the association between Traveller/Gypsy horses and poor welfare is based on stakeholder and public perception rather than on empirical data. Therefore, the welfare of horses belonging to the Traveller/Gypsy community needs to be assessed to address this gap in our knowledge.

5.1.1 Equine assessment indicators and protocols

Historically, the prevention of animal suffering was at the centre of welfare assessment. While physical suffering may be visible, the mental state of the animal that is associated with the problem may not be (Waran and Randle, 2017). Further, traditional assessment protocols comprised of several resource-based measures (Richmond et al., 2017) and while they may be relevant to welfare, it is not clear as to how provision of these resources make the animal feel (Blokhuys et al., 2003). Therefore, rather than assess one facet of an animal's state, such as its physical state alone, an effective horse welfare assessment protocol should incorporate a holistic approach to animal welfare as well as meet the aims and objectives of the welfare assessment.

There are several horse welfare assessment measures and indicators available with these studies providing evidence of the validity, reliability and applicability of these assessment indicators, thus a comprehensive list of animal, resource and management-based indicators was reviewed for their application and limitations (*Appendix D1*). These measures were influenced by the Five Freedoms (Farm Animal Welfare Council (FAWC), 1993) and The

Quality of Life (QOL, Yeates and Main, 2008), an approach that compliments the Five Freedoms in their assessment of welfare by including the concept of 'Five Opportunities'. These relate to the opportunity for selection of dietary inputs, for control of the environment, for pleasure, development, and vitality, to express normal behaviour and for interest and confidence (Parker and Yeates, 2012). Behaviour measurements and observations are also effective in the assessment of animal welfare (Mench and Mason, 1997). While there are various welfare assessment tools available and measures used, all of these tools and measures need to be standardised (Viksten et al., 2016).

Equine welfare assessment tools comprise of a large range of protocols with various purposes and contexts ascribed to different tools. Traditional welfare assessment protocols comprised of resource-based measures. For example, the Swedish Official protocol (Statens Jordbruksverk, [2009](#), [2012](#)) continues to incorporate resource-based measures such as, water provision and bedding in their assessment of horses. While resource-based measures are relevant to welfare, measuring resources alone is insufficient, as their absence is an indication of the possibility of welfare issues rather than an evaluation of an animal's current welfare state (Rousing et al., 2001). In addition, a positive score in a resource-based protocol does not ensure a good welfare status (Winckler and Willen, 2001; Whay et al., 2003). According to Main et al., (2003) the status of the animal is best assessed using animal-based health and behaviour measures. The Animal Welfare Indicators (AWIN) (Dalla Costa et al., 2015) and the Standardised Equine-Based Welfare Assessment Tool (SEBWAT) (Sommerville et al., 2018) focus on animal-based indicators in their assessment of horses. AWIN (Dalla costa et al., 2015) is a two-level approach where the first level gives a rapid overview of a sample of horses while the second level is applied when a more in-depth investigation of individual horses is necessary. The SEBWAT (Sommerville et al., 2018) uses 40 animal-based measures divided into categories (e.g., behavioural, health, pain). Animal-based protocols are comprehensive, rapid, and user-friendly and focus on the animal (Dalla Costa

et al., 2017; Sommerville et al. 2018). However, the AWIN (Dalla Costa et al., 2015) tool needs to be adapted for specific management and husbandry systems and needs to be more geographically representative while the SEBWAT (Sommerville et al., 2018) requires intensive training in its application and it does not examine resource- based measures, therefore, is not applicable to a home environment (Dalla Costa et al., 2017; Sommerville et al., 2018).

Behavioural measurements are also considered an important aspect of a welfare assessment protocol and are used to understand an animal's affective state. An innovative scientific approach used to measure the expressive quality of an animal's behaviour and emotions is 'Qualitative Behaviour Assessment' (QBA), (Wemelsfelder et al., 2000). QBA is a 'whole animal approach' and is used to measure how the animal is expressing behaviour, often referred to as 'body language'. An animal's body language communicates its mood or emotional state and is assessed using terms that describe their behavioural repertoire. This is then applied to interpret an animal's physical and physiological state. QBA has been used in a variety of species (cattle, Andreassen et al., 2013; horses, Fleming et al., 2013; donkeys, Minero et al., 2016). QBA is inexpensive, user-friendly and its inter-observer reliability and biological validity has been recorded (Stockman et al., 2011; Rutherford et al., 2012; Wemelsfelder and Mullan, 2014). Further, QBA is effective in detecting subtle differences in an animal's body language and is valuable in the assessment of positive features of the animal's status (Minero et al., 2016). However, rather than a stand-alone tool, the application of QBA is best used in conjunction with already established welfare protocols (Wemelsfelder and Mullan, 2014).

5.1.2 Rationale

While various studies have indicated that the welfare of Traveller/Gypsy horses is of concern, these concerns appear to be based on perception rather than on empirical studies. As such, the true extent of horse welfare within this horse owning community remains unknown. To determine the

degree of horse welfare issues, there is a need to assess and evaluate Traveller/Gypsy horse welfare. Traveller/Gypsy horses are often managed differently to horses in other communities, therefore, assessments of horses in situations such as fly-grazing, while tethered and at horse fairs was required. However, there are no available protocols for assessing the welfare of horses in the Traveller/Gypsy community. Consequently, the development of a suitable horse welfare assessment protocol is required. Protocols are an effective method of measuring resource availability, health and behavioural indicators of horse welfare. However, in the case of tethered or free roaming horses which are commonplace in Traveller/Gypsy horse culture, the examination of resources is not always feasible, therefore animal-based measurements were generally more applicable to the protocol in this study. However, selected resource-based measures were included in addition to behavioural indicators, physical health measurements and QBA. QBA has been included in other welfare protocols, therefore, to assess the suitability of QBA as a tool to assess Traveller/Gypsy horse welfare, this study aimed to develop a QBA fixed term list and describe the dimensionality of QBA in these horses. Further, the associations between QBA and selected welfare indicators from the welfare assessment protocol were explored. Thus, the aims and objectives of this study were to identify the welfare status of Traveller/Gypsy horses and to determine the factors that are considered risks to horse welfare in this community.

5.2 Methodology

This study was approved by the Human Ethics Review Committee, (Ref no. HERC_180_18) and Veterinary Ethics Review Committee (Ref no. VERC_3_18), Royal (Dick) School of Veterinary Studies, University of Edinburgh.

5.2.1 Development of welfare assessment protocol

Based on a review of the literature; welfare criteria, indicators and assessment tools already available to measure the extent of welfare concerns, were identified. The current assessment approaches were reviewed and their appropriateness and limitations for use in the current study was established. Inspired by the 'Five Freedoms' (FAWC,1993) and the 'QOL' framework (Yeats and Main, 2008), the development of a welfare assessment protocol focused on measures that were relevant to Traveller/Gypsy horses and included animal, resource and management-based measures.

Selection of Welfare Indicators: Measures from established equine welfare assessment tools were discussed at length within the supervisory team. Each indicator included in the assessment protocol was considered for its relevance and value to equine welfare as well as its suitability for use with equines in this study. The severity of thresholds was identified based on the established equine welfare assessment tools used in this study. For indicators devised solely for this study, the setting of severity thresholds were discussed and selected in liaison with the supervisory team. For example, muddy coat condition was separated into positive (from rolling) and negative (from environment) hair coat conditions. The severity of negative muddy coat condition was based on a deviation from an accepted health and welfare standard, i.e., horses had limited control over the time they spent in mud in their environment or whether mud was the only option available to them. A mix of animal and resource-based measures were evaluated for relevance, and it was agreed that due to the housing situations in which Traveller/Gypsy horses may be found in e.g., tethered, free roaming and at horse fairs,

assessments would only include indicators that could be visually assessed. A hands-off assessment approach was used for standardisation purposes and Health and Safety reasons. Further, the protocol was designed to take no more than 10 minutes per animal.

Field testing the Horse Welfare Assessment Pilot protocol: The protocol was tested on ten horses in Scotland and England in March 2018. This revealed that all measures were deemed relevant.

5.2.2 Development of Qualitative Behaviour Analysis (QBA) terms

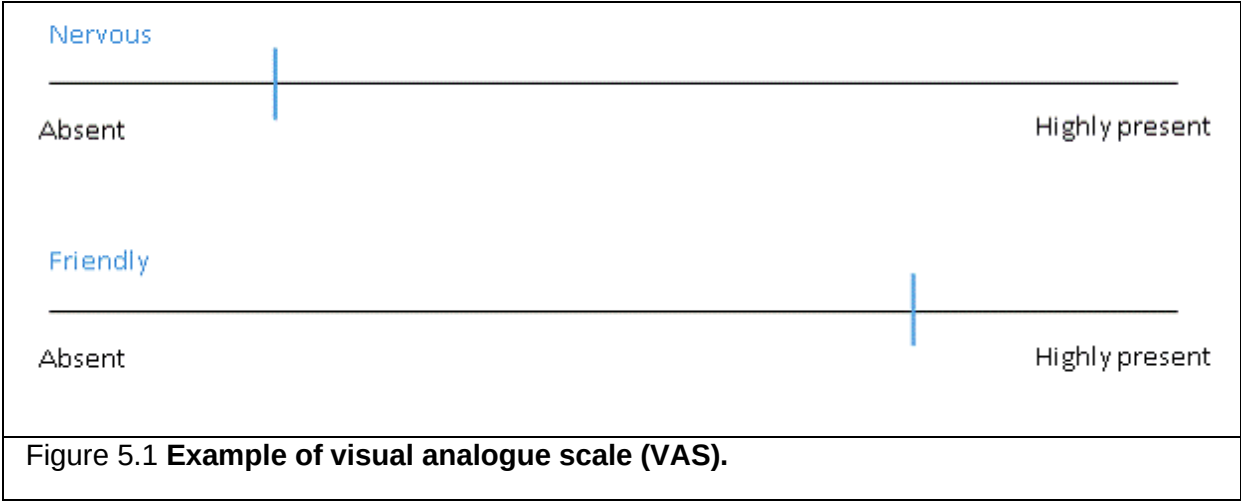
A focus group on QBA in horses took place in Ireland in December 2017 with six Traveller horse owners. An introduction to the QBA method of assessing animal behaviour was presented to participants and followed with a list of 12 behavioural expression descriptors, devised from existing literature (Fleming et al., 2013; Minero et al., 2016; Hintze et al., 2017). Participants reviewed and discussed this list of descriptors, agreeing on broad characterisations and considered situations of when different descriptors could be used. Participants were also invited to include their own QBA terms, resulting in an additional ten new terms and examples of their use. In the second session, participants refined five of the descriptors and eliminated seven terms that they believed were similar or difficult to interpret. Participants discussed and agreed on the definitions of each term. A fixed list of 15 descriptors and definitions of these descriptors were agreed on. The QBA tool was piloted on three horses resulting in the elimination of a descriptor due to its similarity to another term. The tool was further piloted on seven horses in Scotland and England with the final QBA tool consisting of fourteen QBA descriptors, *Table 5.1*.

Table 5.1 List of QBA descriptors and agreed synonyms and explanations from the focus group.

List of QBA Descriptors	Agreed synonyms/explanations
Nervous	shakes, muscles are tense, tail is tucked in under him
Timid	shy, stays in the background
Sociable	mixes well with other horses
Settled	relaxed in himself and with other horses, content
Afraid	anxious, sweating, shivering, rears up, avoids people
Good form	happy, friendly, lively, rolling, bucking, kicking
Laid back	relaxed, easy going, gets on with his own thing
Inquisitive	nosy, curious, stuck into everything
Lively	full of energy, cheerful, running about
Down	depressed in himself, head down, no interest in anything, might be off his food
Aggressive	biting, kicking, snarling, tail swishing, would turn towards you or other horses
Friendly	warm, easy to approach, will come up to you
Bored	not interested in anything; just standing there, needs something to do
Pushy	demanding, pushes everything out of his way to get what he wants

The QBA descriptors were uploaded onto a tablet (Lenovo Tab 2 A10 -70) where each behavioural expression descriptor was presented next to a visual analogue scale (VAS). The left end of the VAS represented the minimum score, indicating that the descriptor was absent in horses and the right end represented the maximum score whereby the descriptor was highly present in horses (*Figure 5.1*). A vertical line was drawn across the VAS at the point that best represented the expressive quality, as indicated by the descriptor

terms, of each horse assessed. Scoring of the behavioural expressions was recorded on the tablet.



5.2.3 Welfare assessment Protocol

The protocol contained 24 measures. All indicators were visually assessed, and measures were scored either numerically, present/absent, yes/no or tick if applies, *Table 5.2*.

Table 5.2 Welfare assessment protocol, including indicators, criteria of use, method of use and classification.			
Indicators	Criteria	Method	Classification
Demographic descriptors	Descriptors: date of assessment, age, breed, sex, season, ambient environmental temperature, geographical region/ location	Record descriptors for each horse	Date, Age, Breed, Sex, Season, Ambient temperature, Region and Location
Body Condition <i>Adapted from Carroll and Huntington's (1988) system</i> <i>Adaptation for Winter coat (Created for this study)</i>	Assessed using an averaging scoring system with the BCS system as follows: <i>Section 1: Neck and Shoulder (withers is cut-off point)</i> <i>Section 2: Middle -Back and Belly (last rib is cut-off point)</i> <i>Section 3: Bottom – Pelvis to Tail</i> A winter coat can conceal both thin/fat horses, BCS assessed overall body condition	Inspect and assess fat/muscle from side on neck, shoulder, ribs, back and pelvis Inspect and assess fat deposits on tail bone/caudal vertebra, shape of croup, visibility of spine and hip bone Assess BCS on overall body condition	0 – Very poor 1 – Poor 2 – Moderate 3 – Good 4 – Fat 5 – Very fat <i>Each body region assessed which, when summed and averaged provided an overall score</i> • Thin • Acceptable • Fat
Cresty Neck Score: <i>Adapted from Carter et al., (2009)</i>	Inspect neck from poll to withers	Inspect neck crest fatness	• No visible crest • Slightly visible crest. • Noticeable crest. • Enlarged and thickened crest.

			- Grossly enlarged & thickened crest. - Very large crest; permanently droops to one side.
Hair Coat Condition: <i>Adapted from Animal Welfare Indicators (AWIN) protocol for horses, (Dalla Costa et al., 2015)</i>	Seasonal coat pattern considered during assessment.	Inspect whole horse for hair/coat condition	Healthy (Sleek/Glossy) Unhealthy (Dull/Dry) Muddy (positive e.g., from rolling) Muddy (negative e.g., from environment)
Generalised Skin Conditions: <i>Adapted from Welfare Monitoring System (WMS) for horses, (Livestock Research, 2012)</i>	Areas assessed: around eyes, muzzle, back, shoulder, ears, legs	Inspect horse for skin conditions (sunburn, rain scald) visible on the horse's body only	- No evidence of generalised skin problem - Evidence of generalised skin problem
Skin irritations in lower legs/pastern: <i>Adapted from WMS (Livestock Research, 2012).</i>	Irritations visible	Inspect lower legs/pastern for skin irritation indicative of dermatitis, mud fever or mites	- No evidence of skin irritation - Inflammation, redness, flakes in pastern - Swelling/scabs in pastern
Body lesions: <i>Adapted from WMS (Livestock Research, 2012)</i>	Area assessed: muzzle, head, neck, shoulders, mid-section, hind quarters and legs	Inspect and record number of lesions in each area <i>Only lesions > 1 cm² area or over 4cm long were included</i>	- None - Hairless spot/scar - Swollen spot - Superficial/healed lesion - Injury minor cut through skin - Open lesion - Deep lesion
Hair Discolouration: <i>Adapted from WMS,</i>	Unnatural patches of hair discolouration (indicative of	Inspect hair discolouration in each	No evidence of hair discolouration

(Livestock Research, 2012)	previous injury) Area assessed: head, neck, shoulder, midsection, hindquarters and legs	area Record number of hair discolouration patches in each area	• Evidence of hair discolouration • Number of hair discolouration patches
Hairless Patches: <i>Adapted from AWIN (Dalla Costa et al., 2015)</i>	Areas assessed: muzzle, head, neck, shoulder, midsection, hindquarters and legs	Inspect for hair loss with undamaged skin on each area Record number of hairless patches in each area	• No evidence of hairless patches • Evidence of hairless patches • Number of hairless patches
Swollen Tendon/Joints: <i>Adapted from (AWIN) (Dalla Costa et al., 2015)</i>	Leg location of swollen tendons/joints: near fore, off fore, near hind, off hind	Inspect for swollen tendons/joints on the following areas: elbow, carpus, fetlock, stifle and hock. Record number in each area	• No evidence of swollen tendons/joints • Evidence of swollen tendons/joints • Number
Discharge and Coughing: <i>(Adapted from AWIN, (Dalla Costa et al., 2015) & Standardised equine-based welfare assessment tool (SEBWAT), (Sommerville et al., 2018)</i>	Nasal: Clear, watery, discharge Unilateral thick white or yellow discharge Bilateral thick white or yellow discharge Unilateral dried, crusted Ocular: Clear, watery, discharge Thick white or yellow discharge Dried, crusted, discharge	Assess both nostrils and eyes for discharge Cough: evaluate the horse at rest (5 mins)	• No evidence of discharge and coughing • Evidence of discharge and coughing

Hoof Condition: <i>Adapted from AWIN (Dalla Costa et al., 2015) & WMS, (Livestock Research, 2012)</i>	For conditions (other than growth rings), limb location of hoof conditions was recorded as follows: near fore, off fore, near hind, off hind	Inspect each hoof for the following: shod, hoof neglect *, growth rings, cracks/breakages, abscess, long toe, backed up toe, imbalance/twist and club foot	- No evidence of hoof conditions - Evidence of hoof conditions <i>* Hoof neglect was defined as the hoof having had little or no recent care while the above- mentioned hoof conditions could still be present in the absence of hoof neglect</i>
Eating Behaviours: <i>Created for this study.</i>	Abnormal eating behaviours: dropping food/ quidding, green nasal discharge, choking, teeth grinding (<i>bruxism post prandial may be associated with gastric ulceration, especially in young horses/foals, Rebhun et al., 1982</i>)	Inspect while eating grass, hay or concentrate feed to identify any abnormal eating behaviours which may be indicative of a welfare issue	- No evidence of eating behaviours - Evidence of eating behaviours
Faecal Appearance: <i>Adapted from AWIN (Dalla Costa et al., 2015)</i>	Faeces appearance: Normal (well-formed faecal balls, uniform colour, little odour, no mucous), dry, hard, gritty (sand, gravel), soft cow pat, very loose/water-like/diarrhoea	Check for fresh (not more than half a day old) faeces and assess the appearance	- Normal - Dry - Hard - Gritty - Soft cow pat - Very loose/water-like/diarrhoea

Abnormal Behaviours: <i>Adapted from WMS for horses, (Livestock Research, 2012)</i>	Stereotypies: crib biting, wind sucking, weaving, pacing & walking on tether line	Assess for evidence of stereotypies and record type of abnormal behaviour observed	• Crib biting • Wind sucking • Weaving • Pacing • Walking on tether line
Voluntary animal approach: <i>Adapted from AWIN, (Dalla Costa et al., 2015), & WMS for horses, (Livestock Research, 2012) & SEBWAT, (Sommerville et al., 2018).</i>	Friendly response (horse moves towards researcher & sniffs hand) Negative non-reactive (horse is apathetic, dull & no interest in approaching researcher) Negative reactive response (horse anxious, frightened, moves away, turns head away, ears flat back, bites or kicks).	Standing in the middle of paddock/field, record the response of the individual horse under assessment: <i>Maximum test time is 3 minutes from a distance of 1.5 m.</i>	• Friendly response • Negative non-reactive • Negative reactive response
Shelter <i>Adapted from Mullan et al., 2014)</i>	Shelter availability: shelter available, mud free/ dry standing area, no shelter available, Muddy/wet standing area	Assess environment for shelter from rain, sun, strong winds and record	• Shelter available • Mud free/ dry standing area • No shelter available • Muddy/wet standing area
Water Availability <i>Adapted from AWIN (Dalla Costa et al., 2015)</i>	Water availability classified as follows: Available Evidence of availability	Assess whether water is available or not at time of assessment <i>Number of waterpoints and cleanliness of water was also</i>	• Available • Evidence of availability • Unavailable

	Unavailable	<i>recorded</i>	
Housing Management & Exercise <i>Adapted from AWIN (Dalla Costa et al., 2015) & WMS (Livestock Research, 2012).</i>	Housing management classified as follows: Group (free range) Individual (free range) Stabled Tethered Exercise classified as follows: Free Range Stabled – turnout daily Stabled - ridden/driven daily Tethered - turnout daily Tethered - ridden/driven daily	Assess the type of housing management that horses are based in Assess the level of exercise for horse/s currently being assessed	• Group (free range) • Individual (free range) • Stabled • Tethered • Stabled – turnout daily • Stabled - ridden/driven daily • Tethered - turnout daily • Tethered - ridden/driven daily
Rug/Blanket Use: <i>Created for this study.</i>	Rug use: absent, evidence of rug use in extreme weather conditions/or when necessary (Summer/sweet itch), evidence of inappropriate rug use	Assess for presence/absence of appropriate/ inappropriate rug use	• Rug absent • Evidence of rug use • Evidence of inappropriate rug use
Visual Horizon: <i>(Adapted from(WMS (Livestock Research, 2012).</i>	Visual horizon: Broad visual horizon Part visual horizon No visual horizon	Assess for possibility of fully, partly or no possibility to broaden its visual horizon	• Broad visual horizon • Part visual horizon • No visual horizon
Social Contact: <i>Adapted from WMS, (Livestock Research, 2012).</i>	Social interaction: Opportunity for full interaction – group housing/free roaming; Opportunity for part interaction – low paddock fences/box	Assess horses for the opportunity for social interaction <i>Record interactions which took place during the assessment</i>	• Opportunity for full interaction • Opportunity for part interaction • No opportunity for interaction

	<i>partitions/ tethered in a group</i> No opportunity for interaction – <i>tethered/stabled alone</i>	<i>period</i>	
Environmental Hazards: <i>Created for this study</i>	Hazards: Clutter/debris, barbed wire, broken fencing, sharp objects protruding, torn metal, nails, screws, splinters, uneven ground, slippery ground, bale netting/twine, exposed electric wiring, poisonous plants, toxic materials, flammable liquids	Assess for the presence of environmental hazards in the horse/s immediate location	• Absence of environmental hazards • Evidence of: Clutter/debris, barbed wire, broken fencing, sharp objects protruding, torn metal, nails, screws, splinters, uneven ground, slippery ground, bale netting/twine, exposed electric wiring, poisonous plants, toxic materials, flammable liquids
Qualitative Behaviour Assessment (QBA): <i>Adapted from Wemelsfelder, (2007)</i>	The visual analogue scale ranged from 'minimum', (behavioural expression was absent) to 'maximum', (behaviour expression prevalent)	Observe each horse for expression of QBA terms (<i>as outlined above</i>)	Individual horses were scored by placing a mark on the scale at a point between minimum and maximum on each of the QBA terms that best reflected the strength of the horse's expression for each of these terms

The welfare assessment protocol was further refined for application at horse fairs/health clinics, resulting in a reduction in the number of indicators originally proposed. Eating behaviours, faecal appearance, exercise, rug use, visual horizon, social contact and environmental hazards were removed from the welfare assessment protocol as assessment of these indicators were not applicable and/or relevant in a fair/clinic situation. Heat stress was added to the protocol, *Table 5.3*.

Table 5.3 Heat stress, including indicators, criteria of use, method of use and classification			
Indicator	Criteria	Method	Classification
Heat stress: <i>Created for this study.</i>	Heat stress defined as: sweating, flared nostrils, increased respiratory rate, increased respiratory depth, head nodding, apathy	Assess for heat stress: <i>The presence of four or more of the criteria determined that heat stress was an issue</i>	• Absence of heat stress • Evidence of heat stress

5.2.4 Horse welfare assessment consent

A horse welfare assessment information sheet (*Appendix D2*) and consent form were used for horse owners to consent to their participation and agreement to the assessment of their horse/horses (*Appendix D3*)

5.2.5 Reporting protocol (in the case of disclosure of animal abuse, mistreatment or neglect).

A protocol setting out the measures to be taken if the researcher and/or wider research team witnessed the mistreatment of animals, or a disclosure is made of animal neglect and/or abuse was devised (*Appendix D4*).

5.2.6 Sampling

Sampling was carried out using convenience and snow- ball sampling techniques as well as using contacts known to the authors, the wider research team and the funding body. A sample of between 100 – 150 horses was intended. The horses assessed were owned by different private owners who were approached randomly and who consented to the assessment of their horses. Horses were assessed in different convenient locations, Appleby Horse Fair, (Cumbria, England), Ballinasloe Horse Fair (Ireland), BHS horse health clinics, horse owners' homes and yards.

5.2.7 Data handling

Initially data were recorded by hand. However, the practical application proved difficult, owing to the volume of paper. The protocol was then uploaded onto a data collection tool `Kobo Toolbox`, an online/offline free software programme developed by the Harvard Humanitarian Initiative. Data were then recorded electronically. All horse welfare data collection was conducted by the main researcher.

5.2.8 Procedure

Horse owners from the Traveller/Gypsy Community were approached randomly and asked if they would like to participate in a study on Traveller/Gypsy horse welfare. The purpose of the research was explained to the horse owners and the method of data collection outlined. Horse owners were advised that participation was voluntary and informed consent was obtained. All horses were assessed by direct observation. For all visual observations of the horse, a distance of 1.5 metres was adopted. The welfare assessment took approximately ten/fifteen minutes per horse. The study was carried out from May 2018 to June 2019. Ambient environmental temperature was recorded. For safety reasons, when horses were not tethered or tied up, horses were held by owners.

The assessments started with QBA. The researcher scored the individual horse by placing a mark on the VAS at a point between minimum and

maximum on each of the QBA terms that best reflected the strength of the horse's expression for each of these terms. Scores were recorded on the tablet and on completion of QBA assessments, data were transferred to a common server (www.egenes.co.uk/qba) at the end of each day for storage.

Horses were then assessed by the researcher according to the welfare assessment protocol outlined above. The assigned scores were recorded on the Kobo Toolbox software

5.2.9 Statistical analysis

Data were initially cleaned and entered into IBM SPSS Statistics 25 (Chicago, IL, USA) for statistical analyses. Unless stated otherwise, all animals ($n = 104$) were included in analysis. Horse breeds were regrouped into the following categories: Cobs, Trotters and 'Other' (Connemara, Shetland, Dales and New Forest ponies and crossbreeds). The results of 'Faecal appearance' were not included in the analysis due to the difficulty in ensuring that this variable was from the horse assessed. Descriptive statistics were conducted on all questions; this included percentages and frequencies. Using logistic regression, models were built to determine the effects of independent variables on various dependent variables and on a subset of Traveller/Gypsy horse owners to determine the effects of owner characteristics and management practices on various dependent variables. The models were built by selecting and entering predictors which were considered relevant to the dependent variables e.g., the effect of nomadic status on the presence of hoof conditions. Screening of variables was used to remove the variables that did not contribute to model. Deleted variables were considered for their adjustment of the remaining covariates. This practice of deleting and reinstating variables continued until variables that remained in the model contributed to a model that was a good fit to the data (Hosmer- Lemeshow χ^2 test) and when the final model statistically significantly predicted the dependent variable. The data were checked for outliers. Variables were coded as 0 = absent and 1 = present. A chi-square test for association was conducted between location of horse fairs and

voluntary animal approach test (friendly response). Principal Component Analysis (PCA – correlation matrix, no rotation) was used to assess the correlation between the 14 QBA descriptors and to summarise the data into principal components. Principle Component Analysis (PCA) was assessed for suitability prior to analysis. The overall Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were assessed to demonstrate whether the data were eligible for factor analysis. Coefficients with a loading of at least 0.30 were chosen for factor analysis (Tabachnick and Fidell, 2006). Preliminary assessments of factors were based on eigenvalues, cumulative variance and visual examination of the scree plot and factor loadings. To assess the relationship between QBA and other horse welfare measures collected for this study, a new file was created in SPSS 25 with both PCA dimension and horse welfare scores. A general linear model (GLM) was used to assess the relationship between QBA, and horse welfare measures and the residuals checked for normality. Post hoc analysis (Tukey-test) was used to determine where differences lie. Welfare measures were coded as 0 = absent, 1 = present. To assess the relationship between QBA and responses to interview data, a GLM was also used, and post hoc analysis (Tukey-test) was used to determine where differences lie. As there was no obvious links between the interview responses and QBA, each factor was explored independently to determine which ones to add to the model. Most of them were non-significant on their own and unlike in some models where it is important to include certain factors (such as treatment group) no matter whether they are significant or not, these factors were definitely not going to reach significance when added to a model with other factors. Only those factors that were significant were included in the model. Interview data were coded as 0 = no, 1 = yes. R studio 1.2.5019 (*with package FactoMinerR*) was used to create QBA Bi-plot graphs. A significance level of $p < 0.05$ was used and significant values are in **bold**.

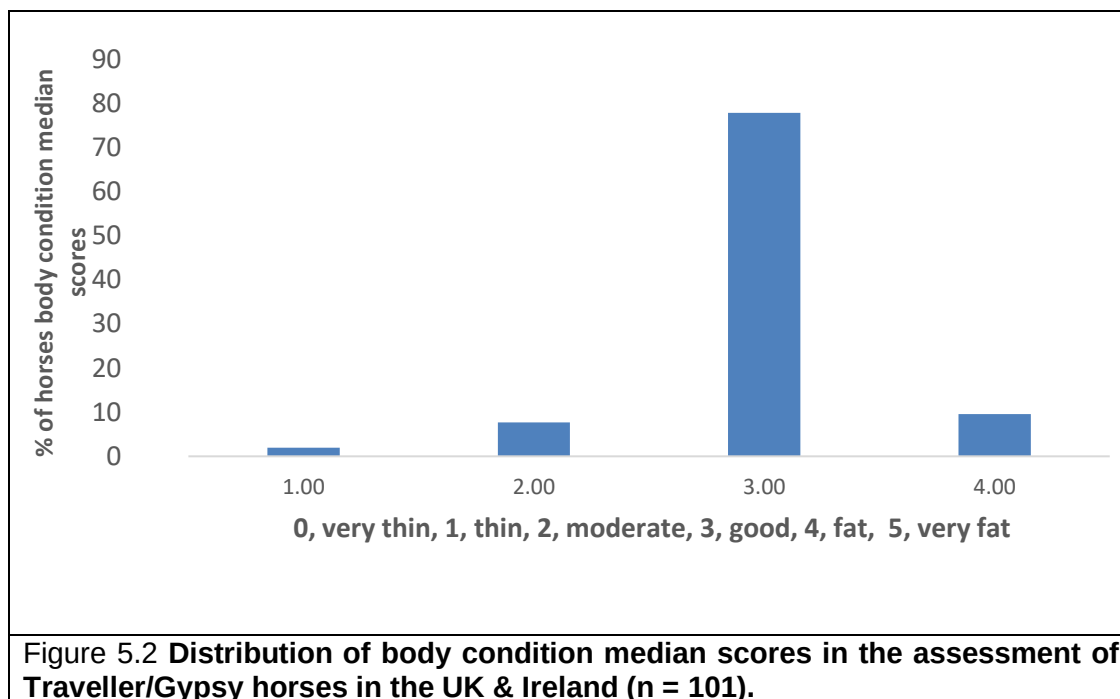
5.3 Results

Horse Information: In total, 104 horses were assessed for this study. The majority (58.7%, $n = 61$) of horses assessed were Cobs, 24% ($n = 25$) were Trotters and 17.3% ($n = 18$) were other breeds of horses. Horse ages ranged from 6 months to 23 years ($\bar{x} = 5.5$, $\sigma = 4.2$). There were 56 (53.8%) mares, 24 (23.1 %) stallions and 24 (23.1%) geldings. Of the 41 mares where data were collected, five (4.8%) had foals at foot and the remainder (36, 34.6%) were not in foal.

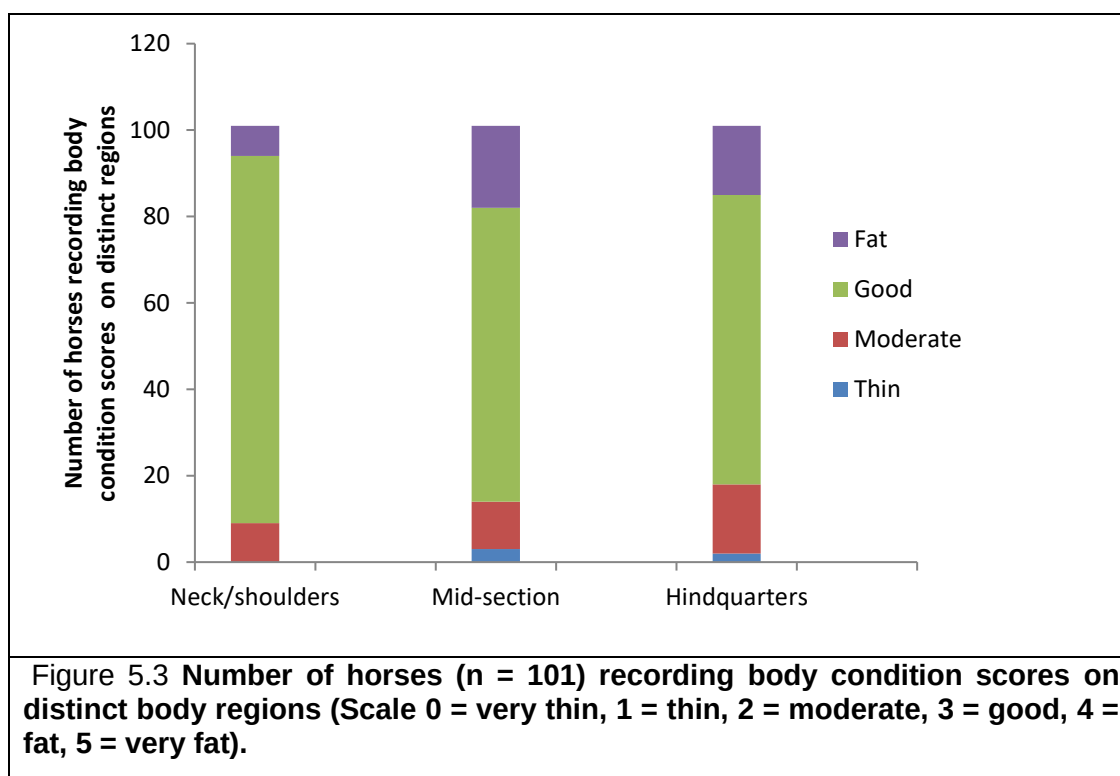
Forty-six (44.2%) were assessed at Appleby Horse Fair and 19 (18.2%) at Ballinasloe Horse Fair. At horse health clinics, 12 (11.5%) horses were assessed in Wales and six (5.7%) in North - East England. Sixteen (15.3%) horses were assessed in Ireland and five (4.8%) in Scotland. Forty-four (42.3%) horses were assessed in the summer, 38 (36.5%), in spring, 19 (18.3%), in autumn and 3 (2.9%) in winter. Ambient temperatures ranged from summer, 10° - 25°C ($\bar{x} = 17.42$ $\sigma = 4.33$), spring, 8.5° – 18°C ($\bar{x} = 11.10$ $\sigma = 2.30$), autumn, 8° – 10°C ($\bar{x} = 9.31$ $\sigma = 0.82$) and winter 7°C.

5.3.1 Health/welfare assessments

Cresty neck and body condition score: Of the 104 horses, 99 (95.2%) had no visible crest and five (4.8%) had a slight visible crest. An overall body condition median score of 3 was recorded for 80 % ($n = 80$) of the 104 horses assessed, *Figure 5.2*. Three horses were assessed in the winter and were found to have an acceptable overall BCS as adapted for Winter coat.



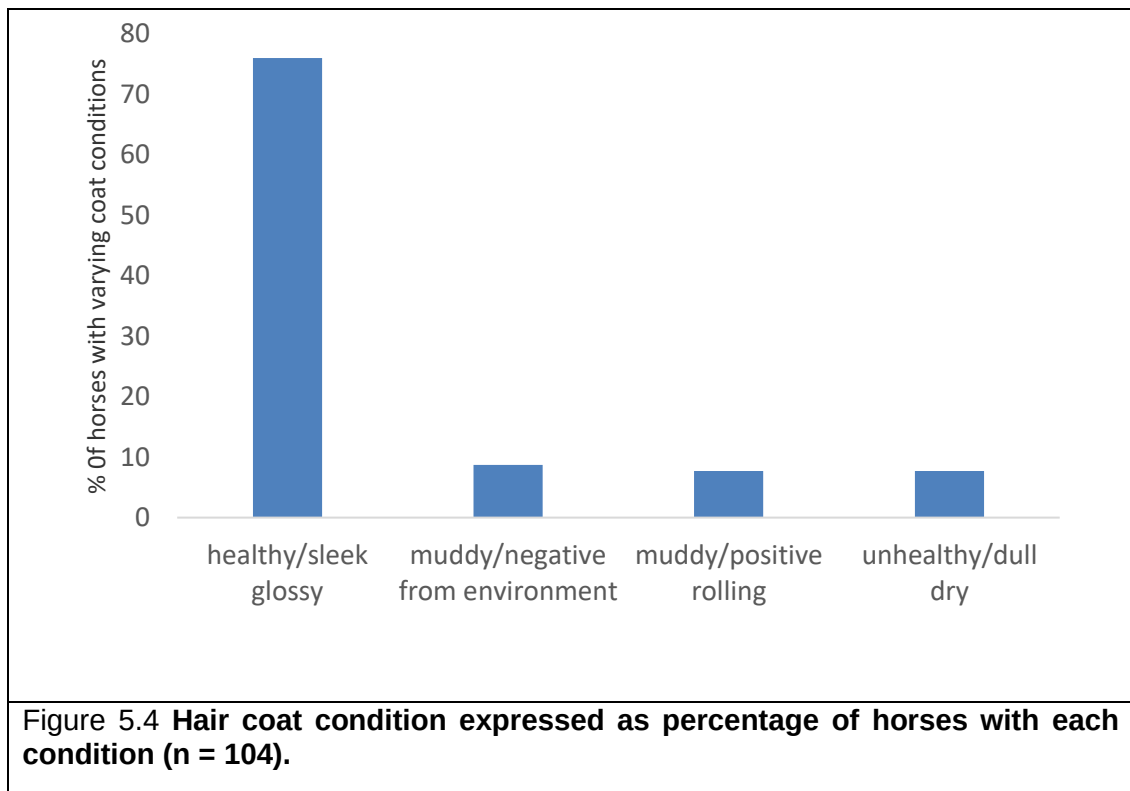
BCS for each body section indicated that the majority of horses obtained a score of 3 (Good), *Figure 5.3*.



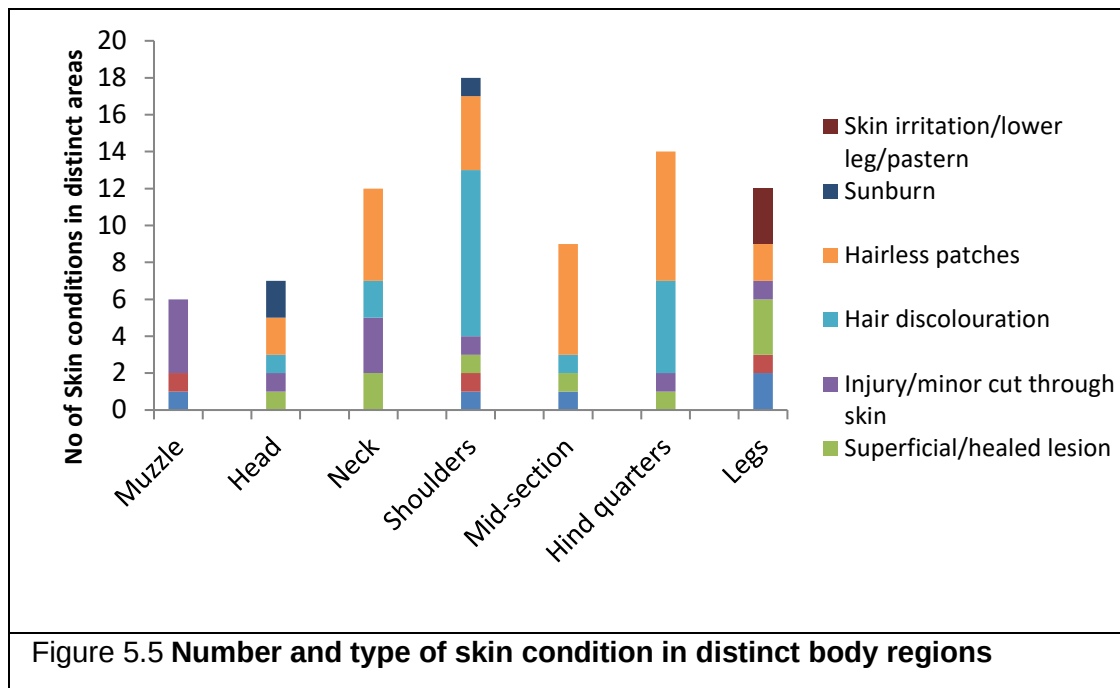
An ordinal logistic regression was run to determine the effect of horse characteristics on horse body condition. The deviance goodness-of-fit test indicated that the model was a good fit to the observed data, $\chi^2(159) = 89.59, p = 0.56$. The final model statistically significantly predicted the dependent variable over and above the intercept-only model, $\chi^2(12) = 28.13, p < 0.01$. Four of the 12 predictor variables were found to be statistically significant. Horses were more likely to have good body condition when skin irritation (lower leg/pastern), $p < 0.01$, and signs of hoof neglect were absent, $p < 0.01$. Good body condition was less likely when horses were <4 years old, rather than 4 – 15 years old, $p = 0.03$ and when generalised skin conditions were present, $p = 0.01$, *Table 5.4*.

Table 5.4 Ordinal logistic regression predicting horse body condition (n = 101). Significant results are bolded ($p < 0.05$).								
Predictor	B	S.E.	Wald	df	p	Exp (B)	95% C.I. for EXP (B)	
							Lower	Upper
Threshold	-							
BCS = 1.00	2.500	2.2202	1.268	1	0.26	0.082	0.001	6.370
BCS = 2.00	-							
	0.096	2.2140	0.002	1	0.96	0.909	0.012	4..657
BCS = 3.00	5.533	2.2811	5.884	1	0.01	252.934	2.893	115.193
Age group < 4	-							
	1.458	0.6749	4.664	1	0.03	0.233	0.062	0.874
Age group > 15	-							
	1.808	2.2348	0.654	1	0.41	0.164	0.002	13.100
Tethered=.00	0.153	0.5763	0.071	1	0.79	1.165	0.377	3.606
Poor coat condition=.00	0.617	0.8233	0.561	1	0.45	1.852	0.369	9.301
Hairless patches=.00	0.753	0.7656	0.968	1	0.32	2.124	0.474	9.526
Generalised skin cond. =.00	-							
	3.014	1.2330	5.975	1	0.01	0.049	0.004	0.550
Skin Irritation lower leg pastern=.00								
	3.671	1.3955	6.921	1	0.01	39.302	2.550	60.770
Body lesions=.00	-							
	0.486	0.6557	0.550	1	0.45	0.615	0.170	2.223
Swollen joints=.00								
	0.321	1.3310	0.058	1	0.81	1.378	0.101	18.713
Not shod=.00	-							
	0.504	0.5841	0.745	1	0.38	0.604	0.192	1.898
Signs of hoof neglect=.00								
	1.964	0.7762	6.399	1	0.01	7.124	1.556	32.617
Voluntary approach (friendly)=.00								
	1.096	0.7296	2.255	1	0.13	2.991	0.716	12.498

Hair coat condition: The majority (76%, n = 79) of horses had a healthy/sleek and glossy hair coat condition. (Figure 5.4)



Skin conditions: *Lumps/ bumps/Sarcoids:* Only 1 (1.2%) of the 83 (79.8%) horses assessed had lumps/bumps, located on its head. There were no sarcoids assessed. *Body Lesions:* Body lesions were absent from the majority (77.9%, n = 81) of horses. There were no serious lesions recorded. Injury/minor cuts through the skin on the muzzle and neck and superficial/healed lesions were the most common types of lesions. Horses with lesions on the legs were the most prevalent (3.8%, n = 4). *Hair discolouration:* Most (85.6%, n = 89) of the 104 horses assessed did not have any hair discolouration. Of the total discolouration, most (8.7%, n = 9) was on the shoulders. *Hairless Patches:* Hairless patches were absent on the majority of horses (83.7%, n = 87) if present the midsection had the most hairless patches (2.9%, n = 3). *Sunburn/Rainscald:* The majority (96.2%, n = 100) of horses did not have sunburn and rain scald was not recorded on any of the horses assessed. *Skin Irritation in lower legs/pastern:* There was no evidence of mud rash and dermatophilosis on the horses assessed. Three (2.9%) horses showed signs of skin irritation on one leg, *Figure 5.5.*

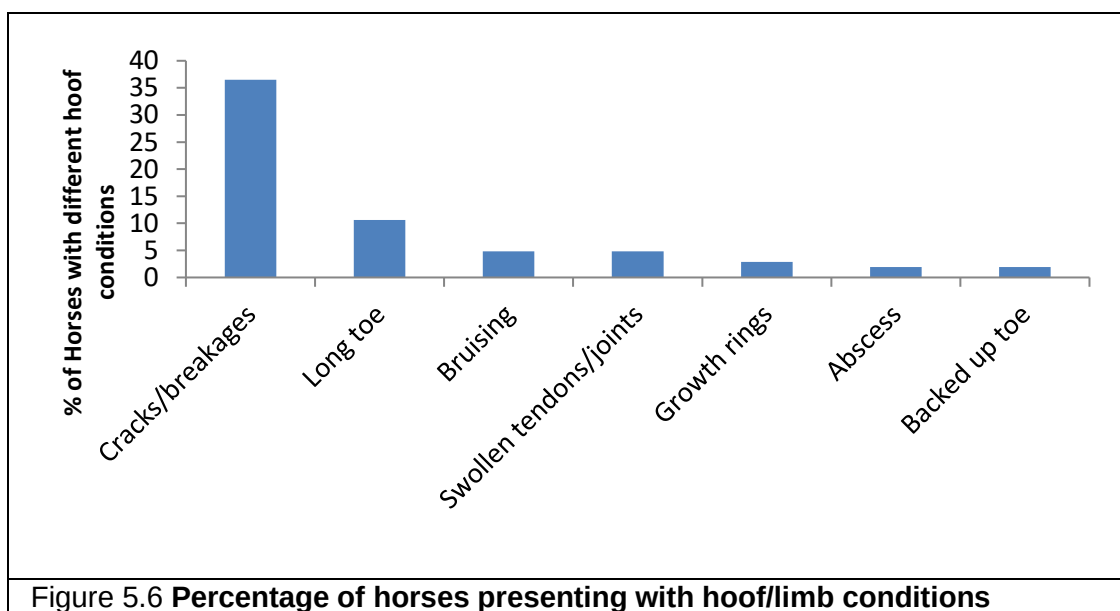


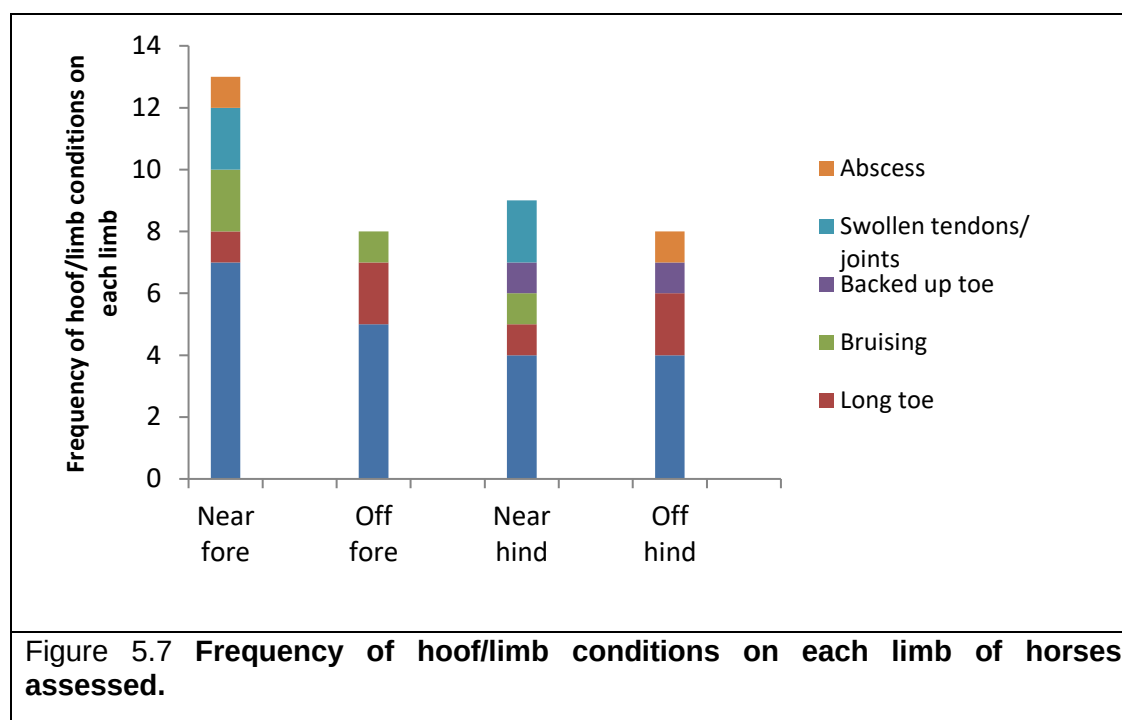
Heat stress: Eighty-three (79.8%) horses were assessed for heat stress. Of these, six (5.8%) horses displayed sweating, three (3.6%) flared nostrils, two (1.9%) increased respiration rate and two (1.9%) apathy

Ocular/nasal discharge/cough: Ocular (98.1%, n = 102) and nasal (93.3%, n = 97) discharge was absent from most horses. Further, 96.2%, horses did not cough in a 5-minute period during assessment, *Table 5.5*.

Table 5.5 Number and percent of ocular/nasal discharge and cough indicators of 104 horses assessed		
Indicators	%	n
Ocular discharge		
No discharge	98.1	102
Clear water discharge	1	1
Unilateral dried, crusted, discharge	1	1
Nasal discharge		
No discharge	93.3	97
Clear water discharge	5.8	6
Unilateral thick white or yellow discharge	1	1
Cough		
No	96.2	100
Yes	3.8	4

Hoof/limb conditions: Just over half (51.9%, n = 54) of horses were not shod, 47.1% (n = 50) were shod on all four feet and one horse (0.96%) was shod but two of the shoes had fallen off. There was no evidence of hoof neglect, in 73.1% (n = 76) of horses while 26.9% (n = 28) horses displayed signs of hoof neglect. Five (4.8%) horses had swollen tendons/joints; one (1%) in the elbow, three (2.9%) in the carpus and one (1%) in the fetlock. Hoof wall cracks/breakages and long toes were the most common hoof conditions recorded, *Figure 5.6*. Cracks/breakages, long toe and bruises were evident in all four limbs, *Figure 5.7*. Of the 83 horses assessed for growth rings, the majority of horses did not display prominent growth rings (76.9%, n = 80).





A binomial logistic regression was run to determine the effects of horse characteristics and horse management practices on the presence of hoof neglect. The binomial logistic regression model was statistically significant, $\chi^2(13) = 38.86, p < 0.01$, explained 47 % (Nagelkerke R^2) of the variance in the presence of hoof neglect and correctly classified 82 % of cases. Four of the 12 predictor variables were statistically significant. The presence of hoof neglect was significantly more likely when poor coat condition, $p < 0.01$, and body lesions, $p = 0.03$, were present and when horses did not show friendly responses to the approach test, $p < 0.01$. Hoof neglect was less likely as body condition scores increase, $p = 0.02$, Table 5.6.

Table 5.6 Binomial logistic regression predicting likelihood of the presence of hoof neglect (0 = absent, 1 = present), (n = 101). Significant results are bolded (p < 0.05).								
Predictor	B	S.E.	Wald	df	p	Exp (B)	95% C.I. for EXP (B)	
							Lower	Upper
BCS median	-1.484	.657	5.100	1	0.02	.227	.063	.822
Age	-.006	.080	.005	1	0.94	.994	.849	1.164
Breed (Cobs)	1.220	.907	1.811	1	0.17	3.389	.573	20.041
Breed (Other)	1.040	1.060	.963	1	0.32	2.830	.354	22.614
Tethered	.188	.628	.090	1	0.76	1.207	.352	4.135
Poor coat condition	1.900	.744	6.515	1	0.01	6.684	1.554	28.748
Generalised skin cond.	1.570	1.483	1.120	1	0.29	4.807	.263	87.987
Body lesions	1.505	.706	4.538	1	0.03	4.504	1.128	17.988
Shod	-.096	.672	.021	1	0.88	.908	.243	3.389
Voluntary approach (friendly)	-2.257	.678	11.070	1	0.01	.105	.028	.396
Skin irritation /pastern	.473	2.241	.045	1	0.83	1.605	.020	129.742
Discharge	2.098	1.544	1.845	1	0.17	8.148	.395	168.137
Shelter mud free/ dry	.181	1.312	.019	1	0.89	1.198	.092	15.676
Constant	3.008	2.587	1.352	1	0.24	20.240		

A binomial logistic regression was run to determine the effects of horse welfare characteristics and horse management practices on the presence of hoof cracks/breakages. The model was statistically significant, $\chi^2(13) = 26.16, p < 0.01$, explained 31 % (Nagelkerke R^2) of the variance in the presence of hoof cracks/breakages and correctly classified 70 % of cases. Three of the 13 predictor variables were statistically significant. The presence of hoof cracks/breakages was significantly more likely when hairless patches, $p = 0.04$, and lesions, $p < 0.01$, were present and tended to be less likely when skin irritation (lower leg pastern) was present, $p = 0.06$. There was a

tendency for hoof/cracks/breakages to be more likely when poor coat condition was present, $p = 0.07$, Table 5.7.

Table 5.7 Binomial logistic regression predicting likelihood of the presence of hoof cracks/breakages (0 = absent, 1 = present), (n = 104). Significant results are bolded ($p < 0.05$).

Predictor	B	S.E.	Wald	df	p	Exp (B)	95% C.I. for EXP (B)	
							Lower	Upper
Tethered	-0.449	0.521	0.743	1	0.38	0.638	0.230	1.772
BCS (median)	-0.967	0.572	2.856	1	0.09	0.380	0.124	1.167
Poor coat condition	1.191	0.671	3.151	1	0.07	3.290	0.883	12.250
Hairless patches	1.335	0.663	4.061	1	0.04	3.802	1.037	13.934
Generalised skin cond.	0.593	1.346	0.194	1	0.65	1.810	0.129	25.322
Skin Irritation/pastern	-3.487	1.911	3.331	1	0.06	0.031	0.001	1.294
Body lesions	1.532	0.626	5.986	1	0.01	4.628	1.356	15.795
Swollen joints	0.005	1.361	0.000	1	0.99	1.005	0.070	14.484
Discharge	0.225	1.674	0.018	1	0.89	1.252	0.047	33.316
Cough	-21.841	17591.713	0.000	1	0.99	0.000	0.000	
Shod	0.210	0.517	0.165	1	0.68	1.234	0.448	3.403
Shelter mud free/dry	0.282	1.096	0.066	1	0.79	1.326	0.155	11.363
Water	-1.001	0.699	2.050	1	0.15	0.368	0.093	1.447
Constant	2.354	2.242	1.102	1	0.29	10.524		

5.3.2 Horse management

Shelter: Shelter was available for 67 (64.4%) horses while shelter was unavailable for 37 (35.6%) horses. Ninety- eight (94.2%) of horses had access to a dry mud free standing area while six (5.8%) did not.

Water availability: Water was available for 79 (76%) horses, unavailable for 18 (17.3) horses and evidence of water availability was seen for 7 (6.7%) of horses. For those 79 horses where water was available, 77 (74%) had access to a single water point while two horses (1.9%) had access to two distinct water points.

Horse tethering: Fifty- five (52.8%) horses were tethered, 11 (10.5%) were loose in a field, three (2.8%) were stabled individually, one (0.96%) was stabled in a group and 34 (32.6%) were housed by other means. These included being hand-held, attached to a gig and/or standing in a yard.

A binomial logistic regression was performed to determine the effects of independent variables on the likelihood of tethering horses. The logistic regression model was statistically significant, $\chi^2(5) = 24.59, p < 0.01$, explained 28% (Nagelkerke R^2) of the variance in horse tethering and correctly classified 72 % of cases. One of the six predictor variables was statistically significant. Tethering horses was more likely when shelter was present, $p < 0.01$, Table 5.8.

Table 5.8 Binomial logistic regression predicting likelihood of horse tethering (0 = absent, 1 = present), (n = 104). Significant results are bolded ($p < 0.05$).								
Predictor	B	S.E.	Wald	df	p	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
Age	-0.094	0.062	2.289	1	0.13	0.910	0.805	1.028
Breed (Cobs)	0.438	0.589	0.553	1	0.45	1.549	0.489	4.914
Breed (Other)	0.981	0.755	1.687	1	0.19	2.667	0.607	11.719
BCS median	-0.261	0.509	0.263	1	0.60	0.770	0.284	2.088
Shelter	2.051	0.555	13.640	1	0.01	7.778	2.619	23.103
Constant	0.400	1.553	0.066	1	0.79	1.491		

5.3.3 Horse behaviour

Abnormal Behaviours: Only one (0.96%) horse displayed any evidence of abnormal behaviours (wood chewing).

Voluntary animal approach test: When horses were assessed for voluntary animal approach, most (80.8%, $n = 84$) demonstrated a friendly response, 18 (17.3%) a negative reactive response and two (1.9%) a negative non-reactive response. For horses that responded in a negative reactive way, reasons recorded included lots of activity in the area of assessment, awaiting medical procedures, first time at the fair and tethered with other horses.

A binomial logistic regression was run to determine the effects of horse characteristics and horse management practices on voluntary animal approach test (friendly response). The model was statistically significant, $\chi^2(16) = 29.98, p < 0.01$, explained 40% (Nagelkerke R^2) of the variance in the voluntary animal approach test (friendly response) and correctly classified 85 % of cases. Of the 15 predictor variables only one was statistically significant. A friendly response to the voluntary animal approach test was more likely when signs of hoof neglect was absent, $p = 0.02$, and there was a trend for a friendly response to be more likely from trotters than other breeds, $p = 0.07$, Table 5.9.

Table 5.9 **Binomial logistic regression predicting likelihood of friendly response (0 = absent, 1 = present) to the human approach test on predicting variables (n = 104). Significant results are bolded ($p < 0.05$).**

Predictor	B	S.E.	Wald	df	p	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Age	0.134	0.119	1.271	1	0.26	1.143	0.906	1.443
Breed (Cobs)	-1.634	1.51	1.171	1	0.27	0.195	0.01	3.765
Breed (Other)	-2.973	1.627	3.34	1	0.06	0.051	0.002	1.24
Tethered	0.778	0.822	0.897	1	0.34	2.177	0.435	10.892
BCS median	-0.801	0.774	1.073	1	0.30	0.449	0.098	2.045
Heat stress	0	0	1.046	1	0.30	1	1	1
Dis-colouration	-1.388	0.917	2.292	1	0.13	0.25	0.041	1.505
Hairless patches	-1.437	0.868	2.737	1	0.09	0.238	0.043	1.304
Generalised skin cond.	21.962	17464.15	0	1	0.99	3.45E+09	0	.
Skin irritation/pastern	0.617	2.254	0.075	1	0.78	1.853	0.022	153.52
Body lesions	-0.838	0.84	0.994	1	0.31	0.433	0.083	2.246
Discharge	19.468	25382.16	0	1	0.99	2.85E+08	0	.
Shod	-0.293	0.746	0.154	1	0.69	0.746	0.173	3.221
Signs of hoof neglect	-3.108	1.371	5.136	1	0.02	0.045	0.003	0.657
Presence/hoof conditions	0.851	1.254	0.461	1	0.49	2.342	0.201	27.329
Shelter	-0.335	0.872	0.148	1	0.70	0.715	0.129	3.949
Shelter muddy/wet	19.714	13833.5	0	1	0.99	3.64E+08	0	.
Water	0.333	0.987	0.114	1	0.73	1.395	0.201	9.661
Constant	6.003	3.237	3.439	1	0.06	404.82		

5.3.4 Horses in their Home Environment

In addition to the welfare indicators above, 21 (20.1%) of the 104 horses were also assessed in their home environment for eating behaviour, rug-use, housing management, exercise practices, visual horizon and environmental hazards. indicators. Most horses ate normally, were unrugged, were stabled and turned out or ridden daily, *Table 5.10*.

Table 5.10 Descriptive statistics of behaviour and management indicators of horses assessed (n = 21), expressed in number (n) and percent (%)		
Indicators	%	n
Eating Behaviours		
Eat normally	90.5	17
Teeth grinding	9.5	2
Rug use		
Absent	80.9	17
Evident	19.1	4
Housing management		
Stabled	52.3	11
Group (free range)	33.3	7
Tethered	9.5	2
Individual (free range)	4.7	1
Exercise		
<i>Stabled horses (n = 11)</i>		
Turned out daily	42.8	9
Ridden daily	33.3	7
<i>Tethered horses (n = 2)</i>		
Turned out daily	9.5	2
Visual horizon		
Broad visual horizon	57.1	12
Part visual horizon	38.0	8
No visual horizon	4.7	1
Social contact		
Full possibility for interaction	38.1	8
Part possibility for interaction	38.1	8
No possibility for interactions	23.8	5
Hazards	0	0

5.3.5 Relationship between horse owner characteristics and horse welfare

During Traveller/Gypsy horse owner interviews (Chapter 4), data were recorded on owner characteristics and their management practices for sixty-six participants who also had their horses assessed. These data were collected at Appleby Horse Fair, Ballinasloe Horse Fair, BHS horse health clinics, horse owners' homes and yards. The data were then used to determine the effects of owner characteristics and management practices on horse welfare assessments.

Heat stress: The binomial logistic regression model was statistically significant, $\chi^2(18) = 21.51, p < 0.05$. The model explained 54 % (Nagelkerke R^2) of the variance in heat stress and correctly classified 87.5% of cases. Only one of the 18 predictor variables was statistically significant. The presence of heat stress was significantly less likely if owners owned 5 - 10 horses than owners who had >20 horses, $p = 0.03$. There was also a tendency for heat stress to be less likely if owners had < 5 horses when compared to owners of >20 horses, $p = 0.06$, *Table 5.11*.

Table 5.11 **Binomial logistic regression predicting likelihood of heat stress based on demographic and horse management variable (n = 66). Significant results are bolded ($p < 0.05$).**

Variable	B	SE	Wald	df	p	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
Ethnicity (Gypsy)	-5.274	26510.854	.000	1	1.00	.005	.000	.
Ethnicity (Other)	-24.753	21962.675	.000	1	0.99	.000	.000	.
Nomadic	.207	2.000	.011	1	0.91	1.230	.024	61.977
Age range (18 – 35)	1.846	1.713	1.162	1	0.28	6.333	.221	181.695
Age range (36-45)	-19.540	9312.600	.000	1	0.99	.000	.000	.
Age range (46-55)	.438	1.952	.050	1	0.82	1.549	.034	71.126
Region (England)	4.044	26510.854	.000	1	1.00	57.068	.000	.
Region (Ireland)	-3.546	2.105	2.838	1	0.09	.029	.000	1.785
Region (Scotland & NI)	-19.604	25416.944	.000	1	0.99	.000	.000	.
No. horses < 5	-5.126	2.735	3.512	1	0.06	.006	.000	1.265
No. horses 5 – 10	-4.532	2.194	4.264	1	0.03	.011	.000	.794
No. horses 11 – 20	-2.046	1.532	1.784	1	0.18	.129	.006	2.603
Breed self	1.930	2.216	.759	1	0.38	6.889	.090	530.170
Housed (loose in field)	-2.187	42847.884	.000	1	1.00	.112	.000	.
Housed (other)	.702	1.428	.242	1	0.62	2.018	.123	33.150

Shelter	1.540	1.678	.843	1	0.35	4.666	.174	125.107
Shelter (mud free dry)	18.956	11924.791	.000	1	0.99	170727407.827	.000	.
Water	-1.429	1.506	.900	1	0.34	.240	.013	4.587
Constant	-17.66	11924.7	.000	1	0.99	.000		

Hoof neglect: The binomial logistic regression model was statistically significant, $\chi^2(19) = 35.09, p < 0.01$. The model explained 56 % (Nagelkerke R^2) of the variance in signs hoof neglect and correctly classified 86.4% of cases. Only one of the 19 predictor variables were statistically significant. The presence of hoof neglect was significantly more likely if owners owned 11-20 horses than owners who had >20 horses, $p < 0.01$, Table 5.12.

Table 5.12 Binomial logistic regression predicting likelihood of hoof neglect (0 = absent, 1 = present) based on demographic and horse management variables (n = 66). Significant results are bolded ($p < 0.05$).								
Variable	B	S.E.	Wald	df	p	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
Ethnicity (Gypsy)	18.688	15142.384	.000	1	0.99	130618825.274	.000	.
Ethnicity (Other)	-2.540	2.255	1.270	1	0.26	.079	.001	6.544
Nomadic	1.625	1.295	1.575	1	0.20	5.080	.401	64.275
Age range (18 - 35)	.174	1.563	.012	1	0.91	1.190	.056	25.446
Age range (36-45)	.537	1.805	.088	1	0.76	1.710	.050	58.792
Age range (46-55)	-.720	1.694	.181	1	0.67	.487	.018	13.456
Region (England)	-21.453	15142.384	.000	1	0.99	.000	.000	.
Region (Ireland)	-1.304	1.376	.898	1	0.34	.271	.018	4.027

Region (Scotland/NI)	-4.293	2.752	2.433	1	0.11	.014	.000	3.008
No. horses < 5	1.068	1.470	.528	1	0.46	2.909	.163	51.927
No. horses 5 - 10	1.993	1.383	2.077	1	0.15	7.340	.488	110.446
No horses 11 - 20	4.125	1.595	6.684	1	0.01	61.840	2.712	1409.939
Breed self	-.084	1.185	.005	1	0.94	.919	.090	9.378
Housed (loose in field)	-20.789	17895.031	.000	1	0.99	.000	.000	.
Housed (other)	-1.270	.851	2.224	1	0.13	.281	.053	1.490
Housed (stabled individual)	-21.061	26790.218	.000	1	0.99	.000	.000	.
Shelter	.236	1.019	.054	1	0.81	1.266	.172	9.323
Shelter (mud free, dry)	1.564	1.719	.827	1	0.36	4.776	.164	138.776
Water	-1.112	.985	1.273	1	0.25	.329	.048	2.269
Constant	-1.712	3.321	.266	1	0.60	.181		

Presence of hoof conditions: The binomial logistic regression model was statistically significant, $\chi^2(19) = 42.28, p < 0.01$, explained 63 % (Nagelkerke R^2) of the variance in hoof condition and correctly classified 83% of cases. Only three of the 19 predictor variables were statistically significant. The presence of hoof conditions was more likely when owners are not nomadic, $p < 0.01$, less likely when owners live in Scotland/Northern Ireland rather than Wales, $p = 0.03$, more likely if owners have < 5 horses, $p = 0.03$, and 11-20 horses, $p = 0.02$, than owners with >20 horses. The presence of hoof conditions also tended to be less likely when shelter was available, *Table 5.13*.

Table 5.13 Binomial logistic regression predicting likelihood of hoof conditions (0 = absent, 1 = present) based on demographic and horse management variables (n = 66. Significant results are bolded ($p < 0.05$).								
Predictor	B	S.E.	Wald	df	p	Exp B)	95% C.I. for EXP(B)	
							Lower	Upper
Ethnicity (Gypsy)	39.467	20062 .4	0	1	0.99	1.38 E+17	0	.
Ethnicity (Other)	-1.081	2.302	0.221	1	0.63	0.339	0.004	30.92
Nomadic	4.72	1.77	7.114	1	0.01	112.1 69	3.495	3599.4 4
Age range (18 - 35)	-0.939	1.49	0.397	1	0.52	0.391	0.021	7.256
Age range (36-45)	-0.824	1.686	0.239	1	0.62	0.439	0.016	11.946
Age range (46-55)	-0.43	1.483	0.084	1	0.77	0.65	0.036	11.894
Region (England)	- 41.674	20062 .4	0	1	0.99	0	0	.
Region (Ireland)	-2.36	1.573	2.252	1	0.13	0.094	0.004	2.059
Region (Scotland/ NI)	-6.874	3.32	4.286	1	0.03	0.001	0	0.693
No horses < 5	2.907	1.36	4.569	1	0.03	18.30 4	1.273	263.14 5
No horses 5 - 10	1.263	1.221	1.07	1	0.30	3.536	0.323	38.722
No horses 11 - 20	3.855	1.622	5.647	1	0.01	47.20 6	1.965	1134.1 9
Breed self	-1.511	1.305	1.341	1	0.24	0.221	0.017	2.847
Housed (loose in a field)	-2.22	2.116	1.101	1	0.29	0.109	0.002	6.869
Housed (other)	-1.542	0.983	2.458	1	0.11	0.214	0.031	1.471
Housed (stabled individually)	1.271	2.879	0.195	1	0.65	3.563	0.013	1005.2 56
Shelter	-2.071	1.116	3.447	1	0.06	0.126	0.014	1.122
Water	-1.288	1.138	1.281	1	0.25	0.276	0.03	2.567
Constant	21.175	13147 .03	0	1	0.99	1.57 E+09		

Shelter: The binomial logistic regression model was statistically significant, $\chi^2(17) = 40.22$, $p < 0.01$, explained 66.1 % (Nagelkerke R^2) of the variance in the availability of shelter and correctly classified 83.3% of cases. Only one of the 17 predictor variables, only one was statistically significant. The

availability of shelter is more likely when owners are not nomadic rather than if they are nomadic, $p < 0.01$, Table 5.14.

Table 5.14 **Binomial logistic regression predicting likelihood of shelter availability based on owner demographic and horse management variables (n = 66). Significant results are bolded ($p < 0.05$).**

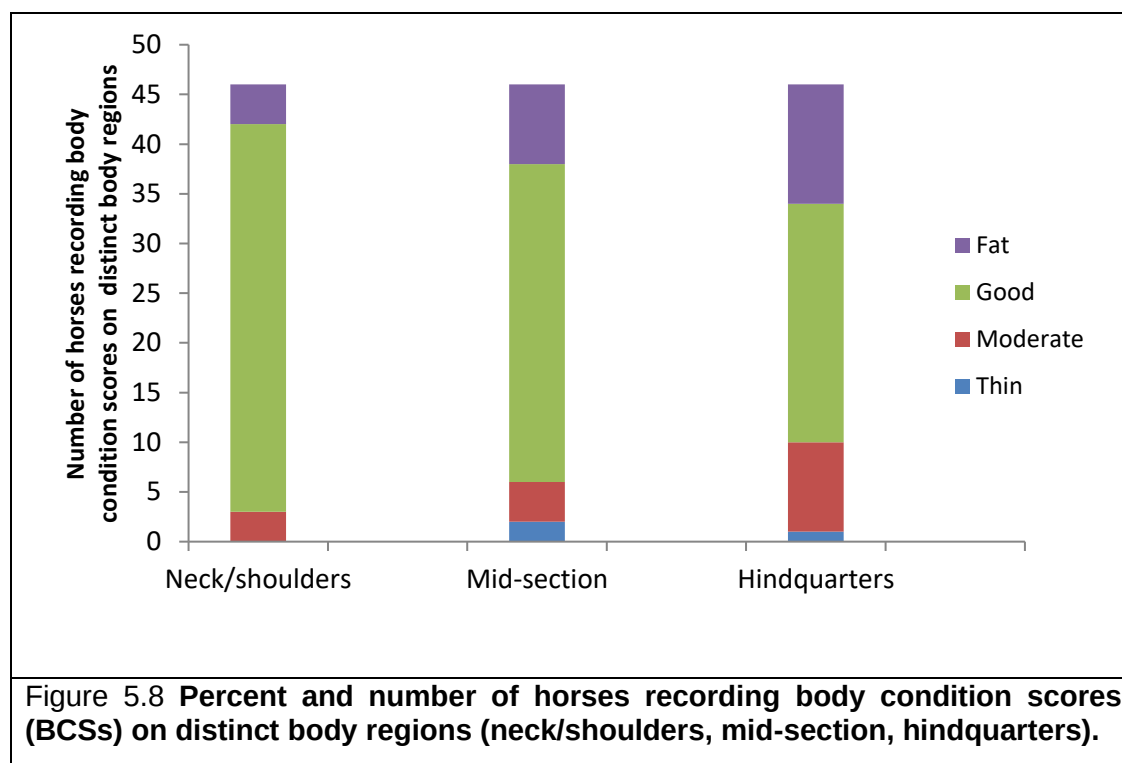
Predictor	B	S.E.	Wald	df	p	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
Ethnicity (Gypsy)	-15.068	29922.039	.000	1	1.00	.000	.000	.
Ethnicity (Other)	2.546	26147.333	.000	1	1.00	12.761	.000	.
Nomadic	4.346	1.615	7.236	1	0.01	77.141	3.253	1829.574
Age (18 - 35 years)	-3.140	1.853	2.871	1	0.09	.043	.001	1.636
Age (36-45 years)	.533	1.895	.079	1	0.77	1.704	.042	69.901
Age (46-55 years)	.679	1.888	.129	1	0.71	1.972	.049	79.852
Region (England)	-4.481	26709.216	.000	1	1.00	.011	.000	.
Region (Ireland)	-18.221	13488.743	.000	1	0.99	.000	.000	.
Region (Scotland & NI)	-41.955	17610.377	.000	1	0.99	.000	.000	.
No. horses < 5	2.232	1.395	2.561	1	0.10	9.322	.606	143.48
No. horses 5 - 10	1.232	1.389	.787	1	0.37	3.429	.225	52.229
No. horses 11 - 20	2.234	1.653	1.827	1	0.17	9.341	.366	238.597
Breed self	-1.046	1.375	.579	1	0.44	.351	.024	5.197
Horse housed (loose in field)	40.059	17919.991	.000	1	0.99	2496917367892041	.000	.

						92.0 00		
Horse housed (other)	.57 3	.980	.342	1	0.55	1.77 3	.260	12.09 3
How horse housed (stabled individually)	40. 059	26028 .046	.000	1	0.99	2496 9679 7569 2434 56.0 00	.000	.
Water	.27 3	1.137	.058	1	0.81	1.31 4	.142	12.19 5
Constant	16. 169	13488 .743	.000	1	0.99	1052 1174 .210		

5.3.6 Horse Fairs

Overall, 65 of the 104 horses were assessed at horse fairs in the UK and Ireland. Results were broadly similar to the overall welfare data.

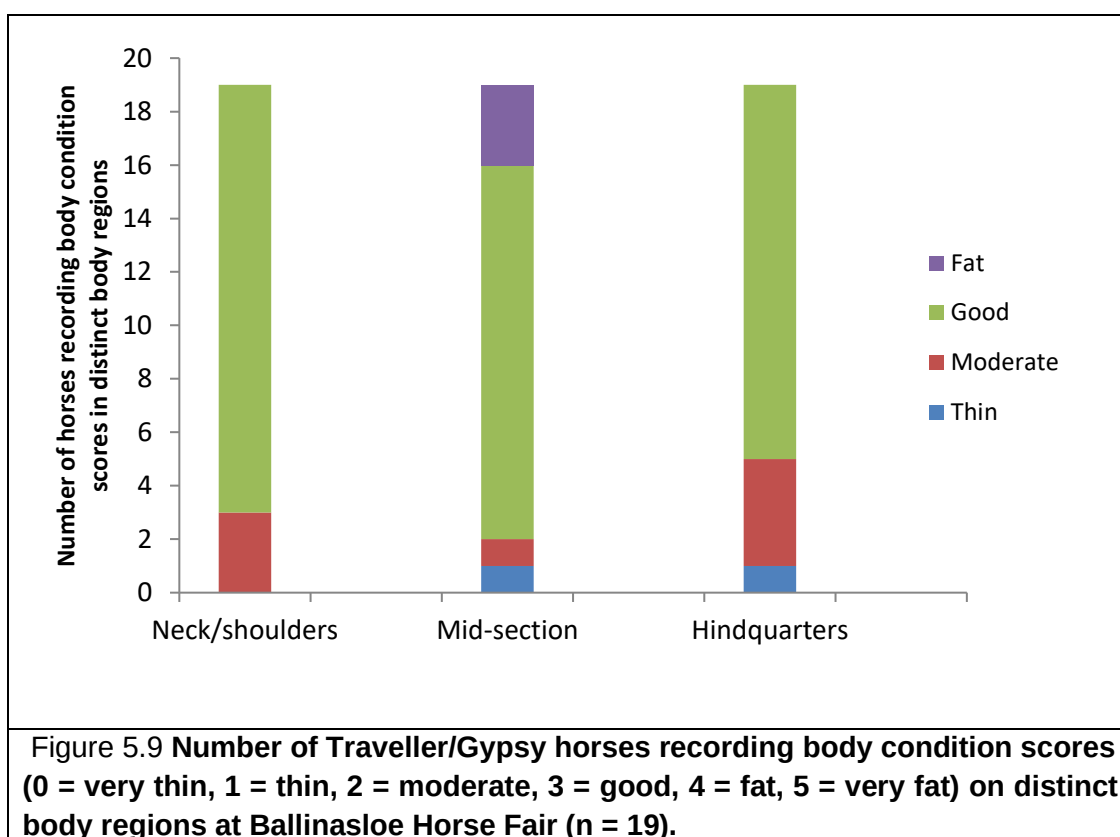
Appleby Horse Fair: Forty-six horses were assessed in June 2018 and June 2019. Ambient temperatures ranged from 10 degrees to 25 degrees. The majority (60.9%, n = 28) of horses were Cobs, 15.2% (n = 7) were Trotters and 23.9% (n = 11) were other breeds. Ages ranged from 1 year to 22 years, ($\bar{x}$ = 6.5, σ = 3.82). Over half of the horses were mares (52.2% n = 24), 32.6% (n = 15) were geldings and 15.2% (n = 7) were stallions. Two (8.3%) of the mares had a foal at foot while the remaining 22 (91.6%) mares were not in foal. Most (75% n = 36) of horses were tethered. *Body Condition Score:* The majority (73.9%, n = 34) of horses scored an overall median of 3 (Good) on the 0 – 6 BCS scale. BCS for distinct body sections indicated that most horses obtained a score of 3 (Good), *Figure 5.8*.



Hair Coat Condition: More horses had a healthy/sleek & glossy coat (89.1%, n = 41) or an unhealthy/dull dry coat (8.7%, n = 4) than the overall welfare assessments. *Skin Conditions:* 4.3% (n = 2) horses displayed sunburn at Appleby Horse Fair. *Heat Stress:* Three (6.5%) horses showed signs of heat stress with flared nostrils, while 2 (4.3%) had increased respiration rate. *Ocular/Nasal discharge/Cough:* Ocular (97.8%, n = 45) and nasal (91.3%, n = 42) discharge was absent for most horses at the fair. Further, most horses did not cough in a 5-minute period during assessment (91.3%, n = 42). *Hoof Condition:* Most horses at the fair were shod (78.3%, n = 36). *Shelter:* At Appleby horse fair, shelter was available for 21 (45.7%) horses. Shelter included a mud-free with dry standing area for 40 (87%) while this was absent for 6 (13%) of horses. *Water:* Water was available for 31 (67.4%) horses, evidence of water availability was seen for three (6.5%) horses and unavailable for 12 (26.1%) horses. For those 31 horses where water was available, 29 (63%) had access to a single water point while and two horses (4.3%) had access to two distinct water points. *Voluntary Animal Approach*

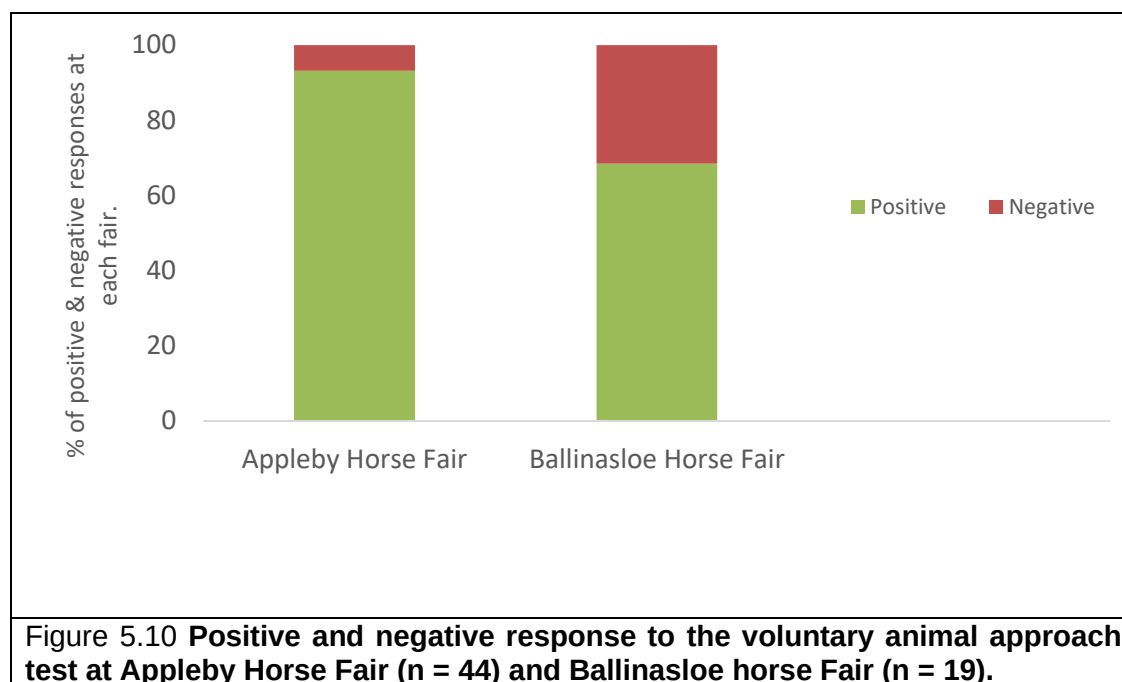
Test: When horses were assessed for voluntary animal approach, the majority (89.1%, n = 41) horses demonstrated a friendly response, 3 (6.5%) a negative reactive response and 2 (4.3%) a negative non-reactive response. For horses that responded in a negative reactive way, reasons recorded included lots of activity in the area of assessment and/or first time at the fair.

Ballinasloe Horse Fair: Nineteen horses were assessed at Ballinasloe Horse Fair. Most (73.7%, n 14) were Cobs, one (5.3%) was a Trotter and four (21.1%) were other breeds of horses. Ages ranged from six months to 18 years ($\bar{x}$ = 4.8, σ = 4.34). The majority were mares (52.6% n = 10), 42.1% (n = 8) were stallions and one (5.3%) was a gelding. Two (10.5%) had a foal at foot while the remaining eight (42.1%) mares were not in foal. Most (73.7%, n = 14) of the horses were tethered. *Body Condition Score:* An overall median score of 3.00 was obtained (n = 19). BCS for distinct body sections indicated that the majority of horses obtained a score of 3 (good) on a 0 – 5 scale, *Figure 5.9.*



Hoof Conditions: Seventeen (89.5%) horses were not shod while two (10.5%) were shod on all four feet. There were signs of hoof neglect on eight (42.1%) horses. **Shelter:** Shelter was available for nine (47.4%) horses. For all 19 horses, standing area was mud free and dry. **Water:** Water was available for 68.4% (n = 13) horses and unavailable for the remaining six (31.6%) horses). For horses where water was available, this consisted of one waterpipe. **Voluntary animal approach:** A friendly response was evident in thirteen horses (68.4) while a negative reactive response was observed in the remaining six (31.6%) horses.

Location of horse fairs and voluntary animal approach test: There was a statistically significant association between location of horse fair and a friendly response to the voluntary approach test, $\chi^2(1) = 6.64, p < 0.01$. A positive (friendly) response was more likely at Appleby Horse Fair than at Ballinasloe Horse Fair, *Figure 5.10*.



5.3.7 Qualitative Behaviour Assessment (QBA)

The QBA was conducted on the main data set of horses (n = 84). The QBA ratings generated scores for each horse on the 14 behavioural expression

descriptors. Descriptive statistics demonstrated a higher mean score for 'friendly', 'good form', and 'settled' and a lower mean score for 'pushy', 'down', and 'aggressive', *Table 5.15*.

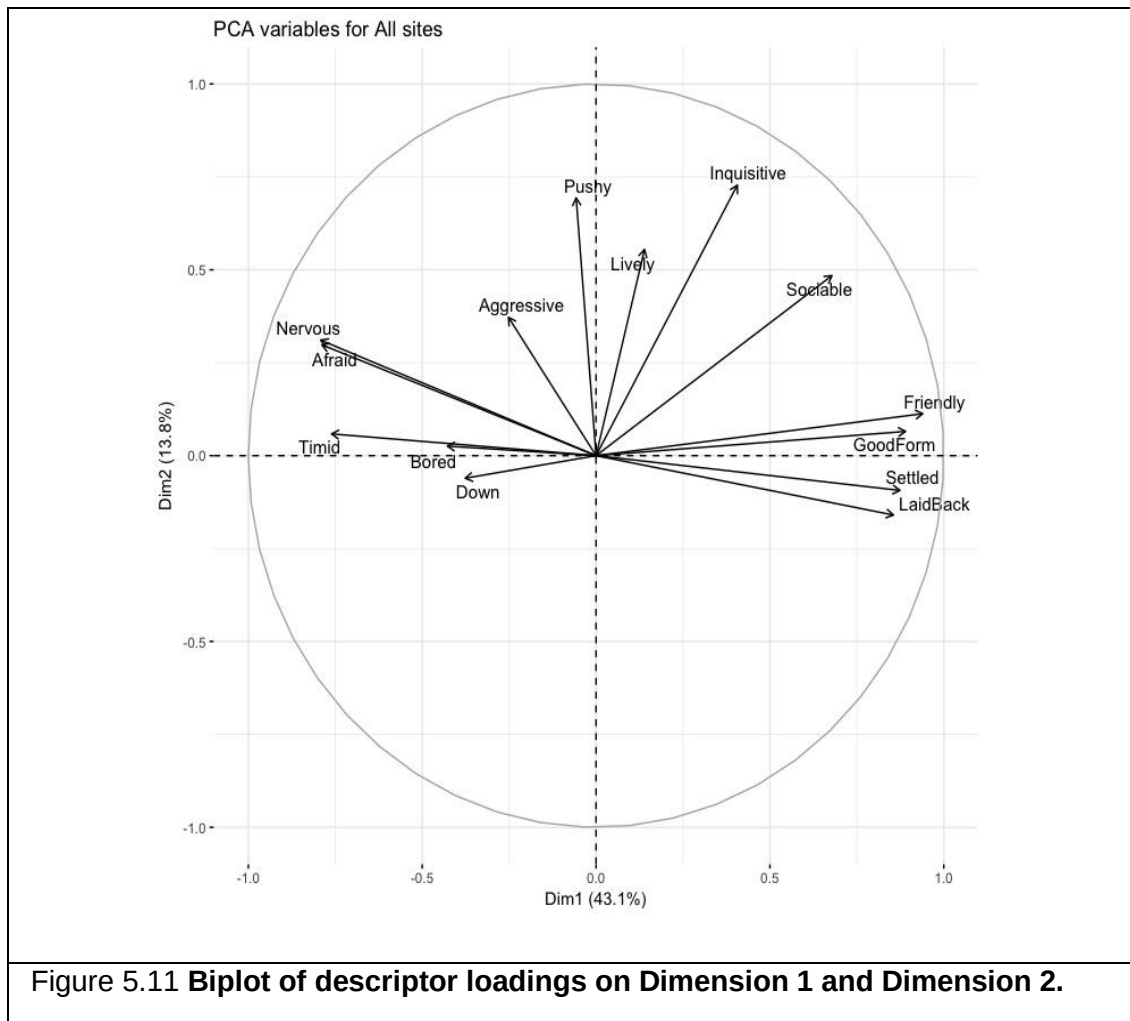
Table 5.15 Descriptive statistics for the behavioural expression descriptors used for QBA (n = 84).		
Descriptor	Mean	Std. Dev
Friendly	67.10	37.50
Good Form	55.54	37.45
Settled	53.59	38.41
Laid Back	49.05	34.68
Sociable	42.27	37.21
Inquisitive	41.50	30.23
Nervous	19.38	25.22
Timid	18.41	23.49
Bored	16.45	20.33
Afraid	14.90	19.03
Lively	14.78	22.37
Pushy	10.46	15.51
Down	8.10	15.34
Aggressive	4.98	3.00

A PCA was run on the QBA descriptors. The Kaiser-Meyer-Olkin statistic was 0.840. Two principal components were extracted explaining 56.9% of the total variance, *Table 5.16*.

Table 5.16 Horse QBA scores which are grouped in two dimensions (PC1, PC2) representing mood and energy. The items were analysed using Principal component analysis with no rotation. The highest loadings for each factor are bolded.

Descriptor	PC1	PC2
Nervous	-.792	.311
Timid	-.761	.059
Sociable	.678	.484
Settled	.874	-.094
Afraid	-.789	.298
Good Form	.890	.065
Laid Back	.855	-.160
Inquisitive	.406	.728
Lively	.139	.555
Down	-.376	-.061
Aggressive	-.252	.372
Friendly	.940	.113
Bored	-.427	.026
Pushy	-.057	.694

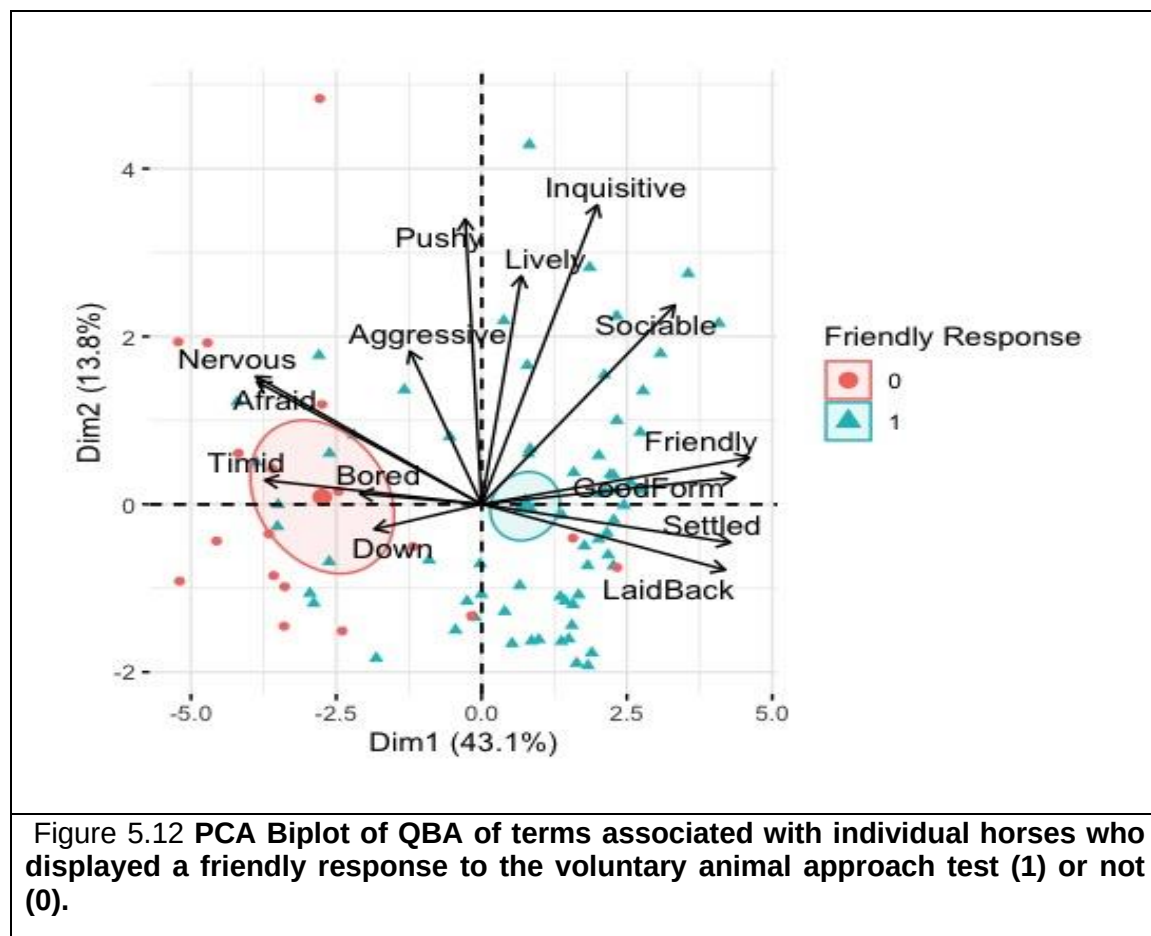
The distribution of descriptors for the two PCA dimensions are shown in a 2-dimensional loading plot, *Figure 5.11*. PC1 (10 items) explained 43.1 % of the variance and ranged from `good form/friendly to afraid/nervous which relates to mood. PC2 (4 items) explained 13.8 % of the variance and ranged from inquisitive/lively to aggressive/pushy which relates to energy, *Figure 5.11*.

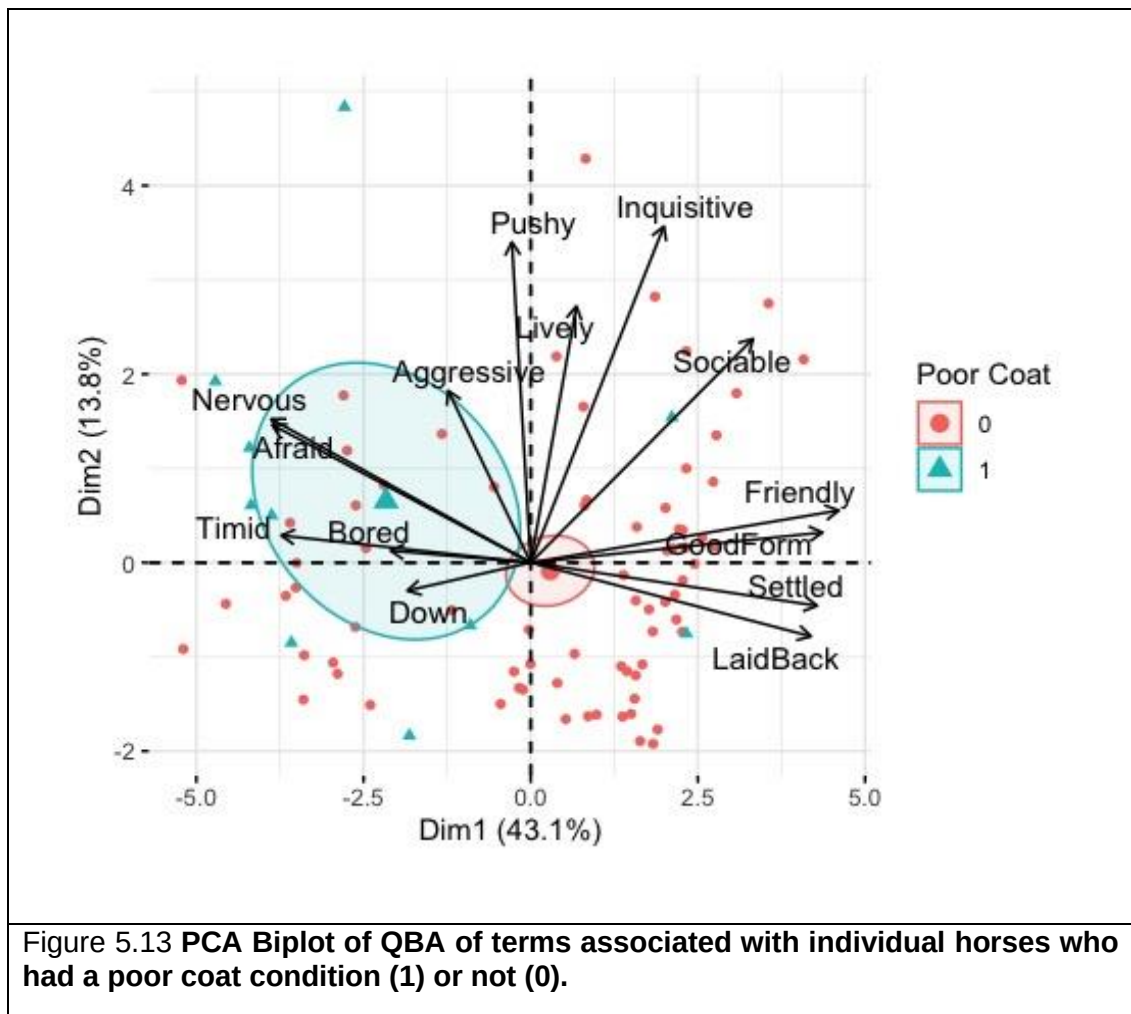


Relationship between QBA and horse welfare measures

Data from eighty-four horses examined the relationship between QBA and the overall horse welfare measures. Both PC1 (mood) and PC2 (energy) met the assumptions of normality. Results of the GLM indicated that there was a statistically significant relationship between PC1 (mood) and a friendly response to the voluntary animal approach test, $F(1, 78) 4.96, p < 0.01, adj. R^2 = 0.37$ and there was a tendency for a significant relationship between PC1 (mood) and poor coat condition, $F(1, 78) 3.39, p = 0.06, adj. R^2 = 0.37$. Post-hoc analyses revealed that horses that showed a friendly response to the voluntary animal approach test had significantly higher PC1 (mood),

Figure 5.12. There was a tendency for horses with poor coat condition to have lower PC1 (mood), Figure 5.13.





There was a statistically significant relationship between PC2 (inquisitive/pushy) and shelter availability, $F(1, 75) 5.70, p < 0.01, \text{adj. } R^2 = 0.26$, tethering, $F(1, 75) 3.42, p < 0.01, \text{adj. } R^2 = 0.26$, poor coat condition $F(1, 75) 3.60, p = 0.04, \text{adj. } R^2 = 0.26$ and breed of horse, $F(2, 75) 6.29, p = 0.02, \text{adj. } R^2 = 0.26$. Post-hoc analyses revealed that horses that had shelter available had significantly higher PC2 (energy), *Figure 5.14*. Horses with poor coat condition had significantly higher PC2 (energy), *Figure 15*. Tethered horses had significantly lower PC2 (energy), *Figure 5.16* and Cobs had significantly higher PC2 (energy) than Trotters and other, *Figure 5.17*.

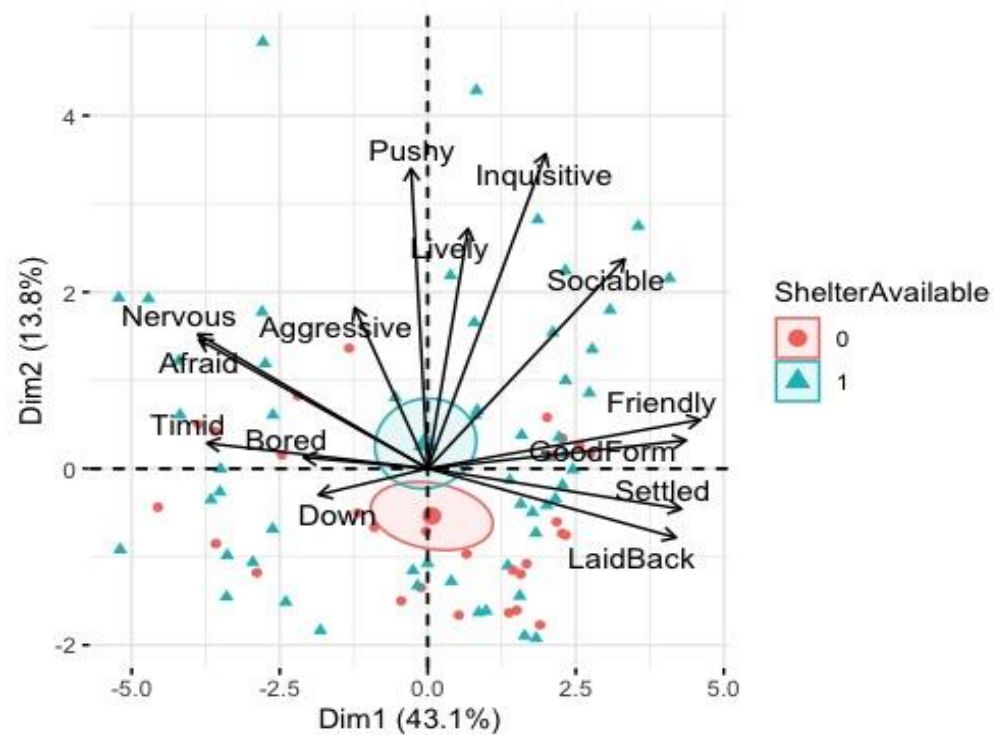


Figure 5.14 PCA Biplot of QBA of terms associated with individual horses who had shelter available (1) or not (0).

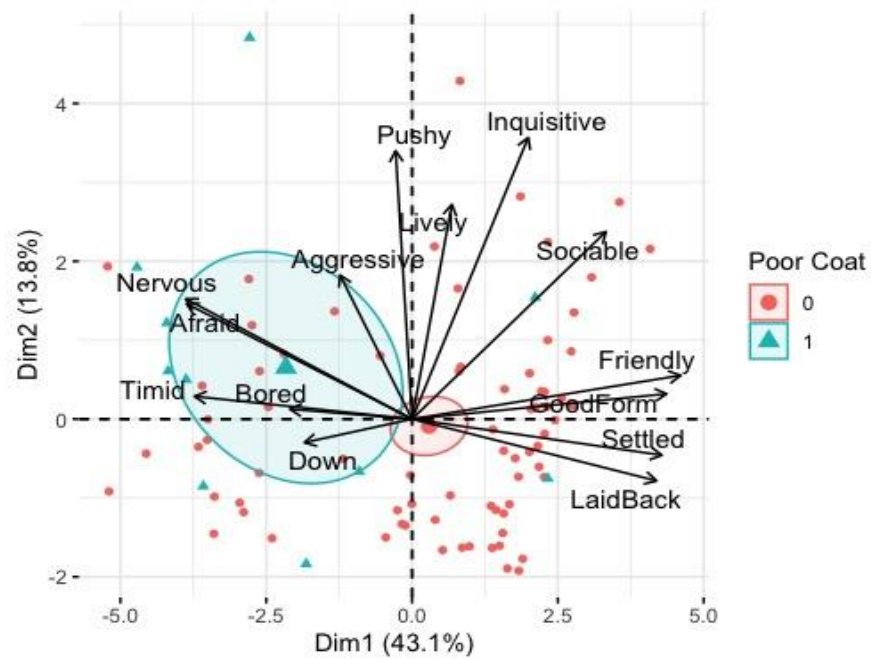


Figure 5.15 PCA Biplot of QBA of terms associated with individual horses who had poor coat condition (1) or not (0).

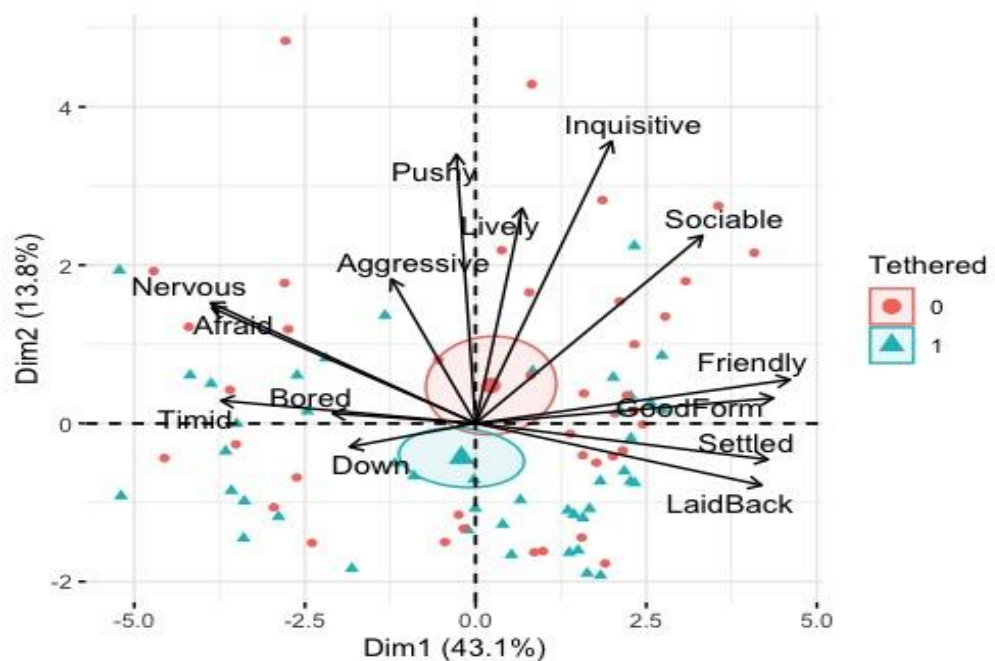
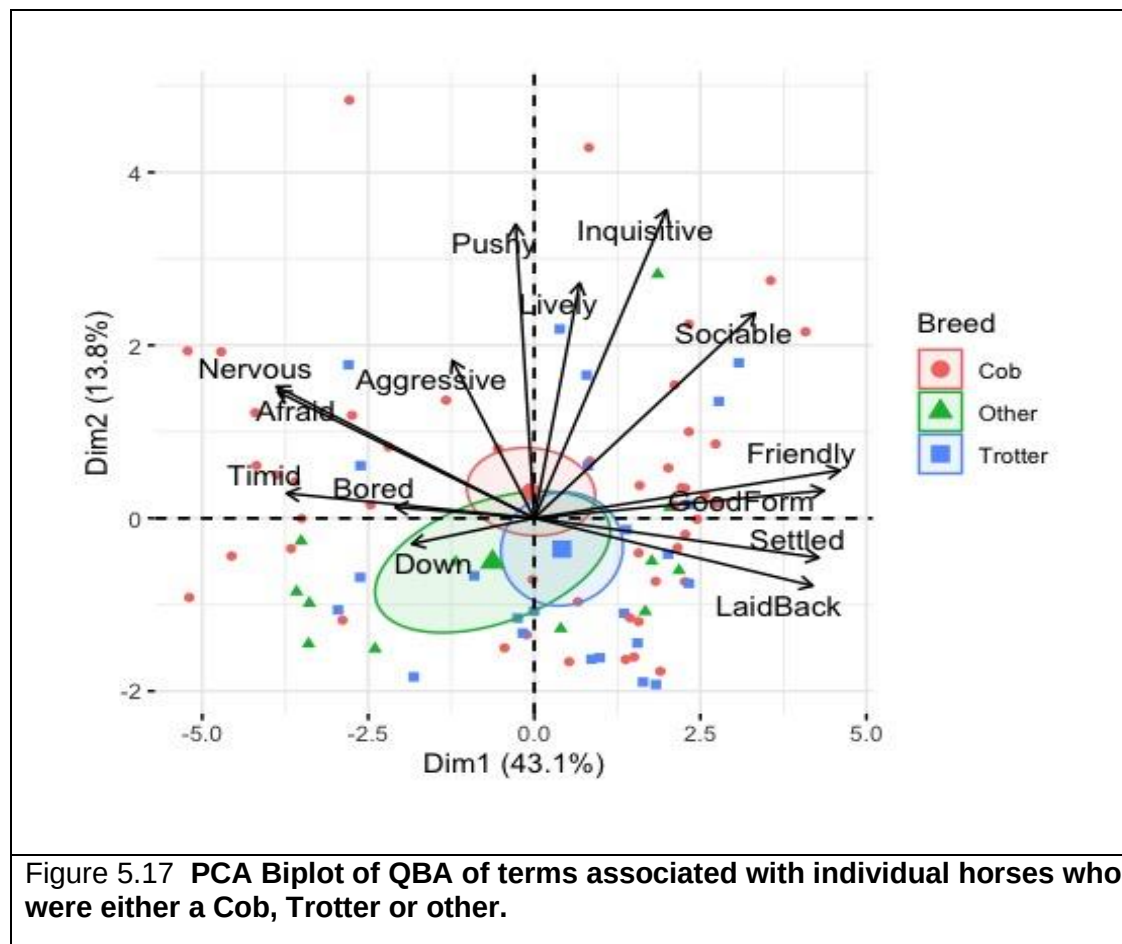


Figure 5.16 PCA Biplot of QBA of terms associated with individual horses who were tethered (1) or not (0).



Relationship between QBA and horse owner views and approaches to horse ownership.

PC2 (energy) met the assumptions of normality. Results of the t-tests indicated that Tetanus and Flu vaccinations had a p-value of less than 0.05. Results of the GLM indicated that there was a statistically significant relationship between PC2 (inquisitive/pushy) and horse owners maintaining that their horses received the flu vaccine, $F(1, 48) 5.481, p = 0.02, adj. R^2 = 0.13$. Post-hoc analyses revealed that those horses whose owners said that they vaccinated for flu had a lower PC2 (energy) than those who did not, *Figure 5.18*.

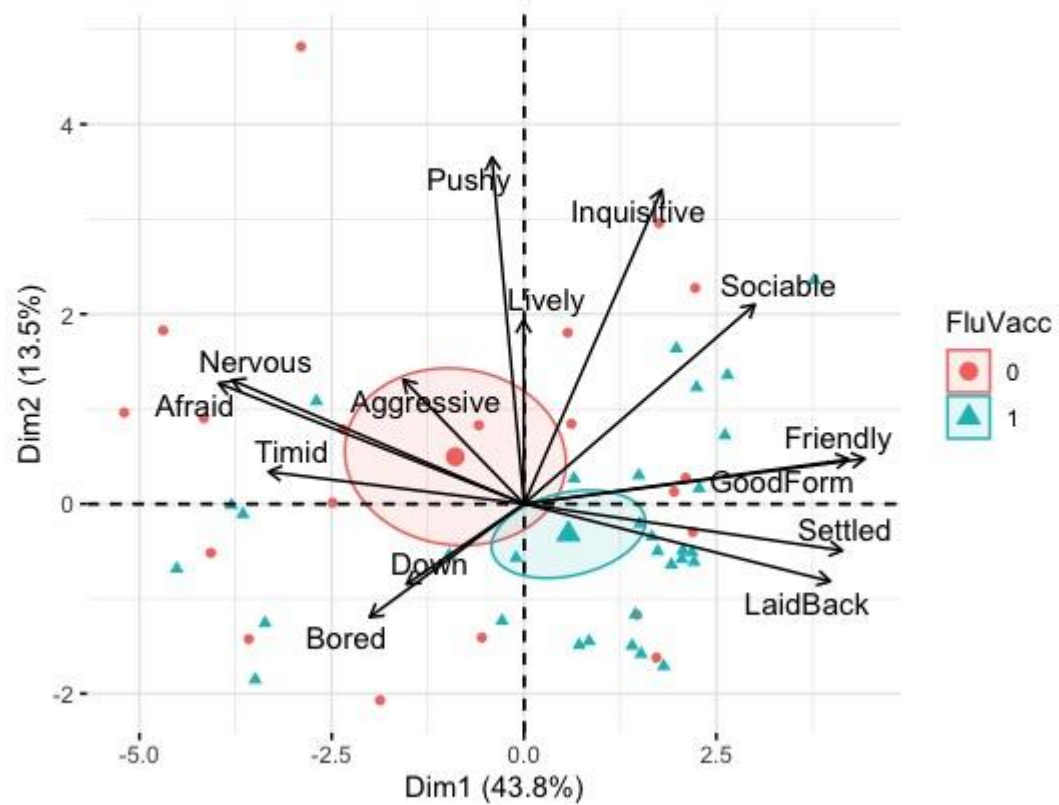


Figure 5.18 **PCA Biplot of QBA of terms associated with individual horses who were vaccinated against flu (1) or not (0).**

5.4 Discussion

The aims and objectives of the assessment protocol in this study were to identify and describe the welfare status of Traveller/Gypsy horses. The findings of this study have demonstrated that the overall health and welfare of Traveller/Gypsy horses was good. Most horses had an optimal body condition score of 3, had a healthy coat, had few skin issues, lesions or ocular and nasal discharges. Hoof neglect and the presence of hoof conditions were the most prevalent welfare issues observed, with hoof wall cracks/breakages and long toe the most common hoof condition. A large proportion of horses were tethered when assessed. Shelter, a dry mud free standing area and water was available to most horses. The majority of horses demonstrated a positive (friendly response) in the voluntary animal approach test although this response differed between Appleby Horse Fair and Ballinasloe Horse Fair. Horses assessed at fairs and in their home environment presented with similar results to the overall findings. Findings also indicated that there was a relationship between increasing energy (inquisitive/pushy) and tethering, water availability and poor coat condition. Increasing mood (friendly/good form) was associated with water availability and a friendly response to the voluntary animal approach test.

5.4.1 Prevalence of health and welfare conditions

In the present study, most Traveller/Gypsy horses had a good (3) BCS score or an adequate winter BCS and most had no visible cresty neck. Further, an optimal score was recorded on most horse regional body areas. These results perhaps indicate that Traveller/Gypsy horse owners are managing their horses in a way that is conducive to a 'good' body condition and this concurs with previous findings where Traveller horse owners identified BCS as a key factor in horse health care (Rowland et al., 2019). A very small percentage of horses in the present study had a suboptimal BCS although there were no horses at either of the extremes of the scale. There are many reasons for a lower than optimal BCS such as parasitism, malnutrition, poor dentition etc. (Ali et al., 2016). However, in this study, different BCS scores

may be related to seasonal variation as 39.4 % of horses were assessed during the late winter and spring months. Previous studies suggested that horse BCS varied between seasons with scores greater in the spring and summer and lower in the winter (Lewis et al., 2014). Such seasonally-adaptions provide for winter forage shortages (Thiery et al., 2002; Henry, 2003). As Traveller/Gypsy horses are usually kept outdoors (Rowland et al., 2019), horse BCS is likely to correspond with seasonal variation. Further, the BCS system in this study was based on visual assessment alone, therefore, scores may not be considered as accurate as those assessed using a conventional BCS assessment where palpation is used to determine body condition. In addition, cobs who were the principal breed of horses assessed have thick coats, therefore, visual BCS through the hair coat may also have impacted scores as coat thickness was a characteristic found to reduce the accuracy of BCS (Broring et al., 2003). However, Vieira et al. (2015) found that visual BCS tools were practical, reliable and improved with training in their study on the assessment of dairy goats; an animal who also possesses a long or thick coat. The absence of skin irritation (lower leg/pastern) and signs of hoof neglect were associated with good body condition which supports the literature that a lower body condition is associated with the presence of hoof neglect (Dai et al., 2018; Fröhlich et al., 2020). The reason for this may be that a low body condition score may be indicative of general neglect and lack of overall care (Arkow, 2015). However, good body condition in the current study was more likely in the presence of generalised skin conditions. This result may be explained by conditions such as sweet itch, which is an allergy rather than directly related to management. Further, it thrives at the time and places when it is warm and damp, conditions which are also optimal for grass growth and therefore increased BCS in horses. Younger horses (< 4) were less likely to have good body condition than horses over 20 years. This result may be explained by the fact that younger horses are still growing or may be lower down the herd 'pecking order' with regards access to food. Dominant rank was found to be associated with body condition, with younger horses having a lower dominance position than

middle-aged horses (Giles et al., 2015). In addition, young horses may be more susceptible to parasites which impacts their body weight, with infections such as roundworms (*Ascarids*) and threadworms (*Strongyloides*) more commonly found in this age group (Reinemeyer and Nielsen, 2016). Age related body condition reflect those of Ireland et al. (2012) who also found that most horses/ponies in their study on geriatric horse health conditions in North-West England and Wales were in good body condition. Overall, horse body condition in Traveller/Gypsy horses in this study was predominantly good.

Most horses had a healthy hair coat or a healthy muddy coat indicative of rolling. Good hair coat condition is often a reflection of a horse's health (Dalla Costa et al., 2016). In a previous study, Travellers referred to hair coat condition as an indicator of their horse's health status (Rowland et al., 2019). However, a small percentage of horses had an unhealthy or muddy coat associated with being kept in muddy wet conditions. Nutritional deficiencies, presence of parasites, skin infections, internal diseases or poor husbandry conditions may all affect hair coat condition (Veit et al., 1993; Berg et al., 2009) Therefore, the use of hair coat condition as a welfare indicator can be very advantageous in that it may help horse owners identify initial health concerns. There were few lesions recorded and none were serious. Luna et al. (2017) too found that most lesions on Chilean horses were moderate although in their study, horses were work rather than leisure animals. Nevertheless, the welfare state of the two horse owning communities is often reported to be poor (Burn et al., 2010; Horseman et al., 2016). In the present study, lesions documented were injury/minor cut through the skin and superficial/healed lesions which indicates old injuries with most located on the legs. A possible explanation for this is that most horses were assessed at horse fairs or health clinics, therefore, these minor injuries may have been sustained during transportation. This finding is supported by Riley et al. (2016) who reported 25% horse transportation related injuries in their study on transporting horses to equestrian events in Australia.

A minority of horses had hair discolouration, hairless patches and skin irritations. Skin disease was the top disease syndrome recorded in the NEHS study (2018) although in the present study, it does not appear to be a common complaint in Traveller/Gypsy horses. This may be associated with the predominant breed of horses assessed. Cobs have thick coats; therefore, these conditions may be less visible to the observer. However, it may also be that a healthy thick hair coat may provide protection from insects and micro-organisms and help protect the legs from moisture and mud and therefore mud fever (*Dermatophilosis, pastern dermatitis*). Further, horses kept outdoors are less likely to have their legs washed than horses kept in stables and yards, therefore, they are not exposed to the frequent wetting, scrubbing and drying of the skin which may exacerbate mud fever. However, to the researcher's knowledge, there are no empirical studies to support this viewpoint. Further, the low levels of rugging and the high levels of turnout, as found in this study, are likely to influence healthier skin and coats (Hartmann et al., 2017; Mejdell et al., 2020). A few horses had sunburn which may be explained by the unexpected very high temperatures in May/June 2018. As such, horse owners at horse fairs may not have been prepared for the possibility of strong sunshine. Further, it is unlikely that sunburn shows on the shoulders as was reported on one horse in this current study although it may have been caused by the ingestion of poisonous plants, fungi, drugs or chemicals which deems the horse more susceptible to light damage (Stegelmeier, 2002). In addition, it must be noted that the absence of sarcoids in horses in this study contrasts with that of Knowles et al. (2016), who found that sarcoids were the most commonly diagnosed equine tumour in the UK.

Heat stress was detected in thirteen horses. However, neither ambient temperature nor attendance at a horse fair was a statistically significant predictor of heat stress. Nevertheless, most horses with heat stress were observed at horse fairs or at horse health clinics. In addition to daily high temperatures, an explanation for heat stress at horse fairs may relate to a practice where some horses are often run at fast speed on a 'flashing lane'.

The purpose of the `Flash` is to showcase horses to horse dealers, buyers, sellers and spectators. However, the riding and driving practices on the Flashing Lane at Appleby Horse Fair have raised concerns for the horse's welfare (Rogers, 2017) although there is no empirical evidence of the extent of these concerns. Therefore, the identification of any welfare issues at this event would provide opportunities to make positive changes that may improve horse wellbeing. Horses attending health clinics may be exposed to heat stress during transportation and while at these clinics. This is unsurprising as these horses were assessed away from their home environment. As such, factors such as space allowance during transport to and while at events may have been limited, therefore, the possibility of heat stress increases. These issues resonate with previous studies on horse transportation where heat stress conditions were recorded (Stull, 1999; Waran et al., 2007). Further, horse herd size was found to have an influence on the presence of heat stress, with owners who had >20 horses more likely to have horses that present with heat stress than owners who had fewer horses. This finding may be indicative of larger breeders who need to sell their horses and may be pushing their horses more in the flashing lane, thus exposing them to heat stress. With a surplus of horses available in recent years, larger breeders are less likely to form a bond with individual horses as sales are their priority. The identification of animals as sentient is increased when a positive human-animal bond exists, with this bond often influential to the health and wellbeing of the animal (Wensley, 2008). However, it must be stated that the clinical signs of heat stress are very non-specific and temperature of horses was not taken in this study, hence, there may have been other reasons why horses might look heat stressed but were not.

Ocular and nasal discharge and cough were uncommon in horses assessed and of those who presented with these issues, clear watery discharge was the most prevalent. Clear, watery discharge is not usually a concern if the horse is otherwise in good health (Brega, 2011) although identification of the origin and nature of any discharges and coughs would help rule out any significant concerns. This is particularly important in the context of

unregulated horse fairs where horse health and welfare may be compromised due to the large number of horses from different regions and countries in attendance. Stakeholders identified unregulated horse fairs as an area of key concern for horse welfare (Collins et al., 2010). Equine Herpes Virus (EHV-1) is also a very current and serious issue (Teagasc, 2021) although not assessed in horses in this study. Yet, this is highly contagious disease and has the potential to spread at horse fairs. It must be noted that at all other equine events, a passport with up-to-date vaccinations is required for participation, to counter disease out-breaks. Nevertheless, Traveller/Gypsy horses in this study displayed few, if any, clinical signs of these health conditions.

In the present study, hoof neglect and the presence of hoof conditions was the most frequently recorded welfare issue. Nearly a third of horses presented with hoof neglect and common hoof conditions recorded were hoof wall cracks/breakages and long toe, with both conditions evident in all four limbs. These conditions may be attributed to owners' lack of knowledge of hoof care in general. Further, with over half of the horses unshod, owners may not be aware of the need for regular hoof care in barefoot horses. However, horse hoof conditions are widely reported (Burn et al., 2010; Ireland et al., 2012; Popescu and Diugan, 2013) and were one of the most common welfare issues assessed in horses sent to slaughter in the U.S. (Grandin et al., 1999). Further, the effect of season and environment on foot health in all horse populations has been documented. Ley et al. (2010) found that seasonal trends considerably affected hoof wall strength in Thoroughbred mares, while Holzhauer et al. (2017) found that environmental factors were a contributory factor for the prevalence of thrush in a population of horses in The Netherlands. Thrush is caused by the *fusobacterium necrophorum* bacteria and is often found in wet and unsanitary environmental conditions, such as in muddy paddocks and dirty stables.

In the current study, the presence of hoof neglect was significantly more likely when poor coat condition and generalised skin conditions were present

and when horses did not show friendly responses to the approach test. This likely shows a general lack of handling and possibly neglect. In addition, if horses are difficult to handle/catch as shown by the approach test then it will be difficult to treat or manage any conditions. Further, hoof neglect was less likely as BCS increased. These findings are consistent with that of Fröhlich et al. (2020) who found that hoof neglect was associated with low body condition scores in working horses in Fiji. It must be noted that the likelihood of hoof neglect was not associated with the highest BCS (very fat) as this condition was not recorded in this study. Obesity in horses increases the risk of laminitis (Robin et al., 2014). Chronic laminitis can result in very long underrun and deformed hooves which needs to be treated with regular care and a strict management routine (Morrison, 2010). What was also observed in the current study was that hoof conditions were unlikely in horses owned by nomadic Traveller/Gypsy horse owners. One plausible explanation for this result is that these horses are often used to pull wagons, therefore, optimal hoof health is fundamental to this nomadic way of life. Another possible explanation is that Traveller/Gypsy nomadic horses are often managed in a similar way to feral/semi feral horses. Feral horses are known to travel large distances, for example, Berger (1977) recorded a home range of 48 km² for the Grand Canyon area, USA. Travel is often over rough terrain which may contribute to their healthier hooves. In fact, Górecka-Bruzda, et al. (2020) found that there were few hoof abnormalities in the semi-feral Konik polski in Poland. However, there is little relevant empirical work to compare the finding of the current study with, hence, it would be interesting to evaluate whether the practices employed by nomadic horse owners differ to those who do not travel. Region and number of horses owned was found to influence on the presence of hoof conditions. Hoof conditions were less likely when owners lived in Scotland/Northern Ireland rather than Wales. Various reasons may exist for this finding such as different hoof management and care practices between the regions. It may also be associated with having more relatively unhandled horses in an area. While not significant, more horses had a negative reactive response to the approach test in Wales, therefore, are

more likely to be difficult to handle/catch. Consequently, hoof conditions would be difficult to treat or manage. However, the lack of existing research on regional differences and the effect of group size on hoof conditions renders comparisons difficult. Although, it must be noted that hoof conditions presented in the current study were relatively mild, therefore, it would be naive to evaluate these factors without exploring this research further. Further, there is a danger of not recording the chronicity of hoof conditions, particularly affecting the feet which grow slowly. While the presence of hoof abnormalities is not unique to Traveller/Gypsy horses, talking to all horse owners about the pathologies of the hoof and hoof care will help increase awareness of the consequences of hoof neglect. This is perhaps a role for the farrier.

5.4.2 Horse Management

Most horses had access to shelter and/or a dry mud free standing area. Shelter ranged from purpose-built stables to natural shelter such as hedges and trees, with most horses provided with the latter. It is common for Traveller/Gypsy horses to live outdoors (Rowland et al., 2019), therefore, the observation of outdoor shelter was expected. Jørgensen et al. (2016) observed in their study on Nordic horses' preference for shelter that most horses remained outdoors and in addition to a thick coat, a dry lying space was found to improve the horse's capacity to acclimatise to low temperatures (Norwegian Food Safety Authority, 2006). However, outdoor horses were found to use natural shelter areas more during times of precipitation, low temperatures and strong winds (Mejdell and Bøe, 2005; Heleski and Murtazashvili, 2010; Snoeks et al., 2015), therefore, access to shelter is necessary for improved horse welfare. A possible explanation for lack of shelter for some horses in this study may be that these horses were assessed away from their normal living areas, therefore, it is probable that shelter may be available outside of the assessment time. The finding that shelter availability is more likely when owners are not nomadic suggests that a nomadic lifestyle may get in the way of providing horse shelter. This result is likely to be related to constantly moving locations, difficulty in accessing

land for horses and lack of transient sites for accommodation (Conway, 2004; Richardson, 2007; Pavee Point, 2019; Rowland et al., 2019). Therefore, further research on the welfare of horses in nomadic situations would be important in understanding the full extent of welfare concerns in addition to the difficulties that these horse owners encounter. Consequently, difficulties identified would need to be addressed at local and government level.

Over 50% of horses in the present study were tethered. Horse tethering is a practice often linked with Traveller/Gypsy horse ownership although it is not considered to be good horse care management (RSPCA, n.d.). In this study, the tethering of horses was predominately observed in fair situations, however, horses were also tethered in other environments. This result may be explained by the need to tether horses as access to suitable land is difficult to source for Traveller/Gypsy horse owners (Pavee Point, 2019; Rowland et al., 2019). However, tethered horses had fewer physical welfare issues and were less likely to be thin than roaming horses in a study on the welfare of long-line tethered and free-ranging horses in South Wales (Mullan et al., 2014). In fact, the tethering of horses in this study was more likely when shelter was present, indicating that horse owners were aware of the need for the horse to have access to shelter when required and when they are unable to seek it themselves due to being tethered.

Water from a single water point was available for most horses. Water is an important welfare indicator (Blokhuis et al., 2013). In fact, the absence of prolonged thirst water has been identified as an iceberg indicator in the assessment of horse welfare (Dalla Costa et al., 2016). An iceberg indicator tends to be related to the state of other welfare measures and is used to indicate welfare issues at the animal level (Hernandez et al., 2020). Therefore, it is positive to observe that Traveller/Gypsy horse owners provide water to their horses. This outcome is contrary to that of Mullan et al. (2014) who found that tethered horses had limited access to water. Their study differs to the present study as horses were assessed on a Welsh Common while in this study horses were assessed throughout the UK and Ireland,

therefore, is a more representative sample. Nevertheless, both studies assessed water availability for tethered horses. Further, in this study, the presence of an iceberg indicator (water) may also support the premise of good overall horse welfare in Traveller/Gypsy horses.

5.4.3 Horse Behaviour

Abnormal behaviours were absent from all but one horse. One of the main effects of domestication for horses is the limitation for horses to freely exhibit natural behaviours such as foraging and social contact. Consequently, stereotypies which are commonly based on feeding and locomotory behaviours are likely to develop (McGreevy et al., 1995). The prevalence of stereotypies have been reported in dressage, eventing and endurance horses (McGreevy et al, 1995) Therefore, the absence of stereotypies in this study may indicate that Traveller/Gypsy horse owners provide horse husbandry environments that are more comparable to their natural conditions. This finding is supported by Rowland et al. (2019) who found that Traveller horse owners had a relatively good understanding of the horse's natural behaviour and their environment, and this was reflected in their management practices.

Most horses demonstrated a positive (friendly response) in the approach test. This test gives an indication of how the animal is interacting with its environment and its owners/handlers (Pritchard et al., 2005; Ali et al., 2016). Therefore, the high incidence of a friendly response towards the researcher in this study supports the notion that a positive human-animal relationship between Traveller/Gypsy horse owners and their horses exists. However, in this study, some horses did exhibit negative reactive responses. For horses that responded in a negative reactive way, reasons recorded included lots of activity in the area of assessment, first time at the fair, tethered with other horses and awaiting medical procedure. While these are stressful events and may have contributed to the negative response, adverse reactions may also be an indication of a poor human-horse relationship (Hausberger, 2008).

5.4.4 Horses in home environment

The prevalence of management and behaviour problems was low in the 21 horses assessed in their home environment. While more horses were stabled when in their home environment, broad/part visual horizon and full/part possibility for interaction was available for these horses. These management practices are effective in reducing stereotypical behaviours (Cooper and McGreevy, 2007), behaviours which were not recorded in the present study. The majority of horses were turned out or ridden daily which is in line with Traveller horse owners' recognition of the importance of exercise to the horse's physical and mental well-being (Rowland et al., 2019). Most horses were unrugged and this practice applied during all seasons of assessment. This finding is contrary to Goodwin (2015) who found that a high percentage of horse owners consistently rugged their horses during winter. However, the rugging of horses is often questioned as a management practice as it can prevent social grooming and may inhibit self-grooming, which is necessary for healthy skin and coats (Hartmann et al., 2017). Further, horses were found to be highly adaptive to extreme weather conditions (Fraser, 1992), therefore, the absence of rugs is likely to be positive for welfare, therefore, unlikely to be an area of concern for horse welfare.

5.4.5 Horse Fairs

Overall, 65 of the 104 horses were assessed at two different Horse Fairs, Appleby in England and Ballinasloe in Ireland. Most horses were either Cobs or Trotters which are the most popular breed in Traveller/Gypsy culture. Results from the assessment of health and management indicators at these Fairs were broadly similar to those of the overall horse welfare assessment. Horse body condition scores were good, a healthy/sleek and glossy coat was observed, and hoof cracks/breakages were the most prevalent hoof condition. However, there was one notable difference between the Horse Fairs. There was a statistically significant association between location of horse fair and a friendly response to the voluntary animal approach test with horses more likely to have a friendly response at Appleby Horse Fair than at

Ballinasloe Horse Fair. This result may be partly explained by the different facilities at each fair location. At Appleby Horse Fair, there are different areas and larger spaces available for horses, owners and visitors as the fair is spread throughout the village. However, at Ballinasloe Horse Fair, most horse related activity occurs in one large field. Therefore, it is probable that there are more fear-inducing stimuli such as unfamiliar noise, presence of strangers and other horses within a confined area. In fear-inducing situations, horses react with avoidance behaviour (Hartmann et al., 2021). This finding need further investigation with the aim of managing these issues in an appropriate way, thus, improving welfare at fairs.

5.4.6 Qualitative Behaviour Analysis

The aim of QBA analysis in the current study was to investigate whether QBA is a potential tool for the assessment of Traveller/Gypsy horses. The descriptors for QBA were devised by Traveller/Gypsy horse owners themselves and piloted. A valuable aspect of developing a fixed list in consultation with the target group is that it allows for greater ownership of the terms being used and uses language that they are familiar with. In fact, a key barrier for Traveller/Gypsy communities accessing health services was a lack of understanding of language used in health care information (McFadden et al., 2018). Following assessment, the fixed list of terms was found to be useful as a quick, easy to use and non-invasive tool to measure Traveller/Gypsy horse behavioural expression. However, it must be noted that QBA was carried out by the main researcher alone, who had a good knowledge of horse behaviour and intensive training in QBA. While these qualities are required for reliable and valid scoring (Wemelsfelder, 2007), the reliability and validity of this tool for Traveller/Gypsy horses needs further investigation. Overall, positive QBA terms exceeded negative terms. This finding indicates that the emotional state of Traveller/Gypsy horses were characterised by more positive experiences, perhaps refuting the concern for the welfare of these horses (Collins et al., 2010, Horseman et al., 2016). There is evidence that an animal's emotional state can reveal significant facets of both its physical and mental health, hence its welfare (Fleming et

al., 2013). The two main QBA dimensions identified both positive and negative emotional connotations. The first dimension represented the terms good form/friendly versus afraid/nervous which reflects different aspects of mood and the terms in the second dimension ranged from inquisitive/lively versus aggressive/pushy, reflecting aspects of energy. This dimensionality is supported by QBA studies in pigs (Duijvesteijn et al., 2014); goats (Grosso et al., 2016) and donkeys (Minero et al., 2016). It is interesting that most of the terms rate highly on the first dimension, with these terms going between very friendly/settled and very nervous/afraid. The place of assessment may explain this result, as horses demonstrated different responses to the voluntary animal approach test at different locations. Negative responses may have been influenced by varying fear-inducing stimuli at fair/clinic locations and a low level of handling.

An important finding of this study is the association between QBA and horse welfare measures. Findings revealed that tethered horses had lower energy (inquisitive/pushy). As tethering is a practice that restricts a horse's movement, the opportunity to exhibit high energy behaviours is limited. In fact, grazing, a low energy activity was found to account for most of tethered horses' time-budget (Mullan et al., 2014), therefore, this result was anticipated. It must be noted that tethering is not necessarily a welfare issue as the physical welfare of tethered horses was found to be better than roaming horses in a study in South Wales (Mullan et al., 2014). There was a relationship between poor coat condition and lower mood and higher energy. As a horse's positive mood is associated with a good hair coat (Lesimple, 2020), the result between low mood and poor coat condition was expected. However, further investigation is required as there was only a tendency found rather than a significant relationship.

It is possible that increasing behaviours such as pushy/aggressive may be a catalyst for poor handling. The welfare of horses that are difficult to handle is often compromised (Minero et al., 2009). This may explain the relationship between higher energy and poor coat condition. In addition, horses that had

shelter had higher energy (inquisitive/pushy). Shelter in this study was more likely to be natural, such as hedges and trees, therefore, it is not surprising that higher energy was recorded in horses housed outdoors as most were in this study. Sveen (2015) reported that outdoor housing is necessary for a horse's need for physical activity. Further, previous research has found that feral horses spend the majority of their time in energy related activities such as travelling large distances (Hampson et al., 2010) although they did seek shelter or 'shades' during differing weather conditions (Tyler, 1972, Stebbins, 1974) and during times of high fly activity (Keiper and Berger, 1982). An unexpected finding was that Cobs were found to have higher energy than Trotters. As most horses were assessed at horse fairs, a valid explanation for this is that Trotters were more likely to have been raced on the 'flash' or used for transport, which may result in lower energy. The relationship between mood (friendly/good form) and the presence of a friendly response to the voluntary animal approach test was to be expected. Horses in a positive emotional state are more likely to approach humans in a friendly way. These results are supported by Boissy et al. (2007) who proposes that the presence of positive affective states has a positive effect in animal behaviour, health and welfare. Further, the findings that horses whose owners said that they vaccinated them for flu, suggests that these owners are more likely to attend to and interact with their horses, therefore, horses are more sociable. This result is supported by Minero et al., (2009) who stated that the horse's self-confidence and its welfare is influenced by the human-horse relationship. While the results on QBA in this study are promising, QBA needs to be used in combination with other assessment measures. This is supported by (Wemelsfelder and Mullan, 2014) who do not promote QBA as a stand-alone tool.

5.4.7 Limitations

The use of convenience sampling may have contributed to potential bias; therefore, results cannot be generalised. However, assessments took place in a number of venues and locations throughout the UK and Ireland. Further, Traveller/Gypsy horses were only assessed on one occasion, therefore,

further studies with larger sample groups is required to show the generalisability of results. Most study sites where assessments took place were not the horses normal home environment, consequently, results may differ from normal horse owner management practices and horse behaviour. It is recommended that additional horse welfare assessments are conducted in the horse's normal environment to compare with the results of this study. Limitations of QBA include both intra- and inter-observer reliability, therefore, the application of the QBA developed for Traveller/Gypsy horses requires further examination. Testing of QBA scoring of the same assessor at different points of time and/or scoring between different assessors will determine the reliability of QBA terms used in this study.

5.5 Conclusion

The development of a horse welfare assessment tool for this study was valuable in identifying potential welfare problems in Traveller/Gypsy horses. In addition, the tool was advantageous in that it also highlighted positive horse welfare in these horses. Each indicator included in the protocol was considered relevant and appropriate for the specific group in this study and while not stating that it is exhaustive, it does aim to provide an initial insight into the welfare of Traveller/Gypsy horses. The overall assessment indicated that Traveller/Gypsy horse health and welfare was of a good standard. In particular, an optimal body condition score and the absence of skin conditions were observed in most horses. However, hoof neglect and the presence of hoof conditions was evident in a number of horses. This information is valuable and indicates that engagement in conversation with Traveller/Gypsy horse owners regarding the importance of hoof care and its impact on horse welfare is warranted. Management practices were often related to the natural behaviour and environment of the horse. Horses were kept outdoors and in groups and shelter was natural. Tethering was a common practice although it is considered a welfare concern by stakeholders. Nevertheless, shelter availability was more likely when horses were tethered. The behavioural needs of horses in this study appear to have been met as there were few abnormal behaviours. Further, most horses

displayed a friendly response to the approach test. The results of the QBA study are encouraging in that it captured many positive elements of Traveller/Gypsy horse expressive behaviours. While Traveller/Gypsy horse owners are often referred to as 'hard to reach', the current study was successful in generating a list of QBA terms in consultation with this group indicating that Traveller/Gypsy horse owners are invested in their horse's welfare.

The use of different sites to collect information was useful to help identify horse welfare when horses are exposed to distinct environments. Further, the role that the qualitative results presented were informative on Traveller/Gypsy horse owners views on horse management care and practices and their subsequent application of these practices. In general, the assessment of Traveller/Gypsy horse welfare presents as being a strong approach to increasing awareness of the true extent of horse welfare concerns. These results are a good starting point to engage with stakeholders who identified Traveller/Gypsy horses to be particularly vulnerable to concern. In addition, the development of targeted interventions centred on the findings is necessary to address those areas where horse welfare was considered to be inadequate or where perceptions and reality differed.

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Chapter 6: Final discussion

6.1 Introduction

This chapter brings together the findings presented in this thesis to provide an understanding of the current situation regarding Traveller/Gypsy horse ownership as identified by this research. Furthermore, how the results of this research met the primary aims of this thesis will be evaluated in addition to a discussion on the implications of these results in their wider context. To recap, the aims of this thesis were to investigate (1) what are the general public's perception of Traveller/Gypsy horse welfare and husbandry practices? (2) what are equine stakeholders' perception of Traveller/Gypsy horse welfare and husbandry practices? (3) what are Traveller/Gypsy horse owners' attitudes to, and knowledge of horse care and management practices? (4) what is the current welfare status of Traveller/Gypsy horses? (5) what evidence - based interventions, centred on the findings from the above research questions are required for horse welfare? Both the strengths and limitations of this research will be considered and directions for future research will be discussed. Finally, the main conclusions of this thesis will complete this chapter.

6.1.1 The current situation regarding Traveller/Gypsy horse ownership

Horses are fundamental to Traveller/Gypsy lives with the care and management of horses primarily a male role within these communities. Nevertheless, there are few empirical studies on this horse-owning community, therefore, the current situation regarding Traveller/Gypsy horse ownership was largely unknown. This research aimed to address this gap and by using a mixed method approach, stakeholder and public perceptions of this horse owning group were investigated, Traveller/Gypsy horse owners' present-day views and approaches to horse management were examined and the current level of Traveller/Gypsy horse welfare was assessed.

6.1.2 Current perceptions of Traveller/Gypsy horse ownership

Based upon the evidence presented in Chapter 2, which addressed the first aim of the thesis, the results revealed that the public had limited knowledge and understanding of Traveller/Gypsy culture and horse culture. Overall findings revealed that Traveller/Gypsy horse owners are generally viewed in a negative way by the public. This result concurred with previous studies as discussed in Chapter 1, where a less than favourable image of Traveller/Gypsy horse ownership was found to be widespread (Cork Traveller Visibility Group, 2013, Pavee Point, 2019). Data from this chapter indicated that Traveller/Gypsy horse welfare and management practices were for the most part considered inadequate by external audiences. What was also evident was that the public demonstrated a high level of concern for horses in these communities even though their knowledge and understanding of Traveller/Gypsy horse culture was negligible. Taken together, these results suggest that these perceptions may not present an accurate picture of what is really going on as they are likely to be formed on limited experience or from other influences such as media representation of Traveller/Gypsy horse culture. It was found that the use of the media was influential on how the public perceived Traveller/Gypsy horse owners. While participants were of the view that media representation of both Traveller/Gypsy community and horse culture was largely negative, TV reality shows, and documentaries were the publics' prime source of information on Traveller/Gypsy culture. However, these mediums have been found to portray a negative image and/or sensationalised accounts of this culture (Tremlett, 2014). Therefore, it was not surprising that negative perceptions prevail as the media has a powerful influence in creating and reinforcing public perception (Morris, 2000). Furthermore, it has been postulated that the media does not always consider the cultural and social values of a community in their reporting, therefore a negative image is often communicated (Covert, 2016). The implications of the findings of this study is that the uncritical acceptance of negative narratives may be maintaining the unfounded myths, stereotypes

and discrimination towards Traveller/Gypsy horse owners as discussed in Chapter 1.

A further finding to emerge from this chapter was that the public proposed that Traveller/Gypsy horse owners should be prevented from owning horses. This apparent disregard of the horse's significance in Traveller/Gypsy culture further indicated that the public were unaware of Traveller/Gypsy horse culture. The horse has been and will always be central to Traveller/Gypsy lives as discussed in Chapter 1. However, it must be noted that some features of Traveller/Gypsy horse management practices such as providing horses with social contact with other horses and feed horses well were acknowledged in a positive way by the public. While these responses were few, they are a good starting point for the development of dialogue on Traveller/Gypsy culture in general.

Chapter 3 addressed the second aim of this thesis and identified stakeholders' current perceptions of Traveller/Gypsy horse culture. A similar trend was found in stakeholder perceptions of Traveller/Gypsy horse ownership to that of the public as presented in Chapter 2. In accordance with the public results, horse care and management in Traveller/Gypsy horse culture was also perceived to be unsatisfactory and the current level of welfare of Traveller/Gypsy horses was perceived to be poor. These findings are also consistent with existing literature as discussed in Chapter 1 on stakeholder perceptions of this horse-owning culture (Collins et al., 2010, Horseman et al., 2016). In this thesis research study, stakeholders identified health concerns perceived to be prevalent in Traveller/Gypsy horses, however, these issues have also been observed in the wider horse population as detailed in the literature review in Chapter 1. Data from this chapter also indicated that stakeholders had a similar level of concern for horse welfare as the public. Both noted a high level of concern for Traveller/Gypsy horse welfare despite there being little empirical evidence on the welfare of Traveller/Gypsy horses in the literature. The animal welfare concept was perceived by stakeholders to be poorly understood by

Traveller/Gypsy horse owners. However, stakeholder perceptions were found to be contrary to results from Traveller/Gypsy horse interviews as discussed in Chapter 4 and horse welfare assessments which were investigated in Chapter 5. Interview and welfare assessment outcomes are discussed in more detail in the next sections.

The media was a key player in how stakeholders perceived Traveller/Gypsy horse welfare which was also a characteristic of Chapter 2. Contrary to the public view in Chapter 2, stakeholders agreed that media sources to some extent, present a positive image of Traveller/Gypsy horse welfare and were more likely to source their information from magazines and tabloid newspapers. Despite Community agencies and Traveller/Gypsy organisations, such as The Traveller Movement, Pavee Point and the Traveller and Roma Centre providing reliable and accurate information on Traveller/Gypsy culture, these mediums were some of the least used information platforms used by stakeholders. The use of reliable sources of information is necessary for accurate information and knowledge, therefore, it is evident that a more targeted approach of information provision is required. Dissemination procedures also need to be considered.

Stakeholders stated that Traveller/Gypsy horse owners were perceived negatively by their profession and these negative perceptions were primarily based on prejudices and stereotypes although horse welfare issues and lack of engagement with the equine service were also mentioned. The implications of stakeholder prejudices are that they may affect the tradition of Traveller/Gypsy horse ownership. This is evident in policy development where legislation has had the most impact on Traveller/Gypsy horse ownership. For example, Traveller horse owners were found to be more vulnerable to the regulations of the Control of Horses Act (COHA: Ireland 1996; Wales, 2014; England, 2015) with actions such as horse impoundment which is detailed and discussed in earlier chapters, i.e., Chapter 1 and 4, found to be more prevalent in Traveller/Gypsy horses (Pavee Point, 2019). Furthermore, the role of the stakeholder is to support and address horse

health and welfare issues, therefore, stakeholders working with Traveller/Gypsy horse owners need to move the focus of their work away from preconceptions of Traveller/Gypsy horse culture and adopt a more culturally competent approach. It has been shown that increasing cultural awareness, through an understanding of culture is likely to help reduce cultural stereotypes and could in turn change perceptions of the Traveller/Gypsy community (Fiske, 2017). However, this chapter did provide evidence that younger stakeholders were less prejudiced and more open to Traveller/Gypsy horse culture, therefore, these same stakeholders could be instrumental in helping reduce cultural prejudices and stereotypes. However, it may also be the case that younger stakeholders' attitudes are changed and shaped by older colleagues who hold traditional views of Traveller/Gypsy horse ownership. In fact, findings from a survey by the British Veterinary Association (2019) reported that discriminatory comments were more likely to be made by a more senior colleague. Stakeholders' support for tougher penalties for equine abuse and neglect was comparable to that of the public as outlined in Chapter 2. These views may have contributed to the ratification of the Animal Welfare (Sentencing) Act (2021), where sentencing for animal abuse was increased from six months to five years. While legislation already existed, it may not have been being enforced as proposed, therefore, increased sentencing may not be a guarantee of improved welfare. There were some references to good horse ownership and to the difficulties that Traveller/Gypsy horse owners may encounter in maintaining their tradition of horse ownership. Traveller/Gypsy horse owners too discussed these difficulties in Chapter 4 and are addressed in more detail in the next section (*Attitudes and approaches to horse care*). There were selected significant differences across public respondent and stakeholder demographic factors on knowledge and perceptions of Traveller/Gypsy horse culture which is comparable to other animal welfare studies that were outlined and discussed in Chapters 2 and 3. These included gender and age (Heleski et al., 2006; Maria, 2006; Prickett et al., 2010), level of empathy (Heleski et al., 2004; Serpell, 2004; Mazas et al., 2013), stakeholder roles (Horseman et al., 2016;

Butler et al., 2019) and area and location of residency (McNeill et al., 2017). From a methodological perspective, the use of survey questionnaires was successful in achieving the first and second aims of this thesis in that it presented public and stakeholders' current perceptions and knowledge of Traveller/Gypsy horse culture. Perceptions of Traveller/Gypsy horse ownership were for the most part negative and there is arguably a lack of understanding of Traveller/Gypsy horse culture by both groups. Hence, the subject of horse ownership from the Traveller/Gypsy horse owner perspective was investigated in Chapter 4 of the thesis. The wider implication of the findings from the stakeholder study are that this may have potential consequences for horse owners from these ethnic groups, such as, limited consultation or inclusion in decision making in policy development. Furthermore, poor relationships between stakeholder and horse owner may have an impact on horse welfare as horses may not be receiving the necessary veterinary or farrier care. Therefore, an understanding of stakeholder and public perceptions of Traveller/Gypsy horse ownership as outlined in this thesis is critical in addressing these issues and implementing change.

6.1.3 Traveller/Gypsy horse owners' attitudes and approaches to horse care

The third part of this research project which was presented in Chapter 4 described Traveller/Gypsy horse owners' understanding of, approaches to and perceptions of horse care, management and welfare. There has thus far been little engagement with this horse-owning community who have a long tradition of horse ownership. This research aimed to address this gap and by using a semi-structured interview method approach, the third aim of this study was addressed. From the horse owners' perspective, results indicated that they had a good understanding of horse health and welfare, applied appropriate husbandry practices in the management of their horses and were more likely to adopt a natural approach to horse management. This is important because there is an increased body of research and literature that recognises the importance of adopting a management approach that reflects

the natural behaviour and environment of the horse (Van Dierendonck and Goodwin 2005, Jørgensen et al., 2016). Furthermore, Traveller/Gypsy horse owners recognised the horse as a sentient animal and most horse owners had a high level of awareness of the animal welfare concept. These results appeared to contradict the perceptions of both the public and stakeholders as previously discussed and show a mismatch between perceptions and the reality of horse ownership for this ethnic group. As previously mentioned, horse owners also described the many challenges to Traveller/Gypsy horse ownership. Many horse owners stated that the COHA, lack of land accessibility and discrimination were contributing factors to these challenges and stakeholders also recognised that some of these factors were challenges for Traveller/Gypsy horse owners. Despite this recognition, the fact is not diminished that Traveller/Gypsy horse owners have little, if any, input in decision making processes on issues that have an impact on their tradition of horse ownership. This was evident in the development of the COHA in Ireland (Irish Government, 1996) whereby, Traveller horse owners or representatives from Traveller organisations were not included in the advisory committee facilitating this Act (Rowland et al., 2019). However, the appreciation of these challenges by stakeholders may lead to discussion with and inclusion of Traveller/Gypsy horse owners about future legislation on horse welfare. The data showed that all parties agreed that horse owners are ultimately responsible for horse care and welfare and these results support animal welfare acts where animal owners have a legal duty of care for their animals.

The interview approach was successful in contributing to the third aim of this thesis, in that Traveller/Gypsy horse owners view and approach to horse ownership was documented. Participants were willing to be part of this research on Traveller/Gypsy horse care and welfare and were also prepared to have their horse assessed. This willingness to participate indicated their interest in horse care and welfare. In addition, their co-operation to participate may have indicated that they are not a `hard to reach` group as is often implied (Condon et al., 2019). It could be argued that researchers are

not trying hard enough to reach them. Furthermore, this PhD research on horse ownership differs from the subjects that are frequently researched in Traveller/Gypsy communities, such as health and education and it may be that they welcome a subject that really matters to them and to show who they really are. Additionally, Traveller/Gypsy horse owners are rarely given a voice so there was obvious appreciation of being listened to what they have to say in a non-judgemental way.

This, perhaps, accords with the results from the previous two chapters where there was little awareness of Traveller/Gypsy horse culture and where perceptions were based on misrepresentations rather than on factual evidence.

6.1.4 Horse Welfare Assessments

The final part of this thesis assessed Traveller/Gypsy horse care and welfare and was presented in chapter 5. A horse welfare assessment protocol was developed for the purpose of assessing Traveller/Gypsy horse welfare. The protocol was based on similar scales that had previously been developed after a thorough review of the literature. The results of the horse welfare protocol also demonstrated a disparity between assessment outcomes and what the public and stakeholders perceive. This thesis argued that there was no previous evidence to determine the accuracy of these perceptions, therefore, this research has quantified for the first time the health and welfare status of Traveller/Gypsy horses. The overall results revealed a good standard of health and welfare in horses assessed with the majority of horses having a good body condition score (3), a healthy coat condition, an absence of skin conditions and a 'friendly response' from the animal when approached. Furthermore, positive elements of Traveller/Gypsy horse expressive behaviours such as friendly, good form and settled were evident following assessment using Qualitative Behaviour assessment (QBA) (Wemelsfelder et al., 2000). QBA terms were devised by a panel of Traveller/Gypsy horse owners which also indicated their willingness to engage with this study. These findings contradicted the concept of

Traveller/Gypsy horse owners as a `hard to reach` group (Condon et al., 2019).

Hoof neglect and the presence of hoof conditions were the main welfare issues assessed in Traveller/Gypsy horses. These results were similar to those of many other equine populations (Christie et al., 2004; Ireland et al., 2011; Dai et al., 2017; Fröhlich et al., 2020; Czycholl et al., 2021). Through examination of the horse welfare assessments, what became evident was that Traveller/Gypsy horses were more likely to be fly-grazed and tethered. These practices are contrary to common management procedures in the wider horse population (Cullinane et al., 2014). However, the challenges of horse ownership, as revealed by Traveller/Gypsy horse owners in the qualitative interviews in chapter 4 identified their motives for these practices. Further, this research has revealed a good standard of welfare in tethered horses which concurs with a previous study which found that the physical welfare of tethered horses was better than that of roaming horses in a study in South Wales (Mullan et al., 2014). However, additional studies regarding the welfare aspects of this form of management practice are recommended.

Overall, the use of the welfare assessment protocol was effective in achieving the fourth aim of this thesis, assessing various parameters of Traveller/Gypsy horse health and welfare. The protocol also employed the use of positive welfare indicators which would highlight good welfare; therefore, the tool may no longer be viewed as a tool for identifying welfare issues and penalising horse owners. Furthermore, the inclusion of positive welfare indicators may also reduce an animal owner's often defensive stance toward animal welfare assessments (Popescu et al., 2014)

6.2 Limitations

This research collected empirical qualitative data in chapter 4 and quantitative data in chapters 2, 3 and 5 in order to investigate Traveller/Gypsy horse culture from both a stakeholder/public and horse owner perspective. This is the first time that this area of work has been examined. However, there are both strengths and limitations to the

interpretability of the research findings. The survey questionnaire for both public and stakeholders was lengthy, therefore, it is possible that respondents may have become fatigued, hence, questions may have been answered hastily. The use of truncated version of the survey is recommended. While there are clear advantages to purchasing a public panel for research such as a high and quick response rate, there are also limitations to this recruitment methodology as used in Chapter 2. Data quality may have been affected as panel respondents could have been motivated to participate in research for money alone rather than have a genuine interest in the research. However, Fry and Dwyer (2001) found that monetary payment was not the only incentive for injecting drug users to participate in their study, with reasons for participation found to be multi-dimensional. In addition, the use of attention checks in the public questionnaire in this research such as *`If you read this, please select strongly agree`* helped remove respondents who did not pay attention to the questions asked. While payment to respondents may be viewed as unethical (Gordon et al., 2002), the payment to research participants in clinical research is a common practice (Largent and Fernandez Lynch, 2017). Further, it is unlikely that participants felt coerced to participate in this research as payment for participation was low and only reflected the minimum rate of pay.

Stakeholders for this research were mainly recruited online with the recruitment email often sent to a main office. This recruitment method was dependent on the office personnel forwarding it to the appropriate person/s, therefore, it must be recognised that it is difficult to determine how many people received the recruitment email. While a 51.5% response rate from a target of 200 stakeholders was achieved, it was not possible to determine an accurate response rate from the number of surveys distributed as the total number of stakeholders that the dissemination methods reached was unknown. Nevertheless, by employing this recruitment method, stakeholders from a variety of roles within the equine industry were recruited for this research. It must also be recognised that it is very likely that participants who

completed the questionnaire were motivated to do so because of their interest and experience in the subject.

A further limitation of survey questionnaires was the possibility that participants' responses may have reflected their tendency to show social desirability in their answers rather than reflecting their true opinions and views. However, by using an online platform and allowing for anonymity, the possibility of social desirability bias may have been reduced. Another limitation to the use of questionnaires in Chapter 2 and 3 was that it could have restricted the amount of information that respondents can provide and omits depth to question answers. Therefore, more use of qualitative methodology may have provided greater insight into the basis of respondents' answers. Survey sample size was similar to that of previous research (McNeill et al., 2017) although a larger sample size would have produced more robust results.

The qualitative interview methodology used in Chapter 4 was also limited by a number of features. One of the major disadvantages of interviews is that they are time consuming which may influence the degree of data collected (Rowley, 2014). However, in this research project, the interviews were conducted over a long period of time and while the convenience sample of seventy-one horse owners is modest, participants responses were reaching 'saturation' point. According to Guest et al., (2006) sample size is determined by 'saturation'. While participants were recruited based on availability and willingness to participate in the study, it is possible that particular groups of people were not reached. Therefore, a further limitation of convenience sampling in the current study is that the sample lacks generalisability. Further, the use of snowball sampling may have contributed to sampling bias since people often refer participants who are familiar to them and have similar traits to themselves. Nevertheless, this research was conducted in many different locations in the UK and Ireland, therefore, the potential for sampling bias may have been reduced. Another possible limitation of this study was that the primary researcher was not a member of

the Traveller/Gypsy community. However, the quality of either the information collected or the relationship between researcher and participant is not assured by corresponding the researcher and participant's race or ethnicity (Daily and Claus, 2001; Springman et al., 2006). Further, irrespective of the researchers race or culture, the researcher's cultural awareness and sensitivity was found to create a stronger research relationship with participants (Cox, 2004; Egharevba, 2001; Ridley, 2005; Tuhiwai Smith, 2005). In this study, the researcher had a good knowledge and experience of working with the target group in a previous work capacity. A further issue was the subjectivity of the interview analysis although there was input from the supervisory team on the finalised selected themes. It must be acknowledged that one of the key strengths of the methodology used in Chapter 4 was that the use of a semi-structured format allowed participants to explain and elaborate on their responses. It was also possible that participants had a tendency to provide socially desirable responses to the interview questions. Social desirability bias can happen if participants act in a way that they consider to be favourable by others (Grimm, 2010). In the current study, horse owners may have given the 'right' answers because of the knowledge they have rather than authentic responses, therefore, this may not necessarily mean that what they say is transferred into practice. However, social desirability bias may have been reduced as participant were made aware from the beginning that all responses were confidential, and responses could not be traced back to any one individual.

The welfare assessment protocol used in Chapter 5 was successfully applied to measure Traveller/Gypsy horse welfare. However, the protocol may not have captured the full extent of all situations that Traveller/Gypsy horses are managed. While most people appear to be looking after their horses appropriately as outlined in Chapter 4, there were practices that the protocol was unable to assess such as vaccinations and deworming routines. Therefore, a more comprehensive welfare assessment protocol is required to reduce the possibility of a mismatch between what participants say they are doing and what they are actually doing.

There was a very low variability for some of the protocol indicators amongst the groups of horses as some indicators were observed infrequently or not at all, such as body condition score one and five. Therefore, a larger sample size would help us to understand whether this result (e.g., a lack of the more extreme welfare issues) was representative or just a product of the small sample.

With no recorded data on the number of Traveller/Gypsy horses in the UK and Ireland and limited studies on Traveller/Gypsy horse culture, it was not possible to compare the response of this study to other studies. Additionally, the assessment protocol only measured Traveller/Gypsy horse welfare at a single point of time, therefore, results could not be generalised. In addition, there was the potential for bias in the horse population assessed because of the use of a convenience sampling method. There could also be a degree of subjectivity when scoring welfare assessment measures and when applying QBA which could have affected reliability. However, both tools were piloted, and the researcher had experience of using these tools prior to assessment application. Nevertheless, test-retest reliability and inter-observer reliability is recommended. However, with further work on the development of this protocol in consultation with Traveller/Gypsy horse owners, this tool is promising of assessing Traveller/Gypsy horse welfare.

6.3 Future Work

As outlined in the introduction, the lack of scientific research in Traveller/Gypsy horse welfare is concerning. While this study has added to the limited body of research on Traveller/Gypsy horse welfare, additional studies will further deepen our understanding of all aspects of Traveller/Gypsy horse culture, horse ownership, care, management and welfare. Most importantly, this thesis has contributed to the research base by including the voice of Traveller/Gypsy horse owners and shows that it is possible to gain information from a group often referred to as 'hard to reach'. A natural progression of this work is to continue to engage with and include Traveller/Gypsy horse owners in future research. This will help ensure that

Traveller/Gypsy horse owners' voices will be heard in matters that are important to them. However, culture-specific semi-structured interviews need to be a standard component of any future research. There also needs to be significantly more research on specific issues that impact Traveller/Gypsy horse owners and their ability to care for their horses. One of the major barriers to Traveller/Gypsy horse ownership identified was the lack of availability of land for horses so it would be beneficial if solutions to the problem with accessing suitable land could be explored. For example, good relationships between Traveller/Gypsy horse owner and land owners need to be established and nurtured. In addition, fostering good relations between horse owners and other service providers is essential for improved horse welfare. For instance, various hoof conditions were evident in this study, therefore, further work should be undertaken to explore the relationship between horse owner and farrier. According to Lynden et al. (2020), an effective partnership between farrier and client is key to encouraging horse owners to follow recommended hoof treatment and care plans. The positive impact of Traveller-specific horse projects has previously been reported (Rowland et al. 2019). Therefore, the development and support of such initiatives may help alleviate some of the difficulties encountered and may help provide a sustainable solution to Traveller/Gypsy equine welfare issues. Although, horse projects also need to be evaluated and restructured according to the needs of horse owners before roll-out to different situations. Considerably more work should be undertaken to explore how these horse owners can be supported in alleviating other horse ownership difficulties identified in this thesis and to determine the best methods for dissemination of appropriate information and training to ensure that Traveller/Gypsy horse owners are well informed of issues that are relevant to them as horse owners. This research needs to involve consultation with members of these horse owning communities on their information needs and suitable dissemination practices.

It is proposed that in consultation with Traveller/Gypsy horse owners, the horse welfare assessment protocol developed for this research be continually

reviewed and updated. More work on QBA is needed as there were issues still to be addressed such as inter-observer reliability. A greater focus on horse welfare assessments with larger sample groups and in different situations such as at the `Flashing lane` at Appleby Horse Fair and at Horse Projects in Ireland is recommended. Future research should reflect on which factors improve horse welfare in Traveller/Gypsy and other horse owning communities. This study included positive welfare indicators, therefore, the application of these indicators in future assessments is recommended. The inclusion of good welfare indicators may help lessen the portrayal of all Traveller/ Gypsy horse owners as inadequate horse owners as good welfare outcomes are also highlighted.

A clear message from this study was that there is a lack of awareness by stakeholders and the public of Traveller/Gypsy culture and horse culture. This is clearly a problem, therefore, there is a scope to build upon the results presented here and raise awareness of this horse owning community. First and foremost, creating a society that is culturally aware of Traveller/Gypsy ethnicity is vital. Therefore, it is essential to provide information and cultural awareness training on Traveller/Gypsy culture and horse culture to stakeholders and the public at large. By understanding cultural differences, prejudices, stereotyping and discrimination towards Travellers/Gypsies may be reduced and/or eliminated (Fiske, 2017). Hence, acceptance of this ethnic minority group can be enhanced. Cultural awareness training is especially essential for stakeholders as they interact with Traveller/Gypsy horse owners in their professional roles. An awareness of Traveller/Gypsy horse culture will inform stakeholders of the different views and husbandry methods applied by Traveller/Gypsy horse owners, and of the challenges they may encounter as they are often different from their own. These challenges can have a far-reaching impact on Traveller/Gypsy horse ownership as is evident in the COHA. Therefore, by developing communication networks between Traveller/Gypsy horse owners and stakeholders, the opportunity for a more balanced discussion on horse welfare practices and concerns can be achieved. However, stakeholder forums to discuss how to best engage with

Traveller/Gypsy horse owners in a culturally appropriate way may be required.

Collaborative working with other equine sectors was advantageous to this research through support with data collection, dissemination of surveys and information sharing. The benefits of collaborative working with relevant agencies should be considered in future work. However, a unified way of working must include Traveller/Gypsy horse owners, therefore, there needs to be a lot more communication and collaboration with all stakeholders. A further suggestion is to include Traveller/Gypsy horse owner representatives in horse welfare platforms. Working in partnership could provide opportunities for the development of more sustainable equine welfare policies and legislation.

Media reporting of Traveller/Gypsy horse welfare is often negative and sensationalised and horse owner voices are greatly underrepresented in media outlets. Greater efforts are now needed redress these misrepresentations and give a voice to these ethnic groups. Further, there is a need for the media to be challenged to take a more accurate role in their reporting of Traveller/Gypsy culture and horse culture. A possible approach to tackle this issue could be a media campaign which may help combat discrimination and stereotyping of Traveller/Gypsy horse culture. A mass media campaign which concentrated on positive representation of Aboriginal employment in Australia was found to be influential on changing public attitudes and dispelling myths about this ethnic community (Donovan and Leivers, 1993). The results of this thesis could be a key starting point for these campaigns.

Traveller/Gypsy horse owners have a lifetime of experience of horse ownership and horse management. Therefore, it is these horse owners that need to steer and conduct ongoing research into horse care and welfare in their own community. However, barriers to education as discussed in Chapter 1 have shown that few Travellers/Gypsies have progressed to third level education. Consequently, an inclusive and effective educational

environment is needed for higher educational achievements. It is planned that the findings of this study will be disseminated to the Traveller/Gypsy community. This will be achieved through presentations at Traveller and Gypsy organisations such as Shannon Horse Project, Pavee Point and Friends, Families & Travellers. Publications from this thesis will also be forwarded to these organisations.

Intervention: An area of interest of this research study was equine stakeholder knowledge and perception of Traveller/Gypsy horse owners and horse welfare. The majority of stakeholders, including veterinarians claimed that Traveller/Gypsy horse owners had minimal awareness of the concept of animal welfare and animal welfare legislation and were unlikely to request the advice of their occupation. Furthermore, stakeholders stated that their occupation had a negative perception of Traveller/Gypsy horse owners. However, Traveller/Gypsy horse owners' knowledge and approach to horse care and management and results from the assessment of Traveller/Gypsy horses in this study on Traveller/Gypsy horse welfare identified few welfare concerns, therefore, these results do not reflect the scale of the problems perceived and reported by stakeholders.

The veterinary profession plays a key role in the care of animals and the veterinarian-client relationship is paramount to an animal's health and welfare. An evidence based intergroup informative symposium between veterinary students and Traveller/Gypsy horse owners was planned to conclude this thesis. Unfortunately, due to restrictions imposed by the COVID-19 pandemic, this event was postponed. However, in collaboration with Redwings Horse Sanctuary, plans for an online virtual intergroup pilot event between veterinary students and Traveller/Gypsy horse owners is now in progress. The aim of this pilot study is to identify and measure veterinary students' knowledge and perceptions of Traveller/Gypsy horse ownership, in addition to, testing a methodology to understand relational barriers and opportunities. Intergroup contact is considered an influential method for reducing intergroup tensions, prejudices and conflict, for improving intergroup

attitudes and for promoting inclusivity (Pettigrew, 1998). An important aspect of this intervention will be to offer participants the opportunity for their voices to be heard and understood regarding their views and challenges concerning horse ownership in a safe environment. Traveller/Gypsy horse owner and stakeholder recruitment procedures, information and consent forms, pre and post questionnaires, post interview questions and an intervention project plan have been approved by the Human Ethics Review Committee, The Royal (Dick) School of Veterinary Studies, The University of Edinburgh, (Ref no. HERC_607_20). This pilot study will examine the feasibility of the methods and procedures used and will help pave the way for larger scale intervention programmes. The intervention project plan can be found in Appendix E1. Further interventions planned but were not implemented due to COVID-19 restrictions included a series of facilitated discussion groups designed to raise the profile of Traveller/Gypsy horse owners and the culture of Traveller/Gypsy horse ownership. Inclusion of this ethnic group in these discussions is at the core of this intervention. Targeted groups to be included in these discussions were equine welfare organisations and service providers. The production of a strategic document to aid councils and a symposium to help engagement amongst stakeholders to improve equine well-being was also planned. Finally, to raise the profile of Traveller/Gypsy horse owners and Traveller/Gypsy horse welfare, the findings of this volume of work needs to be published.

6.4 Conclusion

While much has been written about Traveller/Gypsy horse culture, there is an under-representation of Traveller/Gypsy horse owners from these communities in research. In general, Chapter 2 and 3 illustrated the views, knowledge and understanding of Traveller/Gypsy horse ownership and horse welfare held by the public and stakeholders. A negative image of this horse owning community was found to prevail amongst stakeholders and the public. However, information on these horse-owning communities is predominantly based on other people's attitudes and perceptions. Further, the relationship between Traveller/Gypsy and horses is greatly

misunderstood by the community at large, therefore, concerted efforts by the public, media and stakeholders to recognise and appreciate Traveller/Gypsy horse culture may shift their mind-set from the negative towards the positive instead. In addition, if stakeholders are going to work collaboratively with Traveller/Gypsy horse owners, they are going to need to understand their relationship with horses. This is an essential step towards understanding the true extent of welfare issues in Traveller/Gypsy horse owning communities. Horse owner knowledge and understanding of a horse's health and welfare needs is essential for improved horse welfare and the results of Chapter 2 highlighted Traveller/Gypsy approaches to horse owner care and management and Chapter 3 provided results on the health and welfare of Traveller/Gypsy horses. Horse welfare was deemed to be of a good standard and horse owners had a rich understanding of horse health and welfare and their application of appropriate husbandry practices in the management of their horses. However, there were some welfare issues that need to be addressed such as hoof care, and while vaccination practices were above average for tetanus and flu, there is scope for improvement. Because of their low uptake, more work is also needed on equine herpes virus and strangles vaccinations to improve horse welfare. This study has identified hoof condition as an area of welfare concern in Traveller/Gypsy horses, therefore, more work on this issue would be worthwhile. Traveller/Gypsy horse owners' use of a natural approach to horse management and their acceptance of the horse as a sentient animal is commendable as current scientific literature recognises the importance of these concepts.

While this research fills a gap in the literature on Traveller/Gypsy horse ownership, it is vital that the inclusion of Traveller/Gypsy horse owners continues to inform ongoing research. In addition, recognising the culture of horse ownership in the Traveller/Gypsy community would represent a significant step forward in addressing the dissonance between the perceptions and reality of horse welfare in this horse owning community. While there are a number of limitations to this research, this thesis has

obtained profound and rich data on Traveller/Gypsy horse ownership. In fact, this thesis could be considered as a “first generation” of scientific literature on Traveller/Gypsy horse culture.

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Appendices A (Chapter 2)

Appendix A1	Public questionnaire
Appendix A2	Statistically non – significant effects of demographic variables on public knowledge of Traveller/Gypsy Culture
Appendix A3	Mean and standard deviation (Std. Dev) on whether Traveller/Gypsy horse ownership is part of their `culture` or `not a tradition`.
Appendix A4	Means and standard deviations (Std. Dev) respondent perceptions of Traveller/Gypsy horse owner care as `good practices` or ` poor practices`,

Contribute to applied research on Traveller/Gypsy Horse Welfare

I am a PhD research student at the University of Edinburgh, Scotland, studying **`Traveller and Gypsy Horse Welfare`** in the UK and Ireland. This study is significant because there is relatively little research undertaken into this subject. Part of this study comprises investigating the publics' views and perceptions of Traveller/Gypsy horse care, management and welfare. I would be grateful if you could answer the following questions on animals and animal welfare in general, Traveller/Gypsy culture and Traveller/Gypsy horse culture and horse welfare. The survey will take about 20 - 25 minutes to complete.

Your participation in this survey questionnaire is completely voluntary; you may withdraw at any time during completion without giving a reason and your legal rights being affected. There are no known risks to participating in this survey, beyond those encountered in everyday life. Your responses will remain anonymous and confidential at all times. The data will be analysed as collective data. Individual answers to the questions will be seen only by the research team. It will not be possible to trace individual answers back to you. I understand that my anonymized data will be stored securely in accordance with data protection law including GDPR and for a minimum of 5 years and may be used in future ethically approved research.

Consent

Please tick if you wish to partake in this study

I wish to take the survey and give my consent to participate in this study ☐

Section 1: Demographics

How would you describe your gender identity? <i>Please tick</i>	Man	Woman	In any other way (please specify)	<i>Prefer not to say</i>

Year of Birth				
Please state the location where you live, <i>Please tick</i>				
<i>England</i>	<i>Scotland</i>	<i>Wales</i>	<i>Ireland</i>	<i>Northern Ireland</i>
Please state county				
Do you consider your location to be rural or urban (<i>Please specify</i>)				

Please indicate whether you own pet/s?		
No	Yes	
If yes what type of pet/s do you have	Dog	
	Cat	
	Horse	
	Rabbit	
	Other, please specify	

Section 2: Questions on animals

Please indicate your level of agreement with the following statements regarding animals (From 1 = strongly disagree to 6 = strongly agree)							
	Strongly disagree	2	3	4	5	Strongly agree	Don't know
It is morally wrong to hunt wild animals for sport							
I do not think that there is anything wrong with using animals in medical research							
There should be extremely stiff penalties including jail sentences for people who participate in cock fighting							
Wild animals, such as mink and raccoons, should not be trapped and their skins made into fur coats							
There is nothing morally wrong with hunting wild animals for food							
I think people who object to raising animals for meat are too sentimental							
Much of the scientific research done with animals is unnecessary and cruel.							
I think it is perfectly acceptable for cattle and pigs to be raised for human							

consumption							
Basically, humans have the right to use animals as we see fit.							
The slaughter of whales and dolphins should be immediately stopped even if it means some people will be put out of work.							
I sometimes get upset when I see wild animals in cages at zoos.							
In general, I think that human economic gain is more important than setting aside more land for wildlife.							
Too much fuss is made over the welfare of animals these days when there are many human problems that need to be solved							
Breeding animals for their skins is a legitimate use of animals							
Some aspects of biology can only be learned through dissecting preserved animals such as cats							
Continued research with animals will be necessary if we are ever to conquer diseases such as cancer, heart disease, and AIDS							
It is unethical to breed purebred dogs for pets							

when millions of dogs are killed in animal shelters each year.							
If you read this, please select Strongly disagree							
The production of inexpensive meat, eggs, and dairy products justifies maintaining animals under crowded conditions							
The use of animals such as rabbits for testing the safety of cosmetics and household products is unnecessary and should be stopped							
The use of animals in rodeos and circuses is cruel.							

Please indicate how much the following attributes contribute to animal welfare? (From 1 = not at all to 6 = very much)							
	Not at all	2	3	4	5	Very much	Don't Know
An animal's health							
The way an animal is treated							
An animal's feelings							
An animal's environment							
An animal's need to be protected from hunger and thirst							
An animal's need to express normal behaviour patterns							
An animal's need to be protected from							

pain							
If you read this, please select Not at all							
An animal's need to be protected from suffering							
An animal's need to be protected from injury and disease							
An animal's need to be protected from cruelty							
An animal's need to be protected from fear							
An animal's need to be protected from stress							

Section 3 Questions on Traveller/Gypsy Culture

Please indicate your level of agreement with the following statements regarding Traveller/Gypsy community and culture (From 1 = strongly disagree to 6 = strongly agree)							
	Strongly disagree	2	3	4	5	Strongly agree	Don't Know
Highly value the extended family							
Most don't pay taxes							
Only live in caravans							
Take great pride in cleanliness							
Are often subjected to hostility and hate crime							
Are often the target of racist insults e.g., verbal abuse							
If you read this,							

please select Don't Know							
Those who live in houses are no longer Travellers/Gypsies							
Most live outside the laws & rules of society							
Experience higher levels of discrimination than other ethnic groups							
Should be evicted from unauthorised sites							
Have a strong work ethic							
Have significantly poorer health than that of the general population							
It is acceptable for shops/hotels/pubs to put up signs saying `No Travellers/Gypsies`							

Please indicate where you get your information from about Traveller/Gypsy Culture? (From 1 = not at all to 6 = always)						
	Not at all	2	3	4	5	Always
Traveller/Gypsy Organisations						
Government departments, i.e., education, health, justice etc.						
Local authority/Councils						

Community agencies						
Newspapers (Broadsheet e.g. The Times)						
Newspapers (Tabloid e.g. The Sun)						
TV Documentary Programmes						
TV Reality programmes <i>e.g., Big Fat Gypsy Wedding</i>						
If you read this, please select 'Not at all'						
Radio Talk Programmes						
Internet sites (educational) <i>e.g., The Traveller Movement</i>						
Internet sites (social)						
Internet sites (news)						
Books						
Magazines						
Have friends/neighbours in these communities						

Section 4: Questions on Horses

Please indicate how you consider or classify horses? (From 1 = not at all to 6 = always)						
	Not at all	2	3	4	5	Always
As companion animals						
As livestock						
As working animals						
As sport animals						
Other (please specify)						

Please indicate your level of agreement with the following statements regarding horses (From 1 = strongly disagree to 6 = strongly agree)							
	Strongly disagree	2	3	4	5	Strongly agree	Don't Know
Horses are social animals							
Horses prefer to be kept in herds							
It is unethical to eat horse meat							
Horses are capable of expressing a range of emotions and feelings							
Horses need to be able to exercise							
Most horse sport is cruel to horses							
Horses sometimes have to be beaten to get them to obey orders							
Horses need to be able to express normal behaviour patterns e.g., grazing							
Most horses are aggressive							

Section 5 Questions on Traveller & Gypsy Horse Culture

Please indicate your level of agreement with the following statements regarding Traveller/Gypsy horse culture (From 1 = not concerned at all to 6 = very concerned)							
	Strongly Disagree	2	3	4	5	Strongly Agree	Don't Know
Horse ownership is an important tradition							
Horse ownership is considered one of the last links to their nomadic way of life							
Horse fairs are not an ancient part of their tradition							
It is usually men who own & care for horses							
Sulky/Harness racing is not part of their culture							
A horse's bloodline is not highly regarded within their culture							
Horse fairs are an important social gathering							

Please indicate your level of agreement with the following statements regarding Traveller/Gypsy horse owners care of their horses (From 1 = strongly disagree to 6 = strongly agree)							
	Strongly disagree	2	3	4	5	Strongly agree	Don't know
Traveller/Gypsy horse owners seem to be responsible horse owners							
Traveller/Gypsy horse owners are likely to provide suitable land for their horses							
Traveller/Gypsy horse owners' practices are likely to seriously reduce the welfare of their horses							
Traveller/Gypsy horse owners are more likely to abandon their horses							
Traveller/Gypsy horse owners are likely to adequately care for their horses							
Traveller/Gypsy horse owners are likely to provide their horses with social contact with other horses							
Traveller/Gypsy horse owners seem to lack adequate shelter for their horses							
If you read this, please select Strongly agree							
Traveller/Gypsy horse owners seem to treat their horses well							
Traveller/Gypsy horse owners seem to be generally concerned about their horses' welfare							
Traveller/Gypsy horses are more likely to have poor welfare							
Traveller/Gypsy horse owners are more likely to subject their horses to intentional cruelty/abuse							
Traveller/Gypsy horse owners seem to exercise their horses							

appropriately							
Traveller/Gypsy horse owners' horses are more likely to be neglected							
Traveller/Gypsy horse owners seem to feed their horses well							
Traveller/Gypsy horse owners are more likely to ride and/or drive their horses in a manner that causes undue distress							
Traveller/Gypsy horse owners are more likely to ride and/or drive their horses in a manner that causes undue discomfort							
Traveller/Gypsy horse owners are likely to keep their horses in unsuitable environments							
Traveller/Gypsy horse owners seem to abide by the rules and regulations of animal welfare laws							
Traveller/Gypsy horse owners are more likely to breed from their horses							
Traveller/Gypsy horse owners' horses seem to limp often							
Traveller/Gypsy horse owners are more likely to tether their horses							
Traveller/Gypsy horse owners are more likely to graze their horses in unauthorised private/common land e.g., parks							
Traveller/Gypsy horse owners should be prevented from owning horses							

Please indicate your level of concern about the welfare of Traveller/Gypsy horses in the UK/Ireland (From 1 = not concerned at all to 6 = very concerned)						
Not concerned at all	2	3	4	5	Very concerned	Don't know

How likely are the following media sources to present a positive image of Traveller/Gypsy horse welfare (From 1 = not likely at all to 6 = very likely)							
	Not likely at all	2	3	4	5	Very likely	Don't know
Newspapers (Broadsheet e.g. The Times)							
Newspapers (Tabloid e.g. The Sun)							
TV news							
TV documentary programmes							
TV reality programmes							
Radio News							
Radio talk programmes							
Internet sites (educational) e.g., Friends Families and Travellers							
Internet sites (social)							
Internet sites (news)							
Books							
Magazines							
In your opinion, how are Traveller/Gypsy horse owners perceived by the general public? Please tick							
Positive Perception	Negative Perception			Don't Know			
Give a reason for your answer							

SECTION 6: Responsibility for Traveller/Gypsy horse welfare

Please indicate your level of agreement with the following statements regarding who is responsible for Traveller/Gypsy horse welfare (From 1 = strongly disagree to 6 = strongly agree)						
	Strongly disagree	2	3	4	5	Strongly agree
Traveller/Gypsy horse owners themselves						
Government Body						
Local Authority/Council						
Horse Sector						
Animal Welfare Organisations e.g., RSPCA, ISPCA, SSPCA, Redwings, Horse Trust, etc						
Police/Gardai						
Traveller/Gypsy horse owners themselves with support from the above agencies						
Other, <i>please state</i>						

Please indicate your level of agreement regarding proposals to improve the health and welfare of Traveller/Gypsy horses, if necessary (From 1 = strongly disagree to 6 = strongly agree)						
	Strongly disagree	2	3	4	5	Strongly agree
Increased funding to animal welfare organisations to work with Traveller/Gypsy horse owners						
Incentives e.g., free health assessments, subsidised vaccinations						
Development of a Traveller/Gypsy specific equine welfare organisation						

Increased funding to or development of Traveller/Gypsy Horse Projects						
Educational programmes for Traveller/Gypsy horse owners on horse care and management						
Preventive Traveller/Gypsy horse health and welfare community programmes e.g., castration clinics						
The provision of land for horses						
Referrals to existing equine welfare organisations						
Improved legislation relating to equine neglect/abuse						
Improved mechanisms for liaising with or involvement of Travellers/Gypsies in equine matters						
Increased input from Travellers/Gypsies when devising horse welfare regulations and legislation						
Tougher penalties for equine neglect/abuse						
Long prison sentences for equine neglect/abuse						

If you: 1) have any further questions or concerns about this survey or any of its questions 2) would like to be informed of the results of this study. Please contact Marie Rowland at: marie.rowland@SRUC.ac.uk

If you are concerned about an animal's welfare or wish to report an injured or distressed animal, please call the following organisations:

England/Wales: RSPCA 0300 1234 555

Scotland: Scottish SPCA 03000 999 999

Ireland: ISPCA 1890 515515

Thank you for taking the time to complete this survey.

Your insight and information are very valuable to us in prioritising our research.

Statistically non – significant effects of demographic variables on public knowledge of Traveller/Gypsy Culture (1 = Strongly disagree to 6 = Strongly agree), $p > 0.05$							
Factors	Gender	n	Mean	Std. Dev	t	df	p
Cultural stereotypes	Man	127	3.23	1.10	-1.546	390	0.12
	Woman	265	3.42	1.12			
Cultural awareness	Man	127	4.27	1.02	- .1.394	392	0.16
	Woman	267	4.41	0.93			
Cultural stereotypes	Urban	279	3.29	1.09	1.019	392	0.30
	Rural	115	3.27	1.16			
Cultural awareness	Urban	127	4.27	1.02	1.418	394	0.15
	Rural	267	4.41	0.93			
Cultural stereotypes	Animal	236	3.37	1.12	0.351	392	0.72
	None	158	3.33	1.11			
Cultural awareness	Animal	238	4.36	0.93	-0.027	394	0.97
	None	158	4.37	1.00			
	Age Groups	n	Mean	Std. Dev	F	df	p
Cultural stereotypes	18 - 25	81	3.59	1.13	1.52	3 (390)	0.20
	26 - 35	130	3.32	1.09			
	36 - 45	86	3.29	1.08			
	45 +	97	3.26	1.14			
Cultural awareness	18 - 25	80	4.30	0.96	0.932	3 (392)	0.42
	26 - 35	132	4.34	1.07			
	36 - 45	86	4.31	0.85			
	45 +	98	4.50	0.89			
Cultural stereotypes	Unspecified	21	3.56	0.99	1.63	4 (389)	0.24
	Celtic	66	3.75	1.22			
	North England	108	3.42	1.07			
	Midlands	62	3.15	1.05			
	South England	137	3.18	1.09			
Cultural awareness	Unspecified	21	4.10	1.01	1.25	4 (391)	0.28
	Celtic	66	4.56	0.97			
	North England	109	4.38	0.97			
	Midlands	62	4.27	1.00			
	South England	138	4.34	0.93			

Mean and standard deviation (Std. Dev) on whether Traveller/Gypsy horse ownership is part of their `culture` or `not a tradition`, (Scale 1 = strongly disagree, 6 = strongly agree, $p > 0.05$)							
	Gender	n	Mean	Std. Dev	t	df	p
Culture	Man	117	4.34	1.19	-1.354	367	0.17
	Woman	252	4.51	1.01			
Not a tradition	Man	85	4.00	1.36	-1.315	283	0.19
	Woman	200	4.23	1.30			
Culture	Urban	254	4.41	1.10	-1.143	368	0.25
	Rural	116	4.55	1.01			
Not a tradition	Urban	197	4.21	1.32	1.000	285	0.31
	Rural	90	4.04	1.36			
Culture	Animal	226	4.54	1.00	1.944	368	0.68
	None	144	4.32	1.17			
Not a tradition	Animal	185	4.18	1.29	0.395	285	0.69
	None	102	4.11	1.41			
	Age Group	n	Mean	Std. Dev	F	df	p
Culture	18 - 25	72	3.78	1.32	0.739	3 (366)	0.53
	26 - 35	119	4.50	0.98			
	36 - 45	82	4.73	0.82			
	45 +	97	4.68	0.96			
Not a tradition	18 - 25	53	4.31	1.31	0.138	3 (283)	0.34
	26 - 35	95	4.05	1.29			
	36 - 45	70	4.07	1.42			
	45 +	69	4.28	1.33			

Culture	Unspecified	18	4.12	0.89	1.296	4 (365)	0.27
	Celtic	64	4.42	1.13			
	North England	104	4.63	1.07			
	Midlands	56	4.34	1.11			
	South England	128	4.43	1.05			
Not a tradition	Unspecified	8	4.00	1.39	2.171	4 (282)	0.07
	Celtic	48	4.49	1.37			
	North England	79	4.36	1.33			
	Midlands	50	3.93	1.39			
	South England	102	3.96	1.25			

Means and standard deviations (Std. Dev) respondent perceptions of Traveller/Gypsy horse owner care as `good practices` or `poor practices`, (Scale 1 = strongly disagree, 6 = strongly agree).							
	Gender	n	Mean	Std. Dev	t	df	P
Good Practices	Man	116	3.51	1.11	-0.947	351	0.34
	Woman	237	3.63	1.10			
Poor Practices	Man	121	3.23	1.09	1.046	365	0.29
	Woman	246	3.10	1.11			
Good Practices	Urban	246	3.61	1.09	0.377	352	0.70
	Rural	108	3.56	1.14			
Poor Practices	Urban	260	3.17	1.10	0.636	367	0.52
	Rural	109	3.09	1.10			
Good Practices	Animal	221	3.65	1.14	1.158	352	0.24
	None	133	3.51	1.04			
Poor Practices	Animal	133	3.19	1.11	0.929	367	0.35
	None	146	3.08	1.09			
	Age group	n	Mean	Std. Dev	F	df	P
Good Practices	18 - 25	69	3.75	1.04	1.616	3 (350)	0.18
	26 - 35	115	3.42	1.10			
	36 - 45	80	3.60	1.13			
	45 +	90	3.69	1.14			
Poor Practices	18 - 25	74	3.36	1.15	1.191	3 (365)	0.31
	26 - 35	119	3.10	1.05			
	36 - 45	83	3.06	1.10			
	45 +	93	3.10	1.11			
Good Practices	Unspecified	16	3.12	1.17	1.703	4 (349)	0.14

	Celtic	58	3.55	1.18			
	North England	99	3.79	1.11			
	Midlands	57	3.62	1.01			
	South England	124	3.52	1.09			
Poor Practices	Unspecified	18	3.03	1.08	0.453	4 (364)	0.77
	Celtic	59	3.31	1.16			
	North England	102	3.13	1.14			
	Midlands	60	3.10	0.97			
	South England	130	3.11	1.11			

Appendices B (Chapter 3)

Appendix B1	Stakeholder questionnaire
Appendix B2	Introductory letter
Appendix B3	Statistically non – significant effects of gender, occupation and region of occupational practice on perceptions of Traveller/Gypsy horse owner care
Appendix B4	Statistically non – significant effects of gender, age group and region of occupational practice on perceptions of Traveller/Gypsy horse owners
Appendix B5	Statistically non – significant effects of gender, occupation and region of occupational practice on perceptions of Traveller/Gypsy horses
Appendix B6	Statistically non – significant effects of age group and region of occupational practice on perceptions of the prevalence of health/welfare/management issues in Traveller/Gypsy horses

Contribute to applied research on Traveller/Gypsy Horse Welfare

I am a PhD research student, studying `Traveller and Gypsy Horse Welfare` in the UK and Ireland. I would be grateful if you could answer the following questions. The survey will take about 20 - 25 minutes to complete.

Your participation in this survey questionnaire is completely voluntary; you may exit the survey at any time without facing any penalty. There are no known risks to participating in this survey, beyond those encountered in everyday life. Your responses will remain anonymous and confidential at all times. The data will be analysed as collective data. Individual answers to the questions will be seen only by the research team. It will not be possible to trace individual answers back to you.

Consent

Please tick if you wish to partake in this study

I wish to take the survey and give my consent to participate in this study ☐

Section 1: Demographics

How would you describe your gender identity? <i>Please tick</i>	Man	Woman	In any other way (please specify)	<i>Prefer not to say</i>

Year of Birth	

Please state the location where you practice your occupation. Please tick				
<i>England</i>	<i>Scotland</i>	<i>Wales</i>	<i>Ireland</i>	<i>Northern Ireland</i>

Please state the county/counties where you practice your occupation			
Occupation <i>Please tick</i>	Veterinarian	Veterinary Nurse	Veterinary Technician
Farrier	Equine Podiatrist	Equine Dentist	Council Official
Animal Welfare Officer/Worker	Trading Standards Official	Other, please specify	

What do you consider to be the main ethnicity of Travellers/Gypsies in your location? Please tick all that apply		
English Gypsy	Welsh Gypsy	Irish Traveller
Scottish Traveller	Romany Gypsies	None
Don't Know	Other <i>Please state</i>	

Do you know how many Gypsy/Travellers sites are in your location? Please tick		
Yes	No	Don't Know
If yes, please give an estimate of how many		

Please indicate where you get your information from about Traveller/Gypsy Culture? (From 1 = not at all to 6 = always)						
	Not at all	2	3	4	5	Always
Traveller/Gypsy Organisations						

Government departments, i.e., education, health, justice etc.						
Local authority/Councils						
Community agencies						
Newspapers (Broadsheet e.g. The Times)						
Newspapers (Tabloid e.g. The Sun)						
TV Documentary Programmes						
TV Reality programmes <i>e.g., Big Fat Gypsy Wedding</i>						
Radio Talk Programmes						
Internet sites (Educational) <i>e.g., The Traveller Movement</i>						
Internet sites (social)						
Internet sites (news)						
Books						
Magazines						
Have friends/neighbours in these communities						

Traveller/Gypsy horse welfare

Please indicate how often you address equine health and/or welfare issues with the following groups? (<i>From 1 = not at all to 6 = very often</i>)							
	Not at all	2	3	4	5	Very often	Not Applicable
English Gypsies							

Welsh Gypsies							
Irish Travellers							
Scottish Travellers							
European Roma							
Occupational Travellers e.g., show people							
New Age Travellers							
Other (please specify)							

Are you personally aware of the number of Traveller/Gypsy horses in your location?
Please tick

Yes

No

If so, please give an estimate of how many

Are you personally aware of the number of neglected Traveller/Gypsy horses in your location? *Please tick*

Yes

No

If so, please give an estimate of how many

Please state the prime signs of neglect that you have seen in Traveller/Gypsy horses in your location

Please indicate how common you believe the following health, welfare and management issues are in Traveller/Gypsy horses? (*From 1 = not common at all to 6 = very common*)

	Not common at all	2	3	4	5	Very common
General horse health issues						
Neglect						
Abandonment						
Tethering						
Indiscriminate breeding						
Fly-grazing						
Abuse						
Use of inappropriate training practices						
Sulky racing						
Inappropriate housing						
Abnormal behaviours						
Non- compliance with microchipping and passport regulations						
Unregulated horse fairs						
Poor quality pasture						
Non-use of						

rugs/blankets						
Isolation						

Please indicate your level of concern about the welfare of Traveller/Gypsy horses (From 1 = not concerned at all to 6 = very concerned)					
Not concerned at all	2	3	4	5	Very concerned

Please indicate which of the following health related issues do you consider to be most prevalent in Traveller/Gypsy horses (From 1 = not at all prevalent to 6 = highly prevalent)

Respiratory Diseases	1	2	3	4	5	6
Cough						
Equine Flu						
Equine herpes virus						
Strangles						
Allergic or hypersensitive respiratory disease e.g., RAO, heaves						
Other						
Skin Diseases						
Mud Fever						
Rainscald						
Culicoides hypersensitivity, (Sweet/Summer Itch)						
Lesions/wounds						
Dermatitis						

Ringworm						
Sarcoids						
Melanoma						
Other						
Eye Problems						
Cataracts						
Corneal ulcers						
Conjunctivitis						
Glaucoma						
Blocked tear ducts						
Ocular discharge						
Uveitis						
Other						
Dental Disease						
Requires equine dental technician care						
Requires veterinary care						
Other						
Hoof Problems						
Laminitis						
Foot Abscess						
Hoof Cracks						
Hoof splits						
Diverging hoof wall						
Imbalance						
Club foot						
Thrush						
White line disease						
Other						

Non Foot Conditions						
Arthritis						
Tendon injury/swelling/inflammations						
Ligament injury/swelling/inflammations						
Degenerative Joint Disease						
Development orthopaedic disease/angular limb deformities						
Other						
Internal Medical Problems or Behaviour issues						
Gastric Ulcers						
Intestinal worms						
Colic (abdominal pain)						
Equine grass sickness						
Cushing's disease/Pars Pituitary Intermedia Dysfunction (PPID)						
Diarrhoea						
Liver problems						
Equine metabolic syndrome						
Nervous system problem e.g., Ataxia or other related problem						
Stereotypic behaviour						
Headshaking						
Muscle diseases						
Urinary diseases						

Reproductive diseases						
Other						
External Parasites						
Mites						
Lice						
Ticks						
Other						
Weight Problems						
Underweight						
Obesity						
Other						

Questions about YOUR opinion regarding Traveller/Gypsy horse care and welfare.

Please indicate your level of agreement (with the following statements relative to Traveller/Gypsy horses) (<i>From 1 = strongly disagree to 6 = strongly agree</i>)						
	Strongly disagree	2	3	4	5	Strongly agree
Have poor health condition						
Are more likely to be abandoned than other horses						
Are subjected to intentional cruelty/abuse						
Are well cared for						
Are ridden and/or driven in a manner that causes undue distress						
Are ridden and/or driven in a manner that causes undue discomfort						
Their welfare is likely to be						

compromised						
Are provided with adequate feed						
Are neglected of their basic physical needs						
Are overfed						
Have a high incidence of laminitis						
Are neglected of their basic mental needs						
Are provided with adequate water						
Are indiscriminately bred from						
Have their teeth checked regularly						
Have adequate shelter						
Are malnourished						
Are kept in unsuitable environments						
Their welfare is generally good						
Are fly-grazed ((unauthorised grazing on private/common land)						

Please indicate where YOU believe the current level of welfare of Traveller/Gypsy horse is at *(From 1 = very poor to 6 = very good)*

Very poor	2	3	4	5	Very good

How likely are the following media sources to present a positive image of Traveller/Gypsy horse welfare *(From 1 = not likely at all to 6 = very likely)*

	Not likely at all	2	3	4	5	Very likely
Newspapers (Broadsheet e.g. The Times)						
Newspapers (Tabloid e.g. The Sun)						
TV news						
TV documentary programmes						
TV reality programmes						
Radio News						
Radio talk programmes						
Internet sites (educational) <i>e.g., Friends Families and Travellers</i>						
Internet sites (social)						
Internet sites (news)						
Books						
Magazines						

Traveller/Gypsy horse owners

Questions about YOUR opinion regarding Traveller/Gypsy horse owners

How likely are Traveller/Gypsy horse owners to request the advice of your occupation? (From 1 = Not likely to 6 = very likely)						
Not likely at all	2	3	4	5	Very likely	N/A
Comments						

Please indicate your level of agreement with the following statements relative to Traveller/Gypsy horse owners (From 1 = strongly disagree to 6 = strongly agree)						
	Strongly	2	3	4	5	Strongly

	disagree					agree
Most treat their horses well						
Are more likely to indiscriminately breed from their horses						
The low market value of horses has allowed Travellers/Gypsies to buy more horses than they can care for						
Know how to adequately care for a horse						
Provide suitable land for their horses						
Their practices seriously reduce the welfare of their horses						
Are generally concerned about horse welfare						
Should be prevented from owning horses						

Please indicate your level of agreement with the following statements regarding Traveller/Gypsy horse owners care of their horses (From 1 = strongly disagree to 6 = strongly agree)						
	Strongly disagree	2	3	4	5	Strongly agree
Are aware of horse welfare legislation						
Are responsible horse owners						
Comply with` The Control of Horses Act`						
Provide their horses with social contact with other horses						
Call/go to a vet with a sick horse						
Vaccinate their horses against flu						
Vaccinate their horses against tetanus						
Vaccinate their horses against strangles						
Vaccinate their horses against herpes						
Worm their horses						

Provide regular dental health checks						
Have their feet checked regularly						
Provide hoof care for their horses						
Provide adequate shelter for their horses						
Appropriately exercise their horses						
Responsibly breed their horses						
Provide a constant supply of water for their horses						
Clear their fields of ragwort						
Manage manure appropriately						
Microchip and passport their horses						

Please indicate your level of agreement with the following statements regarding Traveller/Gypsy horse owners (From 1 = strongly disagree to 6 = strongly agree)						
	Strongly disagree	2	3	4	5	Strongly agree
Maintaining their tradition of horse ownership is difficult						
Accessing land for their horses is difficult						
Affording horse care and management is difficult						
Complying with the Control of Horses Act is difficult						

Please indicate how aware Traveller/Gypsy horse owners are of the concept of horse welfare? (From 1 = not aware at all to very aware)					
Not aware at all	2	3	4	5	Very aware

In your opinion, how are Gypsies and Traveller horse owners perceived by your occupation? Please tick		
Positive Perception	Negative Perception	Don't Know
Give a reason for your answer		

Section 4: Responsibility for Horse Welfare

Questions about YOUR opinion regarding responsibility for Traveller/Gypsy horse welfare

Please indicate your level of agreement with the following statements regarding who is responsible for Traveller/Gypsy horse welfare (From 1 = strongly disagree to 6 = strongly agree)						
	Strongly disagree	2	3	4	5	Strongly agree
Traveller/Gypsy horse owners themselves						
Government Body						
Local Authority/Council						
Horse Sector						
Animal Welfare Organisations						
Police/Gardai						
Traveller/Gypsy horse owners themselves with support from the above agencies						
Other, please state						

Please indicate your level of agreement regarding proposals to improve the health and welfare of Traveller/Gypsy horses, if necessary (From 1 = strongly disagree to 6 = strongly agree)						
	Strongly disagree	2	3	4	5	Strongly agree

Increased funding to animal welfare organisations to work with Traveller/Gypsy horse owners						
Incentives e.g., free health assessments, subsidised vaccinations						
Development of a Traveller/Gypsy specific equine welfare organisation						
Increased funding to or development of Traveller/Gypsy Horse Projects						
Educational programmes for Traveller/Gypsy horse owners on horse care and management						
Preventive Traveller/Gypsy horse health and welfare community programmes e.g., castration clinics,						
The provision of land for horses						
Referrals to existing equine welfare organisations						
Improved legislation relating to equine neglect/abuse						
Improved mechanisms for liaising with or involvement of Gypsies/ Travellers in equine matters						
Increased input from Travellers/Gypsies when devising						

horse welfare regulations and legislation						
Tougher penalties for equine neglect/abuse						
Longer prison sentences for equine neglect/abuse						

If you: 1) have any further questions or concerns about this survey or any of its questions 2) would like to be informed of the results of this study. Please contact Marie Rowland at: researchproject@SRUC.ac.uk

If you are concerned about an animal's welfare or wish to report an injured or distressed animal, please call the following organisations:

England/Wales: RSPCA 0300 1234 555

Scotland: Scottish SPCA 03000 999 999

Ireland: ISPCA 1890 515515

Thank you for taking the time to complete this survey.

Your insight and information are very valuable to us in prioritising our research.

Introductory letter

Date:

Dear

I am Marie Rowland, a PhD student at the University of Edinburgh, Scotland. I am researching Traveller and Gypsy horse welfare in the UK and Ireland. This study is significant because there is relatively little research undertaken into this subject.

Part of this study comprises investigating stakeholders' knowledge, views and perceptions of Traveller/Gypsy horse care, management and welfare. This information will be collected via the following online survey.

<https://edinburgh.onlinesurveys.ac.uk/travellergypsy-horse-welfare-2>

I would be grateful if you would forward this survey to all members of your organisation.

The research is funded by the Horse Trust, UK and has been approved by the University of Edinburgh's Human Ethics Review Board and Veterinary Ethics Review Board. Participation in this survey questionnaire is completely voluntary. Responses will remain anonymous and confidential at all times. The data will be analysed as collective data. Individual answers to the questions will be seen only by the research team. It will not be possible to trace individual answers back to participants.

Thank you for taking the time to disseminate this survey

Yours sincerely,

Marie Rowland

Supervisors: Dr Tamsin Coombs, Dr Neil Hudson, Dr Melanie Connor, Professor Cathy Dwyer

Statistically non – significant effects of gender, occupation and region of occupational practice on perceptions of Traveller/Gypsy horse owner care							
Factors	Gender	n	Mean	Std. Dev	t	df	p
Health care	Man	30	2.05	1.03	2.948	99	0.14
	Woman	71	1.55	0.63			
Management	Man	30	2.11	0.84	1.417	99	0.16
	Woman	71	1.86	0.79			
	Occupation	n	Mean	Std. Dev	F	df	p
Health care	Veterinarian	22	1.76	0.49	1.961	96(6)	0.078
	AWO	23	1.58	0.50			
	Council/Trading standards/Police	18	2.16	1.15			
	Equine services	7	1.91	1.09			
	Equine education/trainer	12	1.29	0.35			
	Voluntary welfare	8	1.62	0.40			
	Other	13	1.51	1.10			
Management	Veterinarian	22	2.07	0.56	0.90	96(6)	0.492
	AWO	23	1.90	0.64			
	Council/Trading standards/Police	18	1.95	0.90			
	Equine services	7	2.28	0.72			
	Equine education/trainer	12	1.73	0.66			
	Voluntary welfare	8	2.14	1.18			
	Other	13	1.60	1.11			
	Region						
Health care	Scotland/Northern Ireland	6	1.83	0.53	1.191	93(9)	0.31
	Wales	3	1.47	0.29			
	Leinster	9	1.68	0.60			
	Munster	13	1.79	0.79			
	Connacht	6	2.30	0.63			
	North England	15	1.80	1.16			
	Midlands	11	1.38	0.42			
	South East	26	1.46	0.41			
	South West	3	2.28	1.75			
	Nationwide	11	1.89	1.12			
Management	Scotland/Northern	6	2.08	0.34	0.761	93(9)	0.65

	Ireland						
	Wales	3	1.91	0.94			
	Leinster	9	2.02	0.51			
	Munster	13	2.03	0.98			
	Connacht	6	2.22	0.87			
	North England	15	1.80	0.99			
	Midlands	11	1.72	0.65			
	South East	26	1.73	0.57			
	South West	3	2.16	1.42			
	Nationwide	11	2.32	1.06			

Statistically non – significant effects of gender, age group and region of occupational practice on perceptions of Traveller/Gypsy horse owners							
Factors	Demographic	n	Mean	Std. Dev	t	df	p
	Gender						
Considerate owners	Man	30	2.50	0.77	-	99	0.80
	Woman	71	2.54	0.87			
Inadequate practices	Man	30	3.95	1.31	-	99	0.26
	Woman	71	4.27	1.30			
	Age Group	n	Mean	Std. Dev	F	df	p
Considerate owners	20 - 34	23	2.86	0.78	1.926	3,99	0.13
	35 - 44	30	2.54	0.90			
	45 - 55	28	2.31	0.85			
	56 +	22	2.50	0.72			
Inadequate practices	20 - 34	23	3.68	1.01	1.366	3,99	0.25
	35 - 44	30	4.36	1.31			
	45 - 55	28	4.26	1.41			
	56 +	22	4.22	1.38			
	Region						
Considerate owners	Scotland/Northern Ireland	6	3.29	0.43	1.232	9,93	0.28
	Wales	3	2.50	0.25			
	Leinster	9	2.69	0.88			
	Munster	13	2.13	0.71			
	Connacht	6	2.54	0.62			
	North England	15	2.33	1.05			
	Midlands	11	2.50	0.77			
	South East	26	2.57	0.76			
	South West	3	2.25	1.14			
	Nationwide	11	2.84	1.00			
Inadequate practices	Scotland/Northern Ireland	6	3.33	0.47	0.662	9,93	0.741
	Wales	3	3.88	1.07			
	Leinster	9	4.18	1.15			
	Munster	13	4.51	1.14			
	Connacht	6	3.77	1.24			
	North England	15	4.40	1.54			
	Midlands	11	4.48	1.29			
	South East	26	4.10	1.47			
	South West	3	3.44	2.21			
	Nationwide	11	4.09	1.08			

Statistically non – significant effects of gender, occupation and region of occupational practice on perceptions of Traveller/Gypsy horses							
Factors	Demographic	n	Mean	Std. Dev	t	df	p
	Gender						
Poor practices	Man	30	4.02	0.88	-0.764	99	0.44
	Woman	71	4.19	1.06			
Good practices	Man	30	2.60	0.89	1.047	99	0.29
	Woman	71	2.41	0.83			
	Demographic	n	Mean	Std. Dev	F	df	p
	Occupation						
Poor practices	Veterinarian	22	3.92	0.77	1.890	6,96	0.90
	AWO	23	4.07	0.86			
	Council/Trading standards/Police	18	4.25	1.09			
	Equine services	7	3.59	0.82			
	Equine education/trainer	12	4.11	1.31			
	Voluntary welfare	8	4.09	1.07			
	Other	13	4.88	0.98			
Good practices	Veterinarian	22	2.62	0.75	1.310	6,96	0.26
	AWO	23	2.26	0.73			
	Council/Trading standards/Police	18	2.66	1.09			
	Equine services	7	2.95	0.67			
	Equine education/trainer	12	2.41	0.73			
	Voluntary welfare	8	2.66	0.78			
	Other	13	2.11	1.02			
	Region						
Poor practices	Scotland/Northern Ireland	6	3.97	0.62	0.582	9,93	0.89
	Wales	3	4.12	0.47			
	Leinster	9	4.18	0.82			
	Munster	13	4.34	1.21			
	Connacht	6	3.70	0.68			
	North England	15	4.52	1.07			
	Midlands	11	4.11	1.14			
	South East	26	4.08	1.01			
	South West	3	4.07	2.09			

	Nationwide	11	3.79	0.77			
Good practices	Scotland/Northern Ireland	6	2.55	0.74	1.131	9,93	0.34
	Wales	3	2.55	1.01			
	Leinster	9	2.51	0.78			
	Munster	13	2.16	0.86			
	Connacht	6	2.86	0.95			
	North England	15	2.30	0.94			
	Midlands	11	2.18	0.91			
	South East	26	2.63	0.83			
	South West	3	3.50	0.72			
	Nationwide	11	2.5303	0.72			

Statistically non – significant effects of age group and region of occupational practice on perceptions of the prevalence of health/welfare/management issues in Traveller/Gypsy horses							
Factors	Demographic	n	Mean	Std. Dev	F	df	p
	Age Group						
Management issues	20 - 34	23	4.43	0.72	0.325	3,99	0.80
	35 - 44	30	4.61	0.97			
	45 - 55	28	4.38	1.37			
	56 +	22	4.35	1.06			
Health/welfare issues	20 - 34	23	4.14	0.87	0.878	3,99	0.43
	35 - 44	30	4.42	1.31			
	45 - 55	28	4.26	1.32			
	56 +	22	3.89	1.11			
	Region						
Management issues	Scotland/Northern Ireland	6	4.26	0.76	0.509	9,93	0.86
	Wales	3	3.63	1.89			
	Leinster	9	4.61	1.13			
	Munster	13	4.78	0.97			
	Connacht	6	4.75	0.55			
	North England	15	4.46	1.30			
	Midlands	11	4.28	1.26			
	South East	26	4.48	0.82			
	South West	3	4.20	2.30			
	Nationwide	11	4.25	0.91			
Health/welfare issues	Scotland/Northern Ireland	6	3.36	0.61	0.863	9,93	0.56
	Wales	3	3.66	1.92			
	Leinster	9	3.70	1.43			
	Munster	13	4.37	0.84			
	Connacht	6	3.88	0.97			
	North England	15	4.44	1.35			
	Midlands	11	4.40	1.07			
	South East	26	4.30	1.09			
	South West	3	3.94	2.33			
	Nationwide	11	4.50	1.24			

Appendices C (Chapter 4)

Appendix C1	Interview questions
Appendix C2	Interview questions (fairs, clinics)
Appendix C3	Information sheet
Appendix C4	Consent form

Interview Questions

Traveller/Gypsy Status: English Gypsy; Welsh Traveller; Scottish Traveller; Irish Traveller; Roma, New (Age) Traveller; Show People; Other

Age: 18 – 25, 26 -35, 36 – 45, 46 – 55, 55+

Region where you live: Scotland, Ireland, Wales, Northern Ireland.

England: South East; South West; North East; North West; Midlands

County: _____

Introduction

Do you follow a nomadic way of life?

What is your preferred time of year to travel?

I'd like to know more about your horses, how many horses do you have?

What do you mainly do with your horses?

How long have you had them?

What breed/s of horses do you have?

Did you breed them yourself?

Health

Healthy Horse: Can you describe a healthy horse to me?

Health Problems:

Can you describe what health problems are common in horses?

How would you tell if a horse is sick/unwell?

What do you do when you realise that one of your horses is sick/not well?

When would you consider it important to call/go to the vet?

Vaccinations:

What vaccinations do you consider important for a horse's health?

Do you think a horse should have regular tetanus vaccinations?

Do you vaccinate your own horses against?

Tetanus? How often?

Flu? How often?

Strangles? How often?

Herpes? How often?

Worming:

Why do horse owners worm their horses?

With your own horse(s), do you test and treat them for worms and how often?

Oral Health:

Do you use a vet or dental technician to attend to your horse's teeth?

How often would you get your horses teeth checked?

Horse Management

Are there any traditional methods that Travellers/Gypsies use in the health care of their horses? If so, what are they?

Do you get any other people to look at or treat your horse? (e.g., equine physiotherapist, podiatrist; chiropractors).

Do you think it is important to avoid having horses in fields with ragwort? Why/why not?

How do you manage ragwort?

How do you manage manure?

Do you put rugs on your horses?

If so, when & for what reason? If not, why not?

Farriery:

How do you care for your horse(s) hooves?

How often do you use a farrier to tend to your horse's hooves?

What do you get done?

Do you believe that all horses should be shod? If yes/why? If not, why?

I would now like to move on to hoof condition, in your opinion what are the main problems that affect a horse's hooves?

What do you think causes these problems?

What is the best way to manage some of these hoof problems?

Nutrition:

I will talk about a horse's diet now, what and how do you feed your horses when stabled/part stabled/free-range?

What sort of roughage do you add to horse's diet when stabled/part stabled/free-range?

What is your view on horses having access to pasture 24/7?

Is your horse's diet different in the summer than in the winter? If so, why?

In your opinion, approximately how much fresh water does a horse need in a day?

Shelter

Talking about shelter, what kind of shelter do you have for your own horses?

When do you think that horses should be stabled?

Exercise:

Moving on to exercise, what sort of exercise do you use with your horse/horses?

How important is regular exercise for a horse?

Training Methods:

I would like you to think about training methods, how do you train your horse/s?

At what age do you consider it suitable to begin training a horse?

Why this age?

Social Interactions:

In your opinion, how do horses prefer to live?

Do you think that horses develop bonds with other horses?

What about bonds with their owners?

Do you interact with your horse(s) each day?

Breeding:

Tell me about your own experiences of breeding horses?

Why do you think Travellers/Gypsies breed horses?

Do you think horses are too cheap these days?

What are the consequences of low prices for the horses?

Behaviour

What sort of behavioural problems have you seen and experienced?

If your horse has a behavioural problem, how do you deal with it?

Sentience:

Can you describe different feelings a horse can experience (e.g., pain, happiness)

Welfare

Could you please describe in your own words, what horse welfare is?

Who do you believe is responsible for a horse's welfare?

What do you think that people should do if they can't keep or don't need their horse(s) anymore?

The Control of Horses Act (England, 2015), (Wales, 2014), (Ireland 1996), England (Scotland/ Wales)

Are you aware of this act?

What is your opinion of it?

Why do horse owners' fly-graze their horses?

What is your view on tethering?

What impact do you think this law might have on the Traveller/Gypsy culture of horse ownership?

Do you think it is necessary to microchip and passport horses?

Tell me about your experiences of having to get passports or microchips for your horses?

Land Availability

How easy is it for you to rent land to graze your horses?

In your opinion, is this the case for most Travellers/Gypsies?

Have you or do you graze your horses on common ground or on private land?

What were/are your experiences of this?

Do you think a particular Council department could take (more) responsibility for

supporting Travellers/Gypsies with their horses?

Do you think it is a good idea to have a specific T/G Equine Welfare Organisation?

Difficulties Encountered

What are some of the difficulties you face as a horse owner?

What are your thoughts on how things could be improved for Traveller/Gypsy horse owners?

What do you think of setting up a separate organisation for Traveller/Gypsy horse welfare?

Horse Project (if participant is a member of a horse project)

What is your involvement in this Horse Project?

How did you find out about this project?

What do you think makes the project work well or not?

How has the project changed the way you care for your horses?

How would other horse owners benefit from this type of project?

What other types of projects could be set up to build on this one?

Conclusion

Are there any particular areas of the horse that you use to identify good health and welfare that were not included in the assessment we just did on your horse?

Is there anything else that you would like to say that you feel is important?

Thank you for your participation

Interview Questions (Horse Fairs/Clinics)

Traveller/Gypsy Status: English Gypsy; Welsh Traveller; Scottish Traveller; Irish Traveller; Roma, New (Age) Traveller; Show People; Other

Age: 18 – 25, 26 -35, 36 – 45, 46 – 55, 55+

Region where you live: Scotland, Ireland, Wales, Northern Ireland.

England: *South East; South West; North East; North West; Midlands*

County: _____

Introduction

How many horses do you have?

What do you mainly do with your horses?

What breed/s of horses do you have?

Did you breed them yourself?

Health

Healthy Horse: Can you describe a healthy horse to me?

Health Problems:

Can you describe what health problems are common in horses?

How would you tell if a horse is sick/unwell?

What do you do when you realise that one of your horses is sick/not well?

Vaccinations:

Do you vaccinate your own horses against:

Tetanus? How often?

Flu? How often?

Strangles? How often?

Herpes? How often?

Worming:

With your own horse(s), do you test and treat them for worms? How often?

Do you know about the Faecal Egg Count?

Do you/would you use it?

Oral Health:

Do you use a vet or dental technician to attend to your horse's teeth?

What do you get done?

How often would you get your horses teeth checked?

Horse Management

Do you get any other people to look at or treat your horse? (e.g.: equine physiotherapist, podiatrist; chiropractors).

How do you manage ragwort/ragweed?

How do you manage manure?

Do you put rugs on your horses?

Farriery:

How often do you use a farrier to tend to your horse's hooves?

What do you get done?

Do you believe that all horses should be shod?

What are the main problems that affect a horse's hooves?

What do you think causes these problems?

What is the best way to manage some of these hoof problems?

Nutrition:

What and how do you feed your horses?

How much pasture access do you think a horse should have in a day? Approximately how much fresh water does a horse need in a day?

Shelter:

What kind of shelter do you have for your own horses?

When do you think that horses should be stabled?

Exercise:

What sort of exercise do you use with your horse/horses?

Training Methods:

How do you train your horse/s?

At what age do you consider it suitable to begin training a horse? Why this age?

Social Interactions:

How do horses prefer to live?

Do you think that horses develop bonds with other horses?

What about bonds with their owners?

Breeding:

Why do you think Travellers/Gypsies breed horses?

Behaviour

What sort of behavioural problems have you seen and experienced?

If your horse has a behavioural problem, how do you deal with it?

Sentience:

Can you describe different feelings a horse can experience?

Welfare

In your own words, what does horse welfare mean?

Who do you believe is responsible for a horse's welfare?

The Control of Horses Act (England, 2015), (Wales, 2014), (Ireland 1996)

What is your opinion of it?

Why do horse owners' fly-graze their horses?

What is your view on tethering?

Do you think it is necessary to microchip and passport horses?

Land Availability

How easy is it for you to rent land to graze your horses?

Have you or do you graze your horses on common ground or on private land?

What were/are your experiences of this?

Difficulties Encountered

What are some of the difficulties you face as a horse owner?

Do you think a particular Council department could take (more) responsibility for supporting Travellers/Gypsies with their horses?

What do you think of setting up a separate organisation for Traveller/Gypsy horse welfare?

Horse Fairs/Clinics

Why do you think horse fairs/clinics are popular?

Have you seen any problems with horses here today?

What about good practices, have you seen any here today?

What facilities are at these fairs/clinics to ensure that horses are well looked after?

If you are buying horses at a fair, how do you make your decisions?

How do you check on their previous health conditions, vaccinations etc.?

Conclusion

Are there any particular areas of the horse that you use to identify good horse health and welfare that were not included in the assessment we just did on your horse?

Is there anything else that you would like to say that you feel is important?

Thank you for your participation

Interview Information Sheet

Project Title: Horse welfare practices, knowledge and beliefs in the Traveller/ Gypsy community.

Invitation

You are being asked to take part in a research study on Traveller/Gypsy horse culture. I am a PhD student at Edinburgh University, supervised by a team at the University. The project has been approved by University of Edinburgh's Human Ethics Review Committee.

What will happen

In this study, your horse will be assessed using a number of health/welfare measures such as body, coat and hoof condition. The assessments will be recorded, and notes will be taken. An assistant may/may not be present.

Time commitment

The study typically takes 15 - 20 minutes.

Participants' rights

You may decide to stop being a part of the research study at any time without explanation. You have the right to ask that any data you have supplied to that point be withdrawn.

You have the right to omit or refuse to answer or respond to any question that is asked of you.

You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study's outcome). If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins.

Benefits and risks

There are no known risks for you in this study.

Benefits of study: The benefits of taking part in this study is that Traveller/Gypsy horse owners will have the health and welfare of their horses included in scientific research for the first time.

Cost, reimbursement and compensation

Your participation in this study is voluntary.

Confidentiality/anonymity

The data we collect do not contain any personal information about you. No one will link the data you provided to the identifying information you supplied (e.g., name, location). The researcher may present at conferences and/or publish documents that contain data and quotations by you, but you will not be identified in any way. All information from your interview will be stored safely.

For further information

Marie Rowland will be glad to answer your questions about this study at any time. You may contact her at:

The University of Edinburgh, Easter Bush Campus, Midlothian, EH25 9RG

Phone: 075 222931216

Email: research@sruc.ac.uk

If you want to find out about the final results of this study, you should contact as above.

Interview Consent Form

Participant ID:

Please tick box

1. I confirm that I have read (or had it read to me) and understand the information sheet dated [] for the above study. ☐
2. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
3. I understand that participation is voluntary and that I am free to withdraw at any time during the interview, without giving any reason and without any consequences. ☐
4. I understand that the information recorded in the investigation will be made available to other researchers to use but only in such a way as I will not be identifiable. ☐
5. I understand that the horse health and welfare assessments will be recorded. ☐
6. I understand and agree that the data collected will be used for a research thesis and will be published in scientific literature and presented at scientific conferences. ☐
7. I agree to a summary of the data collected being provided to my University (University of Edinburgh) and I understand that I will not be identifiable from this data. ☐
8. We will protect your anonymity as far as possible however if we find evidence of severe neglect or harm being done to an animal, we may be obliged to report this. ☐

I agree to take part in the above study. ☐

_____	_____	_____
Name of Participant	Date	Signature

_____	_____	_____
Name of person taking consent	Date	Signature

Appendices D (Chapter 5)

Appendix D1 Animal, resource and management-based indicators

Appendix D2 Information Sheet

Appendix D3 Consent form

Appendix D4 Reporting protocol in the case of disclosure of animal
abuse/mistreatment/neglect

Animal, resource and management-based indicators

Equine welfare assessment indicators applied to Freedom from hunger and thirst/Opportunity for selection of dietary inputs.			
Welfare Criteria	Resource/management - based measures	Application/ limitations	Sources
Absence of prolonged hunger	Presence/absence of suitable food	Assessed by inspecting location or by owner questionnaire. May be compromised by recall bias; perceived required reporting and questions open to different interpretations	Popescu and Duigan, 2013
	Animal-based measures		
	Weight estimation tape	Records weight directly. Tape passed around horse at lowest point of withers. Various tapes available with varying effectiveness. Not found to be valid.	Ellis and Hollands, 1998, 2002
	Weight estimation formula	Assessed by using formula: weight (kg) = (heart girth ² x	Carrol and Huntington, 1988 Ellis and Hollands, 1998

		body length) / (11,880 cm ³). Only provides an estimate of weight.	Burden, 2012
	Body Condition Score – numerical scale used to measure adiposity in key body regions through visual appraisal and palpable assessment	Various BCS systems exist, the most common using 1-5- or 1-9-point rating scales. Scales are simple and easy to learn. Found to be very subjective as ratings can differ between scorers using the same scale.	Henneke et al., (1983) Carroll & Huntington, 1988 Dugdale et al., 2009 Mottet et al., 2009 Wyse et al., 2008
	Cresty Neck Score Tests the scale of cresty neck presence	Based on a scale of 0-5, 0 equals no visual appearance of a crest, 5 equals a large and permanently drooping crest to one side. Subjective, requires training and practice.	Carter et al., 2009
	Visual assessment	Visual appraisal of animal. Highly subjective.	Ellis and Hollands, 1998 Burkholder, 2000
	Resting Behaviour	Observation of resting	Ninomiya and Kusunose, 2004

		behaviour post eating, Not tested for validity.	Ninomiya et al., 2007
Absence of prolonged thirst	Dehydration test (skin tent turgor/`pinch` test) Tests delay in the return of pinched skin fold to normal.	Test applied to neck, shoulder or eyelid. Delay indicates animal may be dehydrated. Reliability and validity limited.	Pritchard et al., 2005, 2006, 2007, 2008. Burn et al., 2009
	Drinking test	Water-filled bucket (familiar) offered to animal & behaviour observed for 10 mins. Confounding factors may occur when testing in different environments/ motivation factors are present. Results need to be considered with care.	Pritchard et al., 2006, 2008
	Mucous membrane dryness	Assessed by placing a fast filter paper on the gingival mucosa for 10 sec. Scored: 0 – 5 scale. Not considered a valid measure, inter-observer reliability low.	Pritchard et al 2005, 2008 Burn et al 2009 Mekuria and Abebe, 2010

Equine welfare assessment indicators applied to Freedom from discomfort/Opportunity for control of the environment			
Welfare Criteria	Resource/management - based measures	Application/ limitations	Sources
Comfort around resting	Amount of lying space and bedding quality.	Assessment of box size & bedding quality. Not tested for validity, reliability and repeatability.	Costa et al., 2014
	Animal-based measures		
	Lying behaviour.	Observing/ measuring time budgets for lying behaviour/ owner questionnaire Time consuming and not tested for validity, reliability or repeatability. Lacks objectivity.	Pedersen and Ladewig, 2004 Chaplin and Gretgrix, 2010
	Absence of current hock injuries. Problem getting up.	Visual assessment of animal for hock injuries Relatively new indicator.	Costa et al., 2014
Thermal Comfort	Heat Stress. Signs of profuse sweating,	Four or more of these behaviours present.	Pritchard et al., 2005, 2006, Burn et al., 2009

	apathy, head nodding, flared nostrils, increased respiration and high rectal temperature.	Lacks standardised definitions therefore limited feasibility.	Holcomb et al., 2013
	Cold Stress. Shivering, looking for shelter & huddling.	Observation of behavioural signs. Inter-observer reliability not evaluated.	Heleski and Murtazashvili, 2010
Ease of movement	Locomotor stereotypies	Observations of stereotypies e.g., box walking/ kicking, weaving, pacing. Not tested for validity.	McGreevy et al., 1995 Heleski et al., 2002 Bachmann et al., 2003 Ninimiya et al., 2007
	Resource/management - based measures		
	Daily exercise.	Assessed by owner questionnaire. May be compromised by recall bias; perceived desirable reporting and questions open to different interpretations.	Chaplin and Gretgrix., 2010
	Space to move around easily.	Assessment of housing type, paddock size and access to	Raabymagle and Ladewig, 2006

		pasture. Not tested for validity, reliability and repeatability.	

Equine welfare assessment indicators applied to Freedom from pain, injury and disease/Opportunity for pleasure, development & vitality			
Welfare Criteria	Animal-based measures	Application/ limitations	Sources
Absence of disease	Coat health.	Inspection and recording of signs of hair change. Low inter-observer reliability	Pritchard et al., 2005 Burn et al., 2009, 2010 Mekuria & Abebe, 2010
	Cough Evaluated at rest (5 mins)	Recorded by presence/absence, severity scale, digital monitor. Subjective. Not tested in horses at pasture.	Leeb et al., 2003 Duz et al., 2010 Kutasi et al., 2011
	Abnormal breathing/dyspnoea	Visually evaluate whether expiration is supported by the muscles of the trunk and if the nostrils are dilated. Not significantly tested.	Leeb et al., 2003 Couëtil & Hoffman, 2007 Kutasi et al., 2011

	Ocular discharge Watery/thick. yellow/green, transparent or bloody discharge	Visually assessed and recorded by presence/absence or on 3- point scale (mild to ocular pain). Low inter-observer reliability.	Pritchard et al., 2005 Burn et al., 2010
	Nasal discharge Watery/thick, yellow/green, transparent or bloody discharge	Visually assess nose/nostrils and recorded on presence/absence basis.	Leeb et al., 2003 Kutasi et al., 2011
	Ectoparasites Ticks, lice	Visual assessment and recorded on presence/absence basis or a 3-point scale. Low reliability.	Leeb et al., 2003 Pritchard et al., 2005 Burn et al., 2009, 2010
	Faecal soiling. Indicator of diarrhoea.	Visual assessment of thighs and on back of hocks. Recorded on presence/absence of fresh/dried on liquid faeces. Not tested for validity.	Leeb et al., 2003 Pritchard et al., 2005 Burn et al., 2009, 2010 Mekuria and Abebe, 2010
Absence of injuries	Lameness Lame when walking/ absence of weight-bearing when standing	Assessed by visual examination. Recorded on a presence/absence, numerical /continuous visual analogue	Vin˘uela-Fernández et al., 2011, Ashley et al., 2005

		scales to measure scale of lameness. Inter-observer reliability difficult to attain. Requires training and experience	
	Swollen joints/tendons	Examine visually flexor tendons/fetlock joints. Not tested for validity.	Pritchard et al., 2005 Burn et al., 2009, 2010
	Skin damage in form of lesions, scars and wounds	Visually assess presence/absence or on 3- point scale Wound > 2x 2 cm, 1 x 4 rectangle or 2.3 cm diameter. Low reliability.	Pritchard et al., 2005 Burn et al., 2009 Vervaecke et al., 2011
	Hairless patches	Visual inspection and recording of number of areas of hair loss without damaged skin. Not tested for validity.	Burn et al., 2009 Mekuria and Abebe, 2010 Vervaecke et al., 2011
	Sensitive Back	Evaluated by palpation of sides of spine for tension and/or back muscle sensitivity. Scored on 3- or 4 -point scale.	Neijenhuis et al., 2011 Asknes and Mejdell, 2012

		Not tested for validity.	
	Horse Grimace Scale Evaluates pain related changes in horse facial expressions.	Assessment of facial expression changes present in six Facial Action Units. Scored not/moderately/obviously present. Changes may be subtle.	Minero et al., 2013 Dalla Costa et al., 2014
Absence of pain in relation to management procedures	Pain-related behaviours	Observation of pain related behaviours e.g., weight shifting, fixed stare, clenched jaw and hesitancy to move. Behaviours may be subtle in that mild pain situations are not obvious to the assessor.	Taylor et al., 2002 Ashley et al., 2005 Dalla Costa et al., 2010
	Composite measures pain score	Assessment of pain related behaviours, changes in normal behaviour patterns and physiological parameters. Scored on scales. On farm feasibility not tested.	Bussi�res et al., 2008 van Loon et al., 2010 Graubner et al., 2011

Equine welfare assessment indicators applied to Freedoms to express normal behaviour/Opportunity to express normal behaviour			
Welfare Criteria	Resource/management - based measures	Application/ limitations	Sources
Expression of Social behaviours	Opportunity for social contact	Measurement of time spent with conspecific/s Time consuming and subjective.	Flannigan and Stooky, 2002 Pritchett et al., 2003
	Animal-based measures		
	Allogrooming	Visually assessed. Not tested for validity.	Feh and de Mazieres, 1993 McDonnell, 2002
	Isolation Test	Animal isolated for 5 mins & reaction recorded (flight, actions, vigilance). Inter-observer reliability not tested.	Lansade et al., 2008
	Attraction test	Assessment of reaction to a social attraction by separating test horse from familiar horses with opportunity to re-join. Not valid.	Lansade et al., 2008

	Vocalisations. Increase when separated from conspecifics	Number of vocalisations recorded in 10 min bout. Not tested for validity	Harewood and McGowan, 2005 Lansade et al., 2008
	Aggressive behaviours resulting in injuries	Observation of biting, kicking and related injuries. Not tested for validity	McDonnell, 2002 Knubben et al., 2008
	Stereotypies crib-biting; wood chewing, weaving, wind sucking, box-walking, tongue playing	Observed directly/ indirectly, where evidence is visible in the stable and/or on horse (e.g., anti-air swallowing device). Presence of stereotypies has never been verified by farmers.	Dierendonck and Goodwin, 2005 Wickens & Heleski, 2010 Sarrafchi & Blokhuis, 2013
Expression of other behaviours	Novel object test	Assessed by presenting novel object and recording of latency time to approach object. Lacks evaluation of inter-observer reliability.	Visser et al., 2002 Christensen et al., 2008 Górecka-Bruzda et al., 2011 Leiner and Fendt, 2011
	Novel arena	Assessed by presenting novel arena and recording of frequency of various behaviours.	Le Scolan et al 1997 Wolff et al., 1997 Seaman et al., 2002 Lansade et al., 2008

		Time consuming	
	Startling test	Evaluation of fear responses to startle test (e.g., opening an umbrella) Inter-observer reliability not evaluated	Visser et al., 2001 Christensen et al., 2008 Lansade et al., 2008 Górecka-Bruzda et al., 2011
	Restraint and human fear test	Assessed by unfamiliar person approaching animal and attempting to touch neck of animal. Recording of reaction using 4-point scale. Validity not assessed	Visser et al., 2001 Górecka-Bruzda et al 2011

Equine welfare assessment indicators applied to Freedom from fear and distress/Opportunity for interest/confidence			
Welfare Criteria	Animal-based measures	Application/ limitations	Sources
Good human-animal relationships	Approach test	Researcher walks in direction of the horse's head/shoulder. Scores of reactivity recorded on a predefined scale. Requires standardisation.	Pritchard et al 2005 Burn et al., 2010 Popescu and Diugan, 2013
	Chin contact	Assessor approaches animal at an angle and attempts to touch chin, Recorded on descriptor scale or binary response. Subjective.	Pritchard et al., 2005 Burn et al., 2010 Popescu and Diugan, 2013
	Walking down -side	Assessor (unfamiliar) walks from head to rear and returns along opposite side. Records signs of interest. Moderate Inter-observer reliability.	Pritchard et al., 2005 Burn et al., 2010 Popescu and Diugan, 2013
	Voluntary animal approach	Assessor (unfamiliar) enters paddock, stands still and waits for the horse to approach. Latency/frequency of interactions recorded.	Søndergaard and Halekoh, 2003 Maros et al., 2010 Dalla Costa et al., 2012

	Forced human approach	Assessor (unfamiliar) slowly approaches horse. Attempts to touch neck when within 2 metre range. Reaction recorded using 4 - point scale. Not tested for validity.	Søndergaard and Halekoh, 2003 Dalla Costa et al 2012

Positive emotional state			
Welfare Criteria	Resource/management-based measures	Application / limitations	Sources
Natural behaviour/ environment	Visual Horizon	Assessed by measuring the quality of visual horizon of horse. Recorded as full/ part/ no possibility to broaden its visual horizon	Cooper et al, 2000
	Animal-based measures		
	Rugging. Preference for rugging/non-rugging.	Assessed by observations/ ethogram based on pre-defined social play characteristics. Requires time/expertise/ care when	Spinka et al., 2001 Waring, 2003 Boissy et al., 2007

		interpreting.	
	Social Play	Assessed by observations/ ethogram based on pre-defined social play characteristics. Requires time/expertise/care when interpreting.	Bekoff and Allen, 1998 Spinka et al., 2001 Waring, 2003 Boissy et al., 2007
	Grooming behaviours.	Assessed by time-budgets /ethogram of pre-defined characteristics e.g., rolling, shaking, self-nibbling, tail swishing, rubbing, scratching, intermittent stomping.	Waring, 1983 Boyd, 1988
	Foraging opportunity	Assessed by measurement of time budgets and social behaviour observations. Relatively recent study.	Benhajali et al., 2009
	Qualitative behavioural Assessment	Observations of a fixed list of expressive/emotional behaviours and recorded as a score on a VAS. Requires training, subjective.	Wemelsfelder et al., 2000

Information Sheet

Project Title: Horse health and welfare in the Traveller/ Gypsy community.

Invitation

You are being asked to take part in a research study on Traveller/Gypsy horse welfare. I am a PhD student at Edinburgh University, supervised by a team at the University. The project has been approved by University of Edinburgh's Human Ethics Review Committee.

What will happen

In this study, a health and welfare assessment will be done on your horse. This will include looking at their body and hoof condition, their coat condition and how friendly they are. Your horse will not be touched. The results of the assessment will be recorded, and notes will be taken. An assistant may/may not be present.

Time commitment

The assessment will take about 10 – 15 minutes.

Participants' rights

You may decide to stop being a part of the research study at any time without explanation. You have the right to ask that any data you have supplied to that point be withdrawn.

You have the right to omit or refuse to answer or respond to any question that is asked of you.

You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study's outcome). If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins.

Benefits and risks

There are no known risks for you in this study.

Benefits of study: The benefits of taking part in this study is that Traveller/Gypsy horse health and welfare will be recorded and included in scientific research for the first time.

Cost, reimbursement and compensation

Your participation in this study is voluntary.

Confidentiality/anonymity

The data we collect do not contain any personal information about you. No one will link the data you provided to the identifying information you supplied (e.g., name, address). The researcher may present at conferences and/or publish documents that contain data and quotations by you, but you will not be identified in any way. All information from your interview will be stored safely.

For further information

Marie Rowland will be glad to answer your questions about this study at any time. You may contact her at:

The University of Edinburgh, Easter Bush Campus, Midlothian, EH25 9RG

Phone: 075 222931216

Email: research@sruc.ac.uk

If you want to find out about the final results of this study, you should contact as above.

Consent Form

Participant ID:

1. I understand that participation is voluntary and that I am free to withdraw at any time during the interview, without giving any reason and without any consequences. ☐
2. I understand that the information recorded in the investigation will be made publically available to other researchers to use but with any information that could identify me removed and any information recorded in the investigation will remain confidential. ☐
3. I understand and agree that the data collected will be used for a research thesis and will be published in scientific literature and presented at scientific conferences. ☐
4. I agree to a summary of the data collected being provided to my University (University of Edinburgh) and I understand that I will not be identifiable from this data. ☐
5. We will protect your anonymity as far as possible however if we find evidence of severe neglect or harm being done to an animal, we may be obliged to report this. ☐
6. I agree to take part in the above study. ☐

Name of Participant	Date	Signature
Name of person taking consent	Date	Signature

I agree that the information you have supplied to me during the assessment of your horse will form part of this research and are subject the same terms as above. ☐

Reporting protocol in the case of disclosure of animal abuse/mistreatment/neglect

This protocol sets out the measures to be taken when/if the researcher and/or wider research team witnesses the mistreatment of animals and/ or a disclosure is made of animal neglect and/or abuse.

1. In the first instance, report and discuss with the research supervisor/s.
2. If possible, raise concerns with the accompanying welfare charity or organisation stating the nature of complaint, incident location, dates and approximate times whenever possible and number and type of animal involved.
3. If you are still concerned that an animal may be in distress/neglected, contact the veterinarian working with the horse owner/s stating the nature of complaint, incident location, dates and approximate times and number and type of animal involved. If the horse is not under the direct care of a veterinarian, proceed to step 4.
4. If the animal is not under the direct care of a veterinarian or/and is in a life-threatening situation or, report to an Animal Welfare Inspector of an appropriate agency stating the nature of complaint, incident location, dates and approximate times and number and type of animal involved

N.B: A record of all reports made must be logged and kept on file.

Appendices E (Chapter 6)

Appendix E1 Intervention Workshop Plan

Intervention Workshop Plan

The Big Picture	Participants	Logistics	Preparation	Post Session
Horses are central to many Traveller/Gypsy horse owners' lives. Horse care approaches are handed down through generations and there is some indication that vets play a limited role. Meanwhile vet services have evolved to respond to the needs of the majority population and may not be used by Traveller/Gypsy horse owners for cultural reasons. This session aims to generate data for analysis to begin understanding the relational issues, if any, between vets and Traveller/Gypsy horse owners	Vet students x 2 Traveller/Gypsy horse owners x 2 Field officers x 2 (recruitment and support) Researchers x 2 (recruitment, technical support, programme planning & facilitation)	Pre session selection of participants Pre event information and consent session with G/T Horse owners Pre event information and consent session with veterinary students Pre event semi-structured interviews with G/T horse owners Pre event questionnaire with veterinary students Pre event liaison with micro- analysis expert Field officers to support participants with technology etc.	HERC Submission Meeting with Field Officers Pre-event semi structured interview training with welfare officers (if required) Feedback from G/T on session plan during information session Amend ADIDS plan Pre event Tech Check with participants (if required) Develop ground rules for group intervention	Store recording on RW & SRUC server in accordance with DPIA Provide feedback to participants on lessons and plans for research Analysis