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Horse Use and Care in Therapeutic Horseback Riding Programs

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HORSE USE AND CARE IN THERAPEUTIC HORSEBACK RIDING PROGRAMS

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Abstract

The Professional Association of Therapeutic Horsemanship International (PATH Intl.) is an organization that offers therapeutic horseback riding (THR) and other equine-assisted activities and therapies in the United States. Research on how horses are used and cared for in PATH Intl.-affiliated THR programs is limited. Therefore, the objective of this study was to gather data regarding horse use and care to form a baseline. A survey developed via SurveyMonkey® and distributed through Google Mail Merge to 659 PATH Intl.-affiliated programs in September 2017. A total of 270 responses were received; 264 were eligible for data analysis. Descriptive statistics were used to analyze the data. Mean session length was 8.30 ± 2.55 weeks (n = 111) while mean lesson length was 47.04 ± 13.68 minutes (n = 142); horses spent the majority of lessons at the walk. Most programs tracked horse use daily through written/electronic methods, over half of horses were donated, and the majority of horses were barefoot. Horses remained in THR programs for an average of 7.08 ± 3.02 years (n = 216) and most commonly left due to aging. Mean number of horses in programs was 11.44 ± 6.57 horses (n = 241). Most horses were geldings, aged 16 to 20 years, and of a stock-type breed (Quarter Horse, Appaloosa, Tennessee Walking Horse). Programs varied widely in client riding ability and types of disabilities served. Most common horse lameness issues were limb lameness, back soreness, and hoof issues. Most prevalent types of supplemental care were chiropractic adjustment and massage.

Keywords: horse use, horse care, therapeutic horseback riding

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Chapter 1

Introduction

Horse Use, Therapeutic Riding, and Horse Health

Historically, horses were used as meat, riding, and driving animals. Contemporary uses include rodeo, racing, recreation, and human therapy. Therapeutic horseback riding (THR) gained popularity after Scandinavian polio outbreaks in 1946 (Sterba et al., 2002). Formed in 1969, North American Riding for the Handicapped Association (NARHA) sought to promote equine-assisted activities and therapies (EAAT) and maintain the most ethical, safe, and effective EAAT programs in the United States (PATH Intl., 2018a). In 2011, NARHA became Professional Association of Therapeutic Horsemanship International (PATH Intl.) to better represent their international activities (PATH Intl., 2018b). This organization has more than 800 certified and accredited member centers that serve over 66,000 individuals. Activities like THR, hippotherapy, driving, interactive vaulting, and groundwork are offered (PATH Intl., 2018a).

Therapeutic horseback riding appears to improve the quality of life of individuals with autism spectrum disorder (ASD) and cerebral palsy (CP). However, the majority of evidence supporting THR is anecdotal rather than empirical (Sterba et al., 2002; Davis et al., 2009). Regardless of the perceived or measurable impact of THR, the safety of and benefit to human clients has taken precedence over the welfare and safety of therapy

animals (Evans and Gray, 2012). Use as a therapy animal may be stressful as therapeutic conditions frequently place animals in unpleasant situations that cannot be avoided or escaped (Hatch, 2007). To protect therapy horses, PATH Intl. recommends certain standards for equine welfare and management. Standards include guidelines for implementing an appropriate training and conditioning program; observing physical soundness and behavior of horses before the therapy session; maintaining thorough health records; limiting horse workloads; and recommending a maximum workweek. These standards were formed to maintain a minimum level of quality and equine care in therapeutic facilities (PATH Intl., 2018d).

The United States Department of Agriculture (USDA) conducts periodic equine surveys. The most current report on equine management and health conditions noted that 7.1% of all equines surveyed had an existing lameness problem while 16.2% had experienced a lameness problem in the last year. Main causes of lameness in the report were hoof abscesses, limb lameness, and back soreness (NAHMS, 2017b).

Therapeutic horseback riding participants are generally affected with a disorder that causes poor balance and muscle stiffness. These riders may not move with the horse or lean heavily to one side, potentially leading to back soreness and other lameness issues (Lagarde et al., 2005). Age, current use, and amount of work contribute heavily to the risk of limb lameness and back soreness; older horses used for lessons and ridden by a variety of riders are also at a greater risk for lameness (Visser et al., 2014).

Research Questions

The following questions guided the formation of survey questions and data analysis:

1. In the United States, how often are horses used in PATH Intl.-affiliated THR programs as reported by the programs?
2. Are there any continually reported horse health issues that can be attributed to use as a therapeutic riding animal as reported by the THR programs?
3. When not being used, what type(s) of care do horses receive as reported by the THR programs?

Purpose of the Study

The purpose of this study was to gather information on how horses are used and cared for in PATH Intl.-affiliated therapeutic horseback riding operations in the United States in order to form a baseline of use and care.

Significance

The results of this study provided information for how horses are used and cared for in PATH Intl.-affiliated THR programs across the United States. This study also provided information on horse health issues like limb lameness, body lameness, gastrointestinal issues, and hoof problems. Those in the THR industry would then be able to use the data, paired with other published documents, to defend their practices should this industry come under the social and media scrutiny experienced by other agricultural industries.

Chapter 2

Literature Review

General Horse Use

Historically, horses were used as meat, riding, and driving animals. Archeological evidence beginning one million years ago shows that horse meat was almost always an important component of the human diet (Levine, 1999). Botai, an important early human site dating to 3500 BC, shows thousands of equine bones interspersed with human artifacts. It is theorized that some horse teeth at Botai show bit wear (wear spots on teeth from a bit). If this theory is correct, the Botai site could contain some of the earliest evidence of riding and driving (Levine, 1999).

Contemporary uses include a variety of activities such as rodeo, racing, recreation, and human therapy. About 40% of Professional Rodeo Cowboys Association competing bucking horses were considered too dangerous for other disciplines, but are perfect for bucking and sold to rodeo stock contractors (Schonholtz, 2000). Several breeds, most commonly Thoroughbreds, Standardbreds, and Quarter Horses, are used for racing (Mundy, 2000). In 2015, only 1.6% of equine operations used horses for racing while nearly half (47.2%) used horses for recreation and pleasure (NAHMS, 2017a). Researchers began studying the therapeutic usefulness of horseback riding in the 1800s, but therapeutic riding did not become widespread until the mid-1900s (Bieber, 1983; Meregillano, 2004).

Equine-assisted Activities and Therapies

Horseback riding as a form of therapy gained popularity after serious paralytic poliomyelitis outbreaks in Scandinavia in 1946. The outbreaks led to the founding of the first therapeutic horseback riding (THR) centers in Denmark and Norway. From 1953 onward, the International Polio Fellowship in England promoted THR, leading to the development of the first North American program in Canada in 1965 (Baine, 1965). Formed in 1969, North American Riding for the Handicapped Association (NARHA) sought to promote equine-assisted activities and therapies (EAAT); to credential and improve therapeutic institutions; and to maintain the most ethical, safe, and effective EAAT programs in the United States (PATH Intl., 2018a,c). As individuals around the globe began reaching out to NARHA for information on EAAT to develop their industries, board members decided a name change was in order (PATH Intl., 2018b). In 2011, NARHA became Professional Association of Therapeutic Horsemanship International (PATH Intl.). Currently, PATH Intl. has more than 800 certified and accredited member centers that serve over 66,000 individuals (PATH Intl., 2018a).

Equine-assisted activities and therapies is a broad term that encompasses THR, hippotherapy, driving, interactive vaulting, groundwork, equine-assisted mental health, and stable management; the most prevalent are THR and hippotherapy (PATH Intl., 2018a). Therapeutic horseback riding is conducted by non-licensed professionals who teach specific riding skills to those with a variety of disabilities. On the other hand, hippotherapy is conducted by therapists who use the horse's movement to incorporate activities that improve the functional abilities of disabled individuals (Rigby and Grandjean, 2016).

Therapeutic Horseback Riding

Therapeutic horseback riding appears to improve the quality of life of individuals with autism spectrum disorder (ASD), cerebral palsy (CP), and other disorders (Rigby and Grandjean, 2016). Animal-assisted activities and therapies are theorized to provide a multi-sensory environment that would be beneficial to individuals with disabilities (Bass et al., 2009). However, the majority of evidence supporting the benefits of THR is qualitative and anecdotal rather than empirical (Sterba et al., 2002; Davis et al., 2009; Gabriels et al., 2012). Qualitative and anecdotal evidence includes reports from parents and instructors like 'His self-esteem and self-confidence grew' and 'He seems more happy and relaxed', while empirical evidence involves changes in Gross Motor Function Measure (method to evaluate changes in gross motor function) scores and other objective measures (Russell et al., 1989; Davis et al., 2009).

Individuals with ASD experience impairments in social, communication, and motor skills (American Psychiatric Association, 1994). Gabriels et al. (2012) suggested that as little as 10 weeks of THR resulted in significant improvements in hyperactivity and expressive language, motor, and planning skills. Bass et al. (2009) suggested that 12 weeks of THR significantly improved sensory integration and directed attention and greatly improved social motivation, sensory sensitivity, and distractibility.

Cerebral palsy is a neuromuscular disorder that results in lack of motor development, slow walking speed, and abnormal movement patterns (Bobath and Bobath, 1975). A study involving 14 children participating in THR twice per week for 16 consecutive weeks showed improvements in Gross Motor Function Measure (method to evaluate change in gross motor function) scores that persisted for at least 16 weeks after

the riding period (Cherng et al., 2004). In contrast, a study with a much smaller sample size riding for 10 weeks only showed anecdotal evidence of participants' growth in self-esteem, confidence, happiness and recognition of being off-balance (Davis et al., 2009).

A challenge of therapy is keeping individuals motivated and invested during traditional long-term indoor sessions, but interacting with an animal during sessions can alleviate potential boredom (Cherng et al., 2004). As a result, many child therapy programs use animals. Regardless of the perceived or measurable impact of THR, the safety of and benefit to human clients has taken precedence over the welfare and safety of therapeutic animals (Evans and Gray, 2012).

Use as a therapy animal may be stressful (Heimlich, 2001). When a horse is threatened, in an uncomfortable situation, or confined, hormones like adrenaline and cortisol are released into the bloodstream. Infrequent and short releases of these hormones can be beneficial as it enhances the body's ability to deal with stressful situations. Long-term stress, on the other hand, can negatively impact gastrointestinal and immune health and manifest as 'nippiness', sweating, cribbing, and other stereotypic behaviors (Skipper, 2007). Therapy conditions may frequently place animals in unpleasant situations that cannot be avoided or escaped (Hatch, 2007). For example, assisted mounting equipment for severely disabled individuals like double-sided ramps that create a narrow alley can seemingly 'trap' a horse. The horse's first instinct is to run when it feels trapped, starting the release of stress hormones (Skipper, 2007).

Therapeutic horses are selected for health, conformation, quality of gait, and temperament. The ideal therapeutic horse should have minimal health, structural, and gait issues in order to maintain the physical ability to work and be an effective THR animal.

Therapy horses should also be calm, tolerant, and consistent in their behaviors to maintain the safety of riders and handlers (Anderson et al., 1999). Other than selecting suitable animals, a large component of a successful therapeutic program is the caretaker's ability to recognize the possible mental and physical impacts on the animal (Evans and Gray, 2012). Often times, subtle signs of lameness (irregularity or defect in locomotion) or stress are overlooked and the horse continues to be used, exacerbating an existing issue (Visser et al., 2014).

Horse Health Data

Early leaders and founders of NARHA were committed to center quality and accreditation as well as equine health. As the industry evolves, PATH Intl. staff work to keep the Standards for Certification and Accreditation Manual up-to-date (PATH Intl., 2018d). The equine welfare and management section of the standards manual includes guidelines for implementing a training and conditioning program appropriate to the facility and activity; observing physical soundness and behavior of horses before the therapy session to check the horse's ability to perform; maintaining thorough health records including hoof care and lameness reports; limiting horse workloads to no more than three continuous hours and no more than six total hours per day; and recommending a maximum workweek (number of days per week the horse can work) of six days based on the expectation that working with participants can be stressful (Appendix A; Ross and Kaneene, 1996; PATH Intl. 2018d).

The most current United States Department of Agriculture National Animal Health Monitoring System's (USDA NAHMS) Equine Management and Select Equine

Heath Conditions report contains data on lameness occurrence in equids across the country. The report noted that 7.1% of all equids surveyed had an existing lameness problem while 16.2% had experienced a lameness problem in the last 12 months. Equines over 21 years of age comprised 12.9% of all horses surveyed and contributed to 20.0% of all lameness problems. Equids aged 11 to 15 years accounted for 27.8% of equids with a lameness problem while equids aged 16 to 20 years and aged 21 or more years accounted for 21.2% and 20.0%, respectively, of equids with a lameness (NAHMS, 2017b).

In the USDA's report, the percentage of lame equids by breed mirrored the sample's breed distribution, so breed did not appear to be a factor in lameness. The intended use of each individual horse in the population was not collected, so correlating the percentage of a certain lameness with intended use was not possible. However, horses used for pleasure and recreation comprised 35.1% of horses with lameness in the last year while lesson horses only comprised 6.5%. The most prevalent causes of lameness in the equine report included limb lameness (29.7%), back soreness (4.8%), and hoof abscesses (17.0%; NAHMS, 2017b).

In addition to causes, the report described lameness issues by age group. Equids aged 21 or more years had a higher percentage of limb lameness and back soreness than those aged 16 to 20 years, perhaps due to aging and being at a higher risk for lameness. However, equids aged 11 to 15 years had the highest percentage of limb lameness of the three age groups (Table 1; NAHMS, 2017b).

Table 1. Percentage of lame equids by lameness conditions and selected ages of equids from the USDA's 2015 Equine Report 3

Age (years)	Limb Lameness (%)	Back Soreness (%)	Hoof Abscess (%)
11 to 15	32.5	5.6	16.0
16 to 20	18.9	5.6	17.5
21 or more	29.1	7.2	10.8

The most common lameness issues recognized in the equine report were similar to a study conducted in Michigan from 1992 to 1994. The most frequent horse health problems reported in Michigan were limb lameness followed by dermatologic, respiratory, and hoof problems. Full-body lameness like arthritis and Lyme disease were less frequent (Kaneene et al., 1997).

Horse Lameness Factors and Causes

Therapeutic horseback riding participants are generally affected with a disorder that causes poor balance and muscle stiffness. These riders may not move with the horse or may lean heavily to one side, potentially leading to back soreness and other lameness issues in the animal (Lagarde et al., 2005). A study with pressure mats under the saddle demonstrated that disabled riders, particularly those with CP, displayed significantly more anteroposterior (front to back) and mediolateral (side to side) movement than able-bodied riders (Clayton et al., 2011).

Lameness is generally multifactorial (Visser et al., 2014). Horses participating in at least one exercise-related activity were 53% more likely to experience lameness in general (Ross and Kaneene, 1996). Boarding and training operations where horses undergo a large volume of exercise were significantly more likely to report lameness issues than farming and ranching operations and residences. In addition, leg problems

were the most common cause of lameness in the spring and winter while hoof problems were most common in the summer (Kane et al., 2000).

Limb lameness and back soreness risk factors include age and current use, with older horses and those used for instruction/lessons (ridden by many riders of varying skill levels) at greater risk for lameness (Visser et al., 2014). Aging may also increase or decrease the risk for certain types of lameness. In a two-part study with dairy cattle and equines, researchers found that older animals were more prone to white line abscesses and sole ulcers, but were less at risk for foot rot. While age as a risk factor did not enter the final statistical model for the equine study, researchers suspect that age may be more important with respect to specific types and duration of lameness (Ross and Kaneene, 1996).

Breed and housing may also impact the risk of lameness. One study found that taller horses like Thoroughbreds were at a higher risk of back pain, but researchers did not theorize as to why (Visser et al., 2014). Stalls with medium-density flooring reduce concussion and provide adequate drainage, and well-drained pastures prevent brittle hooves prone to cracking and hoof infections like thrush (Reeves et al., 1989; Ross and Kaneene, 1996; Agne, 2010).

Horses in THR programs need to stay in good health to continue to serve disabled individuals. Excessive riding by individuals with poor balance can lead to limb, back, and other lameness issues. Therefore, the objective of this study was to gather data regarding horse use and care in order to form a baseline of use and care in PATH Intl.-affiliated THR programs in the United States.

Chapter 3

Materials and Methods

Survey Instrument

An initial invitation email was created and sent to each recipient via Google Mail Merge (Appendix B). The initial invitation email contained a link to the survey, which was formed in SurveyMonkey®. The survey consisted of 24 questions total in four sections: General Program Questions (1-10), Equine Health and Care (11-16), Equine Demographics (17-20), and Contact Information (21-24; Appendix C). The survey was based on a university horse use survey by Zhao (2017) with appropriate modifications for distribution to THR programs. The SurveyMonkey® collection web link was open from September 20, 2017 to November 15, 2017. Reminder emails were sent using a modified Dillman method at two, four, and six weeks on October 4, October 18, and November 1 (Appendix D.; Dillman et al., 2014).

Sample Selection

The survey was sent to a sample of 659 PATH Intl.-affiliated THR programs throughout the United States. Programs were selected via PATH Intl.'s 'Find a Center' function (www.pathintl.org/path-intl-centers/find-center) and filtered by activity (Therapeutic Riding). Each state was selected, and a list of program names and emails

was generated. At least one program from every state in the United States was represented in the initial contact list.

Validation

The survey instrument was validated through review by three faculty members at Murray State University, but was not released for pilot testing. However, the university horse use survey by Zhao (2017) was released for a pilot test, and modifications were made before the full survey release. Given that very little change was made in the survey questions for this instrument, an additional pilot test was not deemed necessary. All survey responses were reviewed and cleaned to a consistent format for data analysis; questions asking the respondent to enter a number or percentage were converted to Arabic numerals (e.g. six to 6, 60% to 60). In addition, some responses within a specific question were removed due to non-response, lacking specificity, or misunderstanding the question.

Data Analysis

An Excel data file was downloaded from SurveyMonkey®, and descriptive statistics were conducted using Microsoft Excel 2013. If a respondent entered a range of numbers or percentages, ranges were averaged to better facilitate data analysis (e.g. 6-12 to 9, 4-6 to 5). Preliminary statistical analysis for outliers was conducted on Questions 1, 2, and 6, and outliers greater than three standard deviations from the mean were identified and removed from further data analysis.

Chapter 4

Results and Discussion

A total of 270 responses out of 659 initial emails were received for a response rate of 40.97%. When reviewing the data, six responses were considered ineligible for data analysis because the respondent indicated the program did not ride and, therefore, did not participate in THR. The final response rate eligible for data analysis was 40.06% (264 responses). Within each question, some responses were removed due to non-response to that particular question, lack of specificity, or misunderstanding of the question. Therefore, the response rate for an individual question varied. Although all states were represented in the initial survey distribution, there is no guarantee that each state in the United States was represented in final data analysis because responses were anonymous. This study was considered exempt from IRB oversight.

Section 1: General Program Questions

Questions in this section were intended to gather information about general aspects of THR programs including how often horses were used, the riding ability of clients, and distribution of disabilities within THR programs.

1. Do you offer riding in sessions? Due to unintentional ambiguity in the question, respondents replied with session length (group of rides over a period of weeks),

lesson length (length of one ride), or both. Two high outliers in session length (20 and 34 weeks) were identified; these respondents indicated that sessions followed the academic calendar (August to May), causing sessions to be longer. One high outlier in lesson length (240 minutes) was identified. This respondent indicated that four-hour lessons included unmounted activities as well as riding, but did not specify amount of ride time. Outliers were removed from further data analysis.

Mean session length was 8.30 ± 2.55 weeks (n = 111), ranging from 4 to 17 weeks. Almost half of respondents (46.85%) indicated that sessions ran from 8 to < 12 weeks (Figure 1). Mean lesson length was 47.04 ± 13.68 minutes (n = 142), ranging from 20 to 90 minutes. Responses for lesson length were split almost in thirds across three categories: 30 to < 45 minutes (30.99%), 45 to < 60 minutes (33.80%), and 60+ minutes (33.10%; Figure 2). Many respondents indicated that lesson length was dependent on the individual client as some could ride for longer periods of time than others.

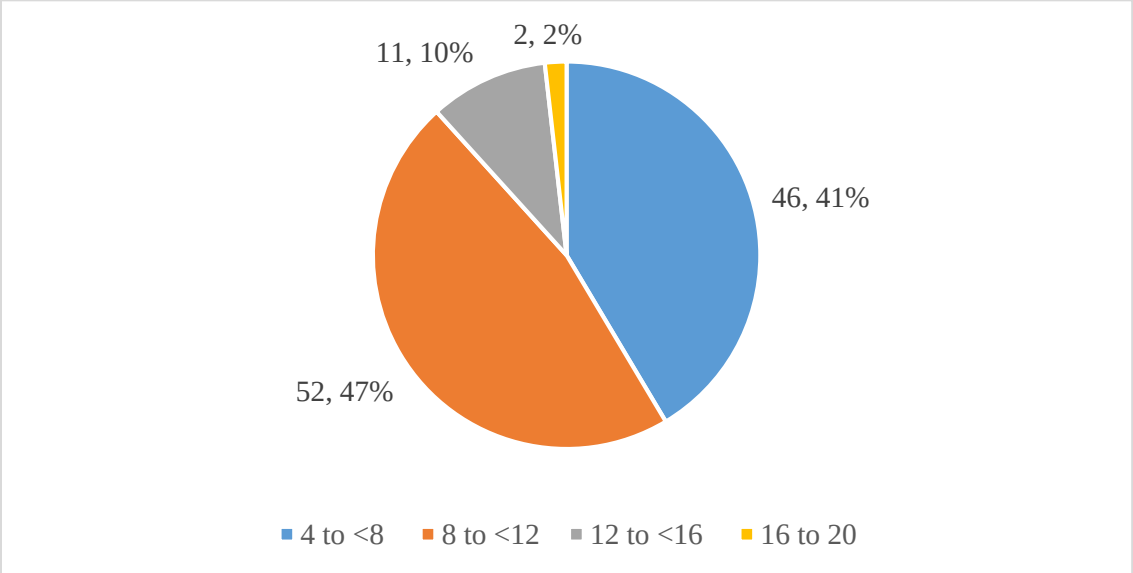

Figure 1. Session length in weeks in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 111)

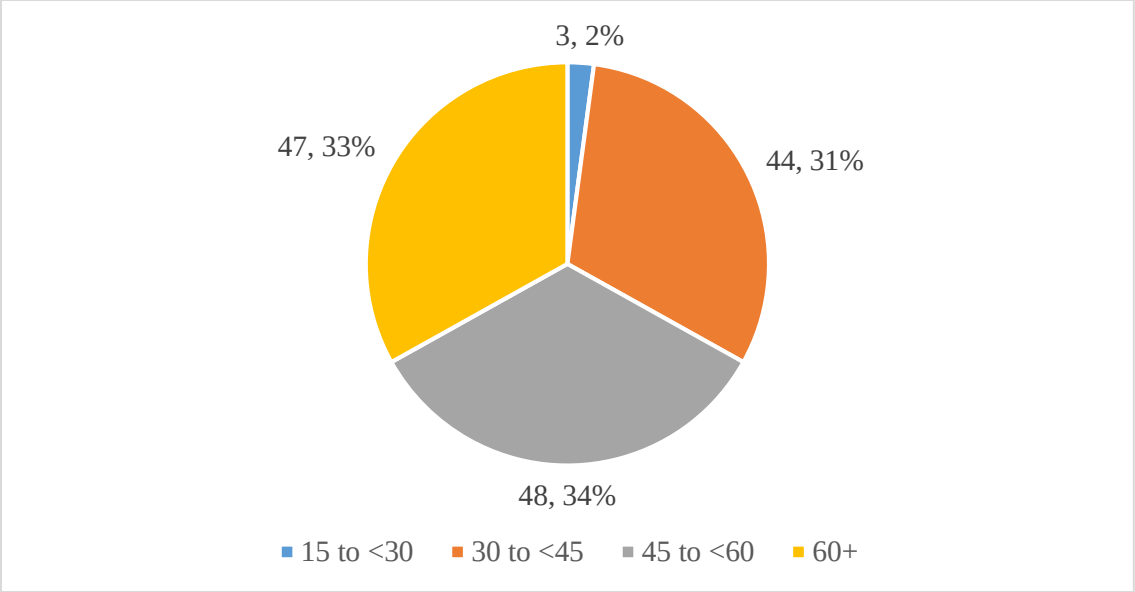

Figure 2. Lesson length in minutes in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 142)

2. On average, how many days per week and hours per day are horses ridden by clients? Five high outliers for hours per day (8, 7, 9, 7, and 9 hours) and seven high outliers for total hours per week (36, 40, 35, 36, 36, 42, and 54 hours per week) were identified and excluded from further data analysis. Horses used for THR were ridden by clients 4.08 ± 1.46 days per week (n = 260) and 2.56 ± 1.08 hours per day (n = 255). Days per week ranged from one to seven days, and hours per day ranged from 30 minutes to six hours. Total hours per week was calculated by multiplying days per week by hours per day within the same response. On average, horses were ridden for 10.15 ± 5.43 hours per week (n = 253), ranging from 45 minutes to 30 hours.

Based on the data gathered in this survey, horses were ridden less than PATH Intl.'s recommendation of six total hours per day and maximum of six days per week (PATH Intl., 2018d). Horses were also ridden less than those in university programs; over

half of universities surveyed in 2017 indicated that horses were ridden more than six hours per week and typically used five days per week (Zhao, 2017).

3. How often are horses schooled by someone more experienced than a client? This question was open-ended. Therefore, response codes were assigned to the data. Over half of programs indicated horses were ridden and schooled to maintain training and obedience one to four times per week by someone more experienced than a client (n = 259). Almost half of respondents (47.10%) indicated horses were ridden by someone more experienced one to two times per week, while 47 respondents indicated horses were ridden three to four times per week (Table 2).

Table 2. Response codes and number of responses for how often horses are schooled by someone more experienced than a client in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 259)

Code	Description	No. of Responses	Percent of Total Responses
1	Less than 3 times per month	20	7.72
2	1 to 2 times per week	122	47.10
3	3 to 4 times per week	47	18.15
4	5 to 6 times per week	7	2.70
5	Daily	7	2.70
6	Rarely; occasionally	7	2.70
7	Not schooled during session	8	3.09
8	“Varies with horse”; “Not often enough”; “As often as possible”; “As needed”	41	15.84

4. During each lesson, approximately how long do horses stay in each gait? Respondents entered the number of minutes horses stayed in the walk, trot/jog, and canter/lope. Minutes were converted to a percentage of the total lesson by dividing the time in each gait by the sum of minutes entered in all three gaits. This conversion was

done because facilities differed in total lesson time. Most of the exercise done by therapeutic horses was at the walk. Few riders were advanced enough to handle the horse at the trot and even fewer at the canter. On average, horses traveled 78.55 ± 14.84% of the lesson at the walk, 17.77 ± 11.56% at the trot/jog, and 3.53 ± 6.21% at the canter/lope (n = 238). Responses for percentage of the lesson ranged from 23.08 to 100% at the walk, 0 to 67.31% at the trot/jog, and 0 to 28.57% at the canter/lope.

Based on the mean lesson length from Question 1 (47.04 minutes), horses traveled 36.95 minutes at the walk, 8.36 minutes at the trot/jog, and 1.66 minutes at the canter/lope. About half of respondents (54.62%) indicated that horses spent 80 to 100% of the total lesson at the walk (Figure 3). A total of 140 respondents (58.82%) indicated that horses spent 0 to < 20% of the lesson at the trot/jog. Almost all respondents (96.64%) indicated that horses spent 0 to < 20% of the lesson at the canter/lope.

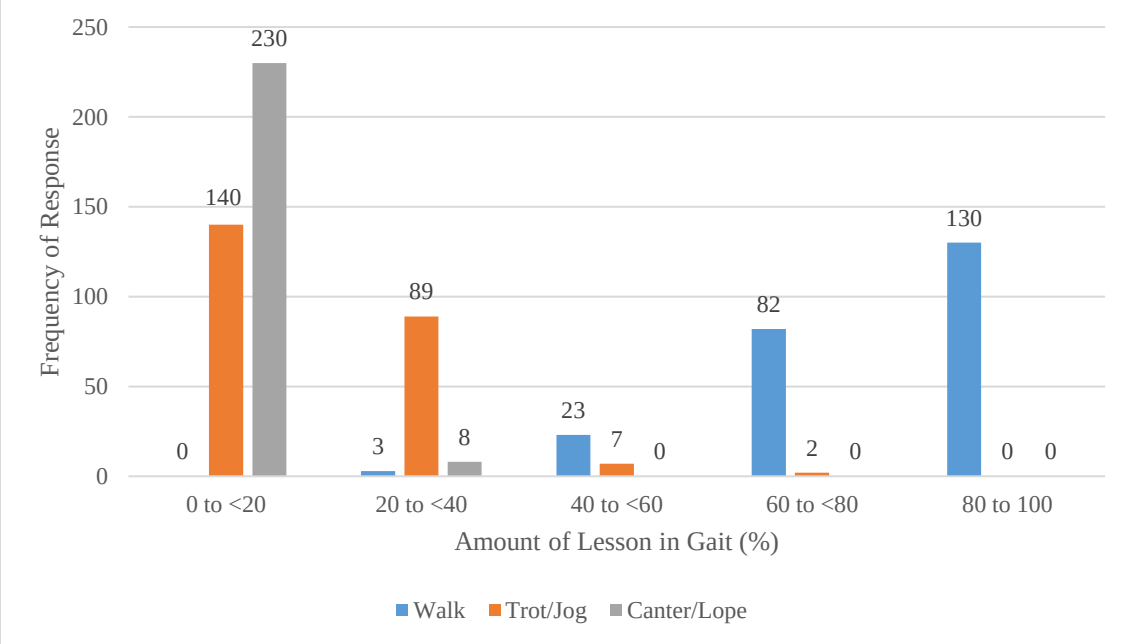

Figure 3. Percent of lesson horses are in a certain gait in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 238)

5. How do you track horse use in your program? Choices for this question were not mutually exclusive as respondents could indicate more than one answer and were split into two categories: frequency (daily, weekly) and method (verbal, written). Some respondents indicated the program used an electronic database to track use, so the written category was changed to hardcopy (written/electronic) for data analysis. If respondents indicated both daily and weekly for frequency, daily was used for data analysis. Respondents could have also chosen not to answer either the frequency or method category.

The majority of respondents (80.99%; n = 263) indicated that horse use was tracked on a daily basis while 25 respondents (9.51%) indicated tracking on a weekly basis only (Figure 4). Over half of respondents (58.9%) indicated use was tracked through hardcopy records while 12 respondents (4.56%) indicated horse use was tracked verbally only (Figure 5). This is not surprising as PATH Intl. recommends that use be tracked in a written form (PATH Intl., 2018d). Some of the respondents indicating use was tracked verbally only commented that authority figures and instructors at that facility held periodic meetings to discuss use.

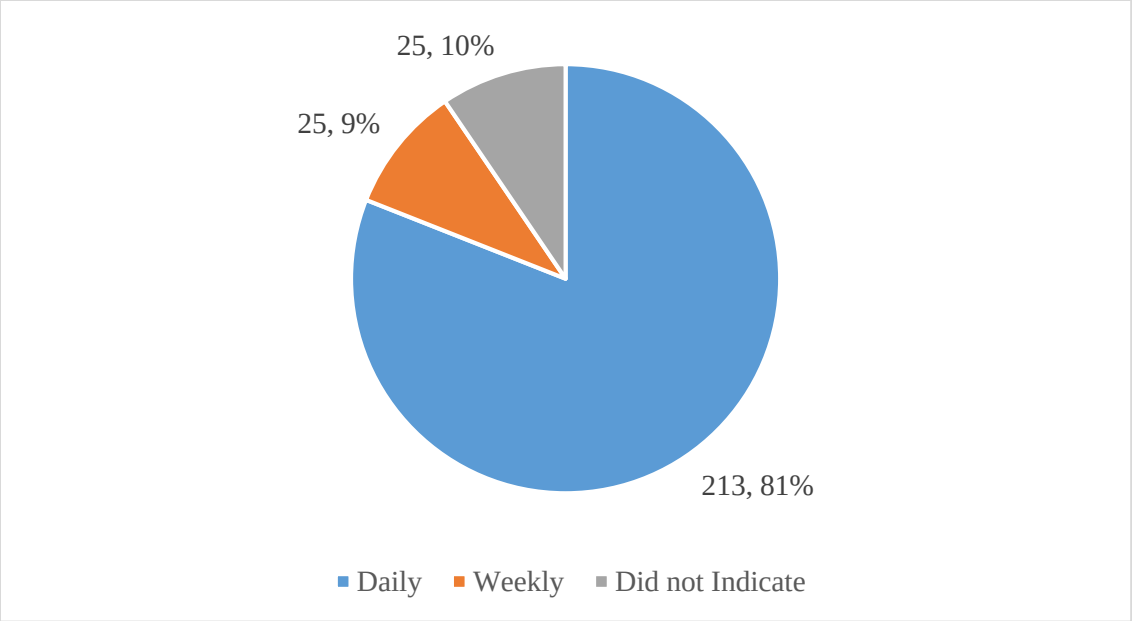

Figure 4. Frequency of tracking horse use in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 263)

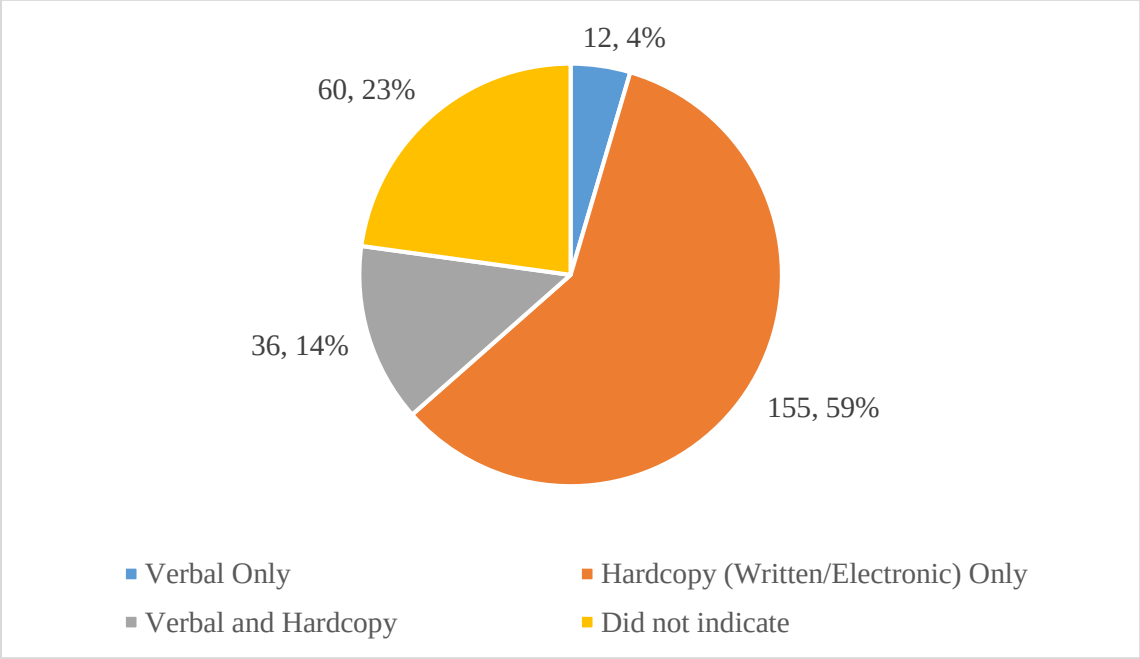

Figure 5. Method of tracking horse use in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 263)

6. How are horses in your program acquired?, 7. On average, how many years do horses remain in your program?, and 8. What is the most common reason horses leave your program? On average, 52.31 ± 35.51% of horses were donated, 16.10 ± 23.37% were purchased, and 30.73 ± 33.64% were privately owned and leased to THR programs (n = 230). Each category ranged from 0 to 100%, indicating there was a wide variety of methods by which horses were acquired.

About one third of respondents (33.48%) indicated 80 to 100% of horses were donated while only 10 respondents (4.3%) indicated 80 to 100% of horses were purchased (Figure 6). The majority of respondents (67.39%) indicated that 0 to < 20% of horses were purchased while only 57 respondents (24.8%) indicated that 0 to < 20% of horses were donated.

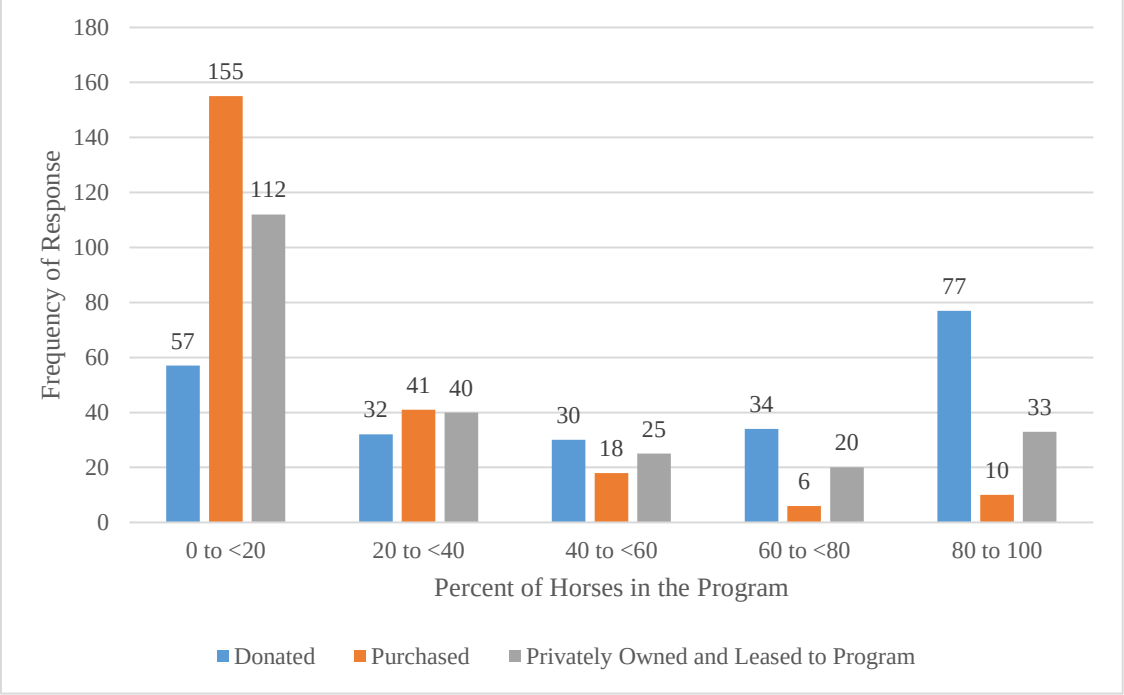

Figure 6. How horses are acquired in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 230)

One high outlier for length in program (30 years) was identified and excluded from further data analysis. Mean length in program was 7.08 ± 3.02 years (n = 216), ranging from 2 years to 15 years. About half of respondents (53.24%) indicated that horses stayed in the program for 5 to < 10 years (Figure 7). Only 7 respondents (3.2%) indicated that horses stayed in the program over 15 years.

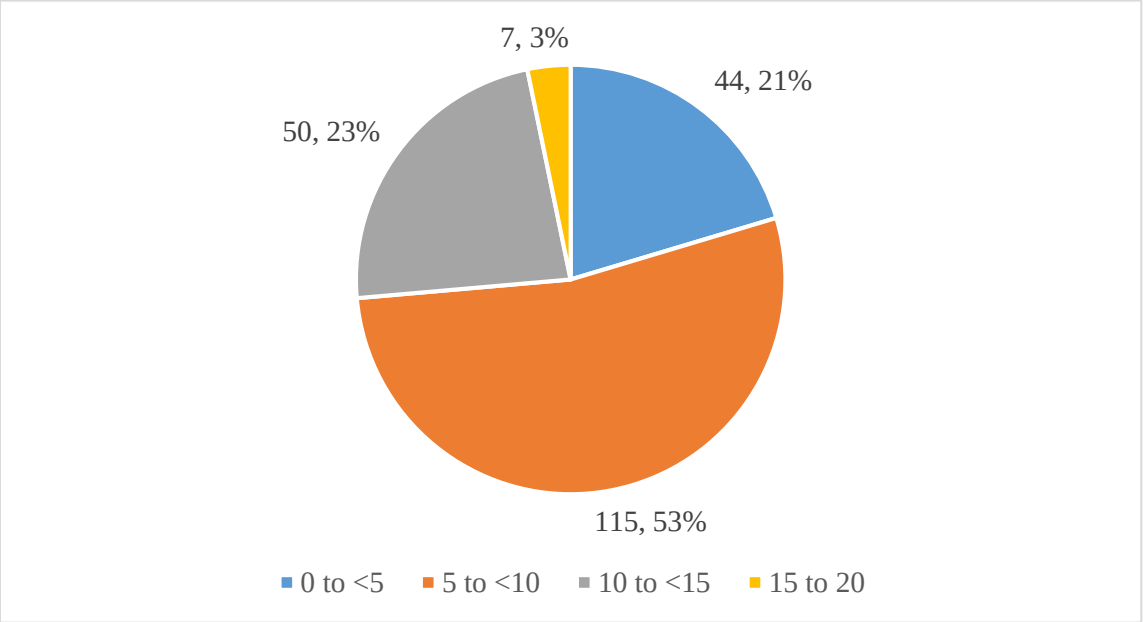

Figure 7. Number of years horses stay in the program in PATH Intl.-affiliated therapeutic horseback riding programs (n = 216)

Respondents could select one of four choices for the most common reason horses left the program: chronic lameness, personality or behavior issues, aging, and other (with comment field). While respondents could only select one reason horses left the program, many wrote in secondary reasons (e.g. death, repurposed to groundwork) or a combination of listed reasons (e.g. aging and lameness, all). Secondary reasons were not included in data analysis, and combination of listed reasons was split and treated as if the

respondent could indicate more than one choice. Therefore, the number of total positive indications (255) exceeds the sample size for this question (n = 253). Forty-five respondents indicated that horses left due to chronic lameness, 68 respondents for personality and behavior issues, and 142 respondents for aging.

Horses were most commonly donated to THR programs. This was likely due to lack of funds in the program as many are non-profit organizations that rely on donations and fundraisers. Most horses stay in THR programs for 5 to < 10 years. This could be due to the stressful nature of being a therapy animal. Anecdotal information suggests that some THR animals were previously show horses, potentially making them older animals on a second career. Respondents indicated that the most prevalent reason horses leave THR programs was aging; this supports the theory that some THR horses had a first career before becoming a therapy animal. In addition, a few respondents indicated that part of the program's mission was to rescue horses that are then used as therapy horses.

9. What percentage of clients fall into the following categories relative to their riding ability? and 10. What percentage of clients with the following does your program serve? Riding ability was split into five categories: very limited, limited, moderate, moderately advanced, and advanced (Table 3). On average, THR program client bases were comprised of 28.03 ± 25.65% very limited riders, 26.18 ± 16.62% limited riders, 24.49 ± 16.16% moderate riders, 15.51 ± 14.54% moderately advanced riders, and 5.79 ± 10.12% advanced riders (n = 225). Riding ability categories ranged from 0 to 80% to 0 to 100%.

Table 3. Client riding ability categories in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 225)

Riding Ability Category	Description
Very Limited	Not able to steer horse; frequent inappropriate pulling on the horse's mouth; very little trunk and upper body support; travels primarily at the walk; requires one or more sidewalkers*
Limited	Able to steer horse, but may occasionally inappropriately pull on the horse's mouth; some trunk and upper body support; can cue horse with legs; travels primarily at the walk and trot; requires one or no sidewalker
Moderate	Able to steer horse with little inappropriate pulling on horse's mouth; good trunk and upper body support; can cue horse with legs; travels primarily at the walk and trot; requires one or no sidewalker
Moderately Advanced	Able to steer horse with no inappropriate pulling on horse's mouth; good trunk and upper body support; can cue horse with legs; travels primarily at the walk and trot; does not require a sidewalker
Advanced	Able to independently steer horse and cue with legs; excellent trunk and upper body support; can travel at the lope; does not require a sidewalker

*Sidewalker: volunteer who walks beside the horse to support the rider

Almost all respondents (93.33%; n = 225) indicated that 0 to < 20% of clients were advanced (Figure 8). Ninety-eight (43.5%) and 91 (40.4%) respondents indicated that 20 to < 40% of clients were moderate and limited, respectively. Only about one quarter of respondents (23.56%) indicated that 40 to < 60% of clients were limited while 24 respondents (10.7%) indicated that 60 to < 80% of clients were very limited. Only six respondents (2.67%) indicated that 80 to 100% of clients had a riding ability over very limited.

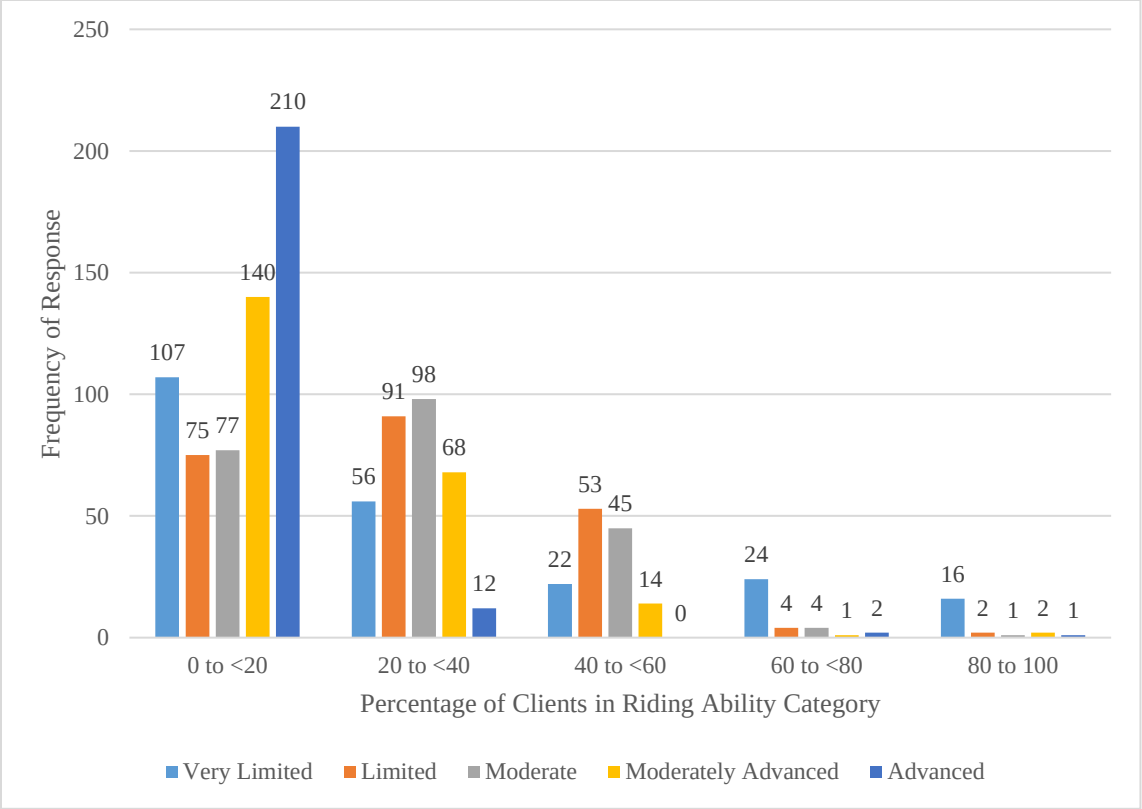

Figure 8. Percentage of clients in riding ability category in PATH Intl.-affiliated therapeutic horseback riding programs (n = 225)

Relative to disability group, categories of ASD, CP, downs syndrome, at-risk youth, veterans rehabilitation, and other were provided. Respondents wrote in several other disabilities in the other category like attention deficit hyperactivity disorder and attention deficit disorder, stroke, traumatic brain injury, spina bifida, and depression. On average, 44.18 ± 20.42% of clients were individuals with ASD, 10.74 ± 9.52% of clients were individuals with CP, 8.50 ± 8.25% were individuals with downs syndrome, 12.40 ± 15.78% were at-risk youth, 4.87 ± 11.84% were participating as veterans for rehabilitation, and 19.31 ± 19.57% were individuals with other disabilities (n = 221). Maximum response values ranged from 50 to 100%.

Almost all respondents (90.95%) indicated that 0 to < 20% of clients were participating for veterans rehabilitation (Figure 9). About one third of respondents (31.22%) indicated that 20 to < 40% of clients were individuals with ASD. Only nine respondents (4.07%) indicated 40 to < 60% of clients were individuals with CP, with downs syndrome, and participating for veterans rehabilitation. About one quarter of respondents (23.07%) indicated that 60 to < 80% of clients were individuals with ASD. Only 14 respondents (6.3%) indicated that 80% or more of clients were individuals with ASD while zero respondents indicated that 80% or more of clients were individuals with CP and downs syndrome.

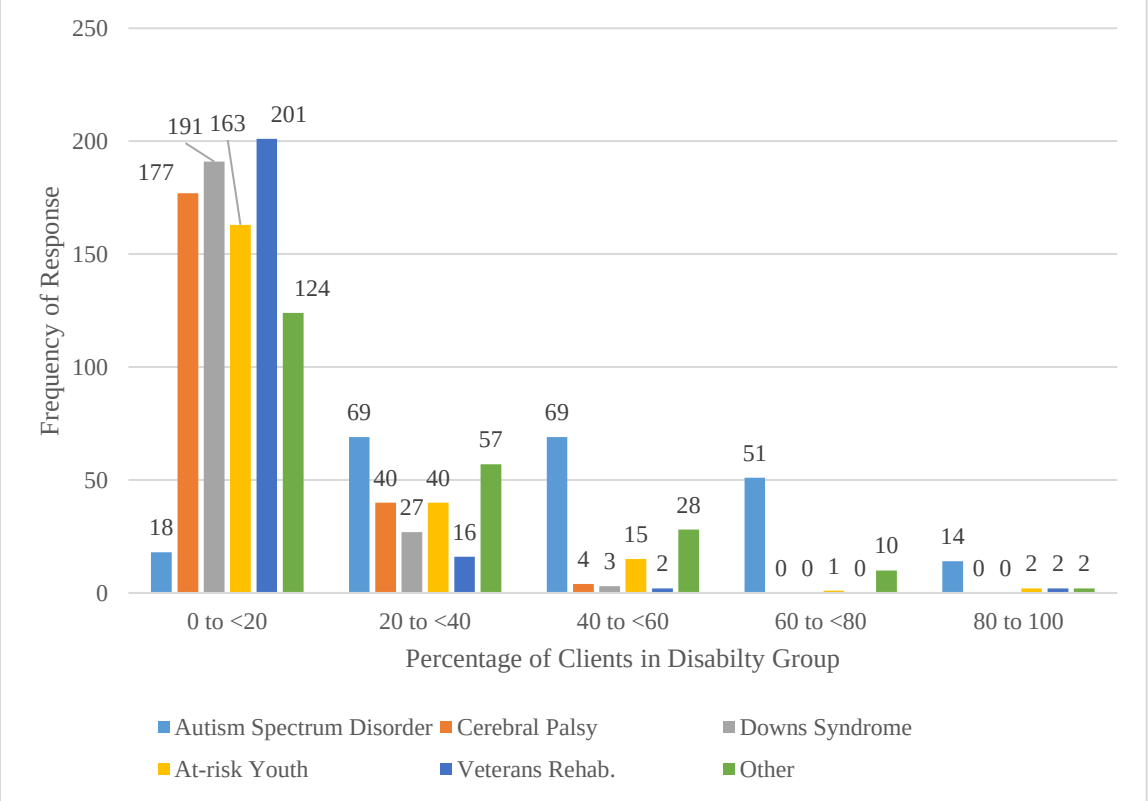

Figure 9. Percentage of clients in disability group in PATH Intl.-affiliated therapeutic horseback riding programs (n = 221)

Results of the client riding ability were not surprising. Few programs serve clients with consistent riding ability (over 60% of clients in one riding ability category). This mirrors the results of the clients in disability groups; few programs served just one type of disability. In general, THR programs serve a very wide variety of both mental and physical disabilities.

Section 2: Equine Health and Care

Questions in this section were intended to gather information about the care of horses, horse health problems seen, and supplemental care given to therapeutic horses.

11. What percentage of horses in your program are shod? On average, 66.93 ± 32.50% of horses were barefoot (no shoes), 22.10 ± 23.49% had front shoes only, and 10.97 ± 22.17% had front and rear shoes (n = 227). All shoeing category responses ranged from 0 to 100%, indicating there was wide variability in shoeing type.

The majority of respondents (85.02%) indicated that 0 to < 25% of horses had front and rear shoes; only 30 respondents indicated that 0 to < 25% of horses were barefoot (Figure 10). About half of respondents (51.54%) indicated that 75% or more of horses were barefoot while only 21 respondents (9.25%) indicated that 75% or more of horses had front shoes or front and rear shoes.

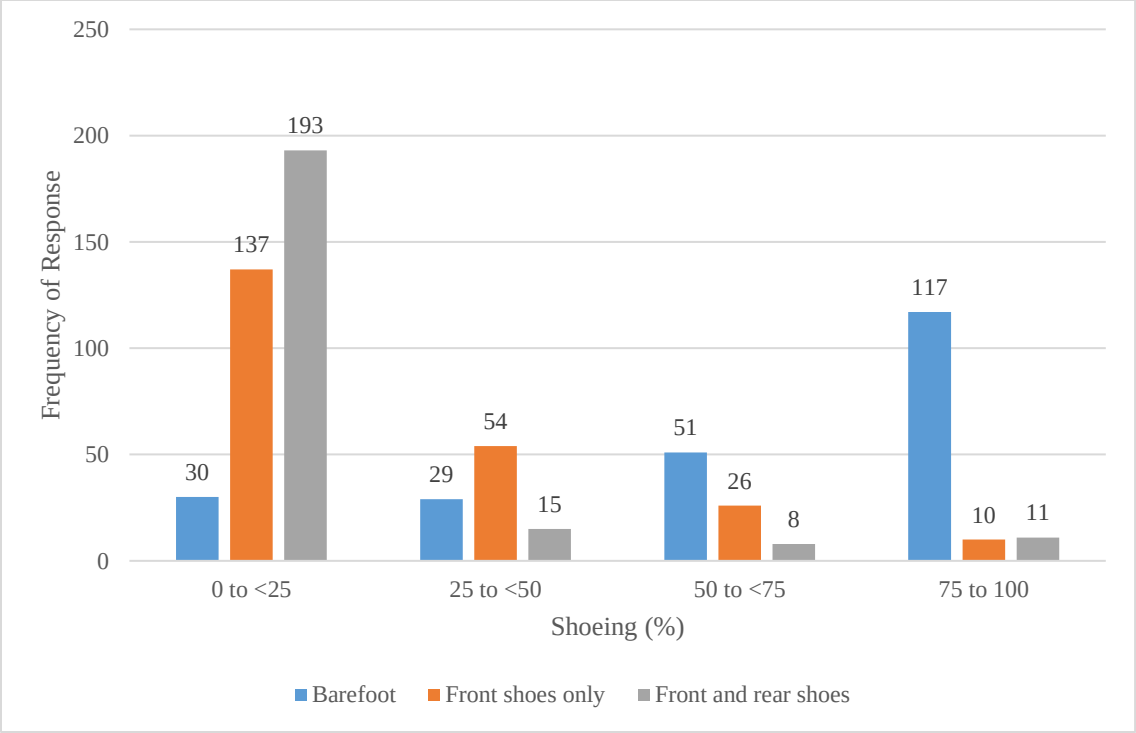

Figure 10. Frequency of shoeing in PATH Intl.-affiliated therapeutic horseback riding programs (n = 227)

Often, THR programs are non-profit and underfunded; many horses were most likely barefoot due to the low volume of exercise relative to performance horses (unless there was a physical condition to correct or alleviate) and to reduce costs. This was reflected in the high frequency of responses to 75 to 100% of horses being unshod and 0 to < 25% of horses having front and rear shoes. One facility indicated that no horses were allowed to have rear shoes. This is not specified in PATH Intl.'s standards manual, so it is assumed this was a facility rule.

12. What are the types and frequencies of physical health issues typically encountered each year? Respondents were given physical health issues like limb lameness, back soreness, shoulder/hip lameness, ulcers, colic, hoof abscesses, and hoof

wall cracks to enter data on. Ulcers and colic were combined to form the gastrointestinal issues category, and hoof abscesses and hoof wall cracks were combined to form the hoof issues category for data analysis. Responses were converted to percentage of total horse population by dividing the number of horses entered by the total number of horses from Question 17 within each program.

On average, limb lameness accounted for 23.74 ± 26.66%, back issues for 20.64 ± 27.02%, shoulder/hip lameness for 6.72 ± 17.42%, gastrointestinal issues for 11.83 ± 23.68%, hoof issues for 24.67 ± 34.46%, and other physical issues for 3.07 ± 8.54% of all physical health issues (n = 219). Maximum response values for physical health issues ranged 50 to 300%. Values entered over 100% could be due to the respondent entering more horses than indicated in Question 17 or the respondent entering the number of incidents per year instead of the number of horses that experience that issues per year.

Results for physical health issues in 0 to < 25% of each program's population were not surprising as most THR horses do not engage in a large volume of exercise. Over half of respondents (60.73% to 95.89%) indicated that 0 to < 25% of horses experienced each physical health category (Figure 11). Results from this question indicate that therapy horses most likely do not exercise enough to see major recurring physical health issues. Respondents indicated a variety of other physical health issues in the 'other' category including navicular syndrome and arthritis.

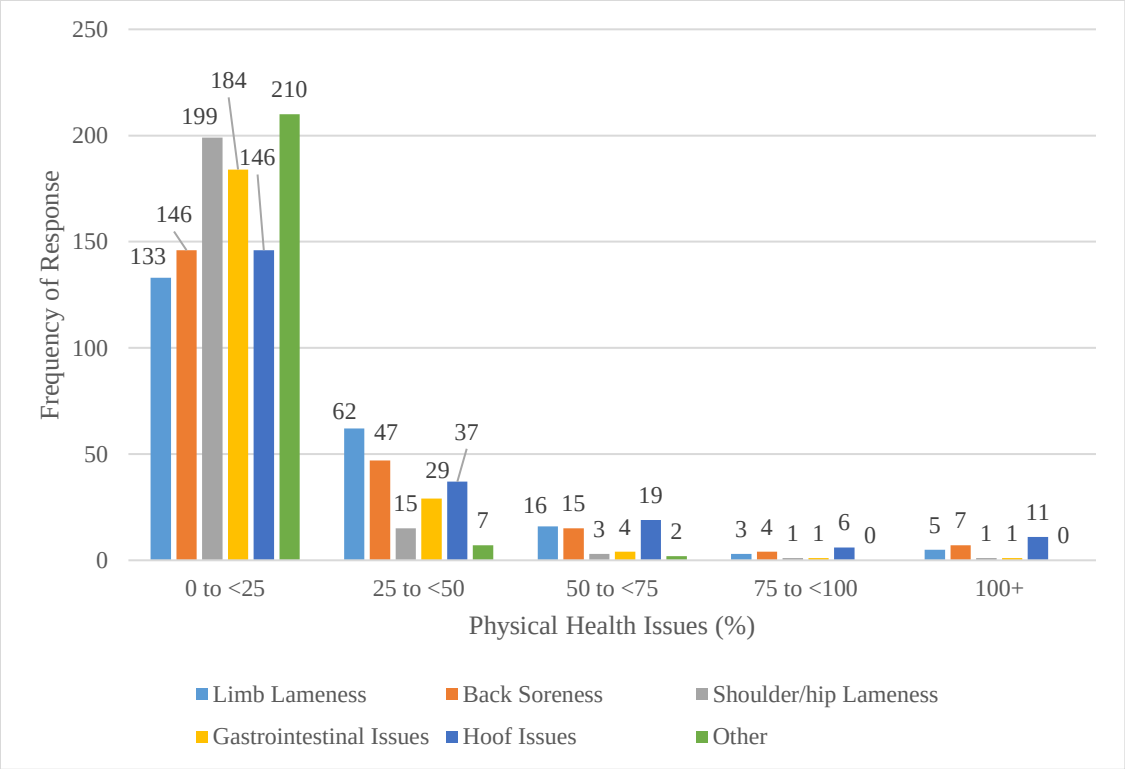

Figure 11. Physical health issues typically encountered each year by horses in PATH Intl.-affiliated therapeutic horseback riding programs (n = 219)

13. How do you determine if horses need time off from the program? This question was meant to inquire how programs determine that horses need time off due to reasons other than a physical issue, so respondents were given the choices of personality changes with no obvious cause, unwillingness to perform a task, and frequent biting of the handler. Choices for this question were not mutually exclusive, so respondents were able to select more than one option. As a result, the total number of responses (487) exceeds the sample size (n = 218). Over three quarters of respondents (189; 86.69%) indicated that personality changes with no obvious cause, 157 respondents (72.0%) indicated that unwillingness to perform a task, and 141 respondents (64.7%) indicated that frequent biting of the handler warranted time off from the THR program. Many

respondents indicated more than one of the choices as factors that warranted time off. Some entered other factors like repetitive spooking incidents, lameness, and injury.

14. In the last year, what percentage of horses have received the following [supplemental care]? On average, more horses receive chiropractic adjustment, massage, and glucosamine than any other supplemental care (n = 234; Table 4). The majority of respondents (64.96 to 92.74%) indicated that 0 to < 25% of horses received supplemental care in the past year (Figure 12). Only one respondent (0.4%) indicated that 75% or more of horses received joint injections and NSAIDs for reasons other than lameness in the past year.

Table 4. Percent of horses receiving supplemental care in the last year in PATH Intl.-affiliated therapeutic horseback riding programs in the United States

Type of Supp. Care	Mean (%)	Standard Deviation (%)	Minimum (%)	Maximum (%)
Glucosamine	19.79	31.81	0	100
Joint Injections	5.02	10.76	0	75
Chiropractic Adjustment	27.30	37.89	0	100
Massage	25.60	37.17	0	100
Acupuncture	5.80	17.56	0	100
NSAIDs for Lameness	16.46	20.50	0	100
NSAIDs for Other Reasons	6.25	11.77	0	75
Other	5.19	17.66	0	100

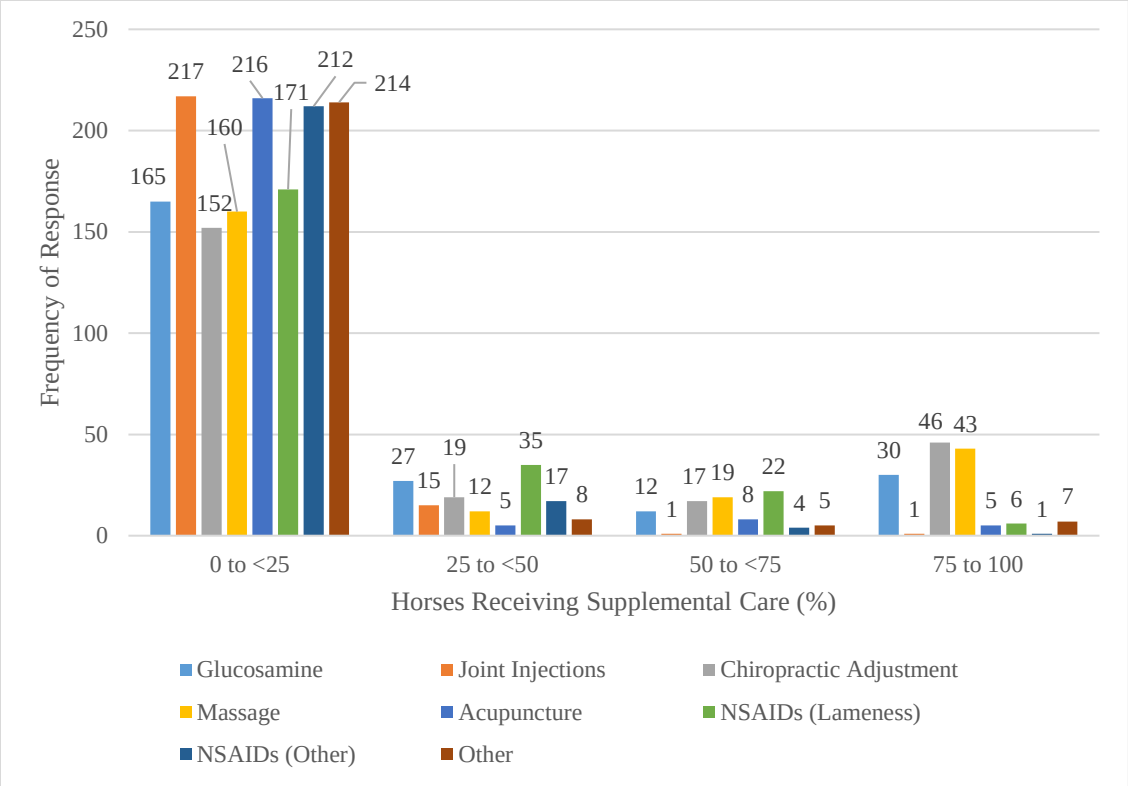

Figure 12. Horses receiving supplemental care in the past year in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 234)

Results for chiropractic adjustment and massage were higher than expected as these two supplemental care services can be expensive. About one fifth of respondents (19.66%; 18.38%) indicated that 75% or more of horses received chiropractic adjustment and massage, respectively, in the past year. Some of the programs that reported 100% of horses received chiropractic adjustment and massage indicated those services were donated.

15. How often are health evaluations of horses conducted by staff and/or veterinarians? Choices for this question were not mutually exclusive, so respondents could choose multiple answers. Each category (By Staff and By Veterinarian) was split

into two choices: daily and weekly for By Staff and monthly and once per session for By Veterinarian. If respondents chose both frequencies, the more frequent evaluation was used for analysis (e.g. both daily and weekly for By Staff was analyzed as daily).

The majority of respondents (84.16%; n = 240) indicated that staff performed health evaluations on horses daily (Figure 13). Many respondents reported these were done informally as visual observation before each lesson, which is not surprising as PATH Intl. recommends that the horse's ability to work is assessed before the therapy session (PATH Intl., 2018d). Thirty-one respondents (12.92%) indicated that staff performed weekly health evaluations on horses. About one third of respondents (37.08%) indicated that a veterinarian performs health evaluations on horses once per session (Figure 14). Many respondents reported that veterinarian visits coincided with spring and fall vaccinations. Only 22 respondents (9.4%) indicated that a veterinarian performs monthly health evaluations.

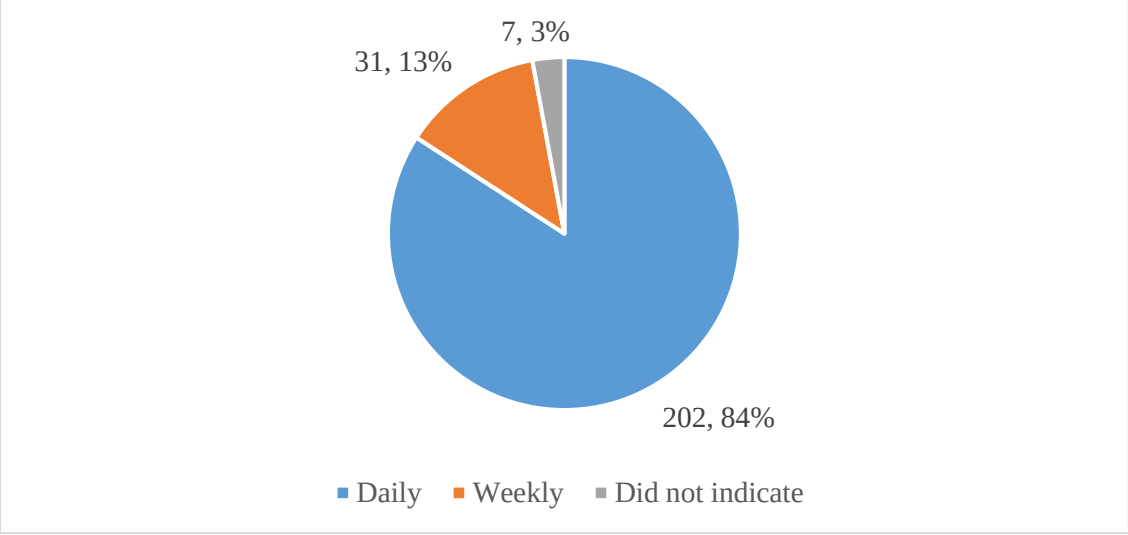

Figure 13. Frequency of horse health evaluations performed by program staff in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 240)

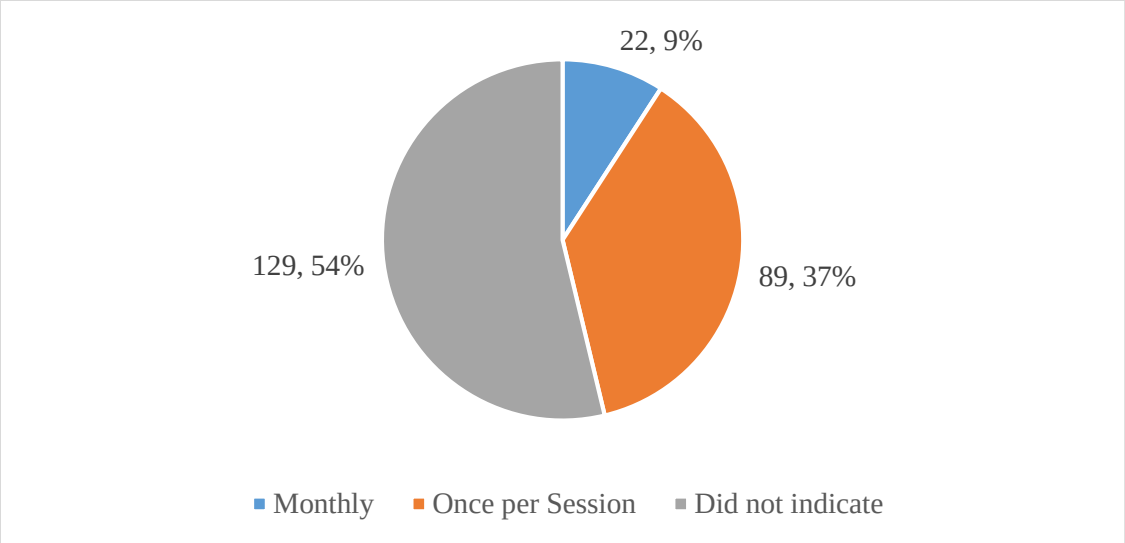

Figure 14. Frequency of horse health evaluations performed by a veterinarian in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 240)

16. How are horses primarily housed when not in use? Respondents were given five housing choices to enter data on: stall, dry lot, small paddock, pasture, and other. On average, 20.54 ± 31.59% of horses were primarily housed in stalls, 17.65 ± 30.98% on a dry lot, 13.01 ± 26.97% in a small paddock, and 48.27 ± 41.36% on pasture when not in use (n = 190). Maximum responses ranged from 95 to 100%. The majority of respondents (81.57%) indicated that 0 to < 25% of horses were housed in a small paddock when not in use (Figure 15). Seventy-three respondents (38.42%) indicated that 75% or more of horses were housed on pasture while 7.89% indicated that 75% or more of horses were housed in small paddocks. Housing of horses when not in use varied greatly with the individual horse and facility. However, housing on pasture seemed to be the most common, as indicated by 73 respondents replying that over three quarters of horses were housed this way.

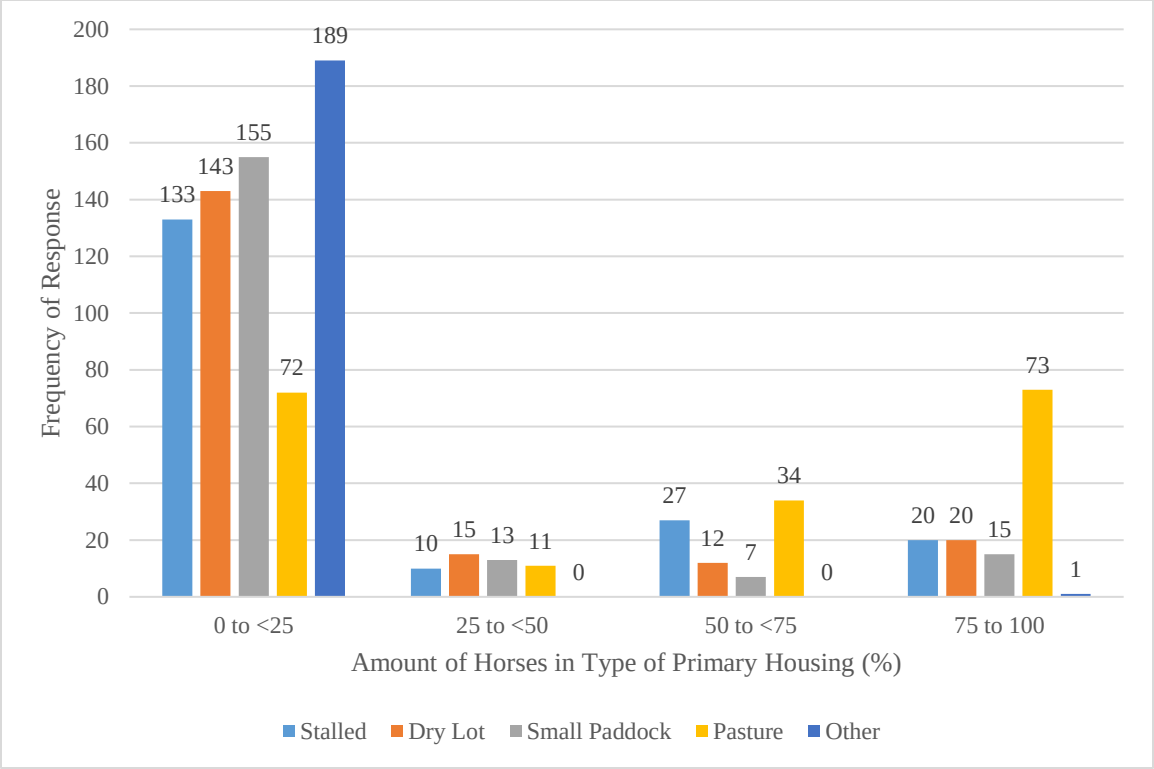

Figure 15. Primary housing of horses when not in use in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 190)

Section 3: Equine Demographics

Questions in this section were intended to gather information about the total number and demographics of THR horses.

17. How many horses are in your therapeutic riding program? Mean number of horses in THR programs was 11.44 ± 6.57 horses (n = 241), ranging from 2 horses to 43 horses. About one third of respondents (35.27%; 30.71%) indicated that the programs had 5 to 9 horses and 10 to 14 horses, respectively (Figure 16). Only ten respondents (4.15%) indicated that the programs had 25 or more horses.

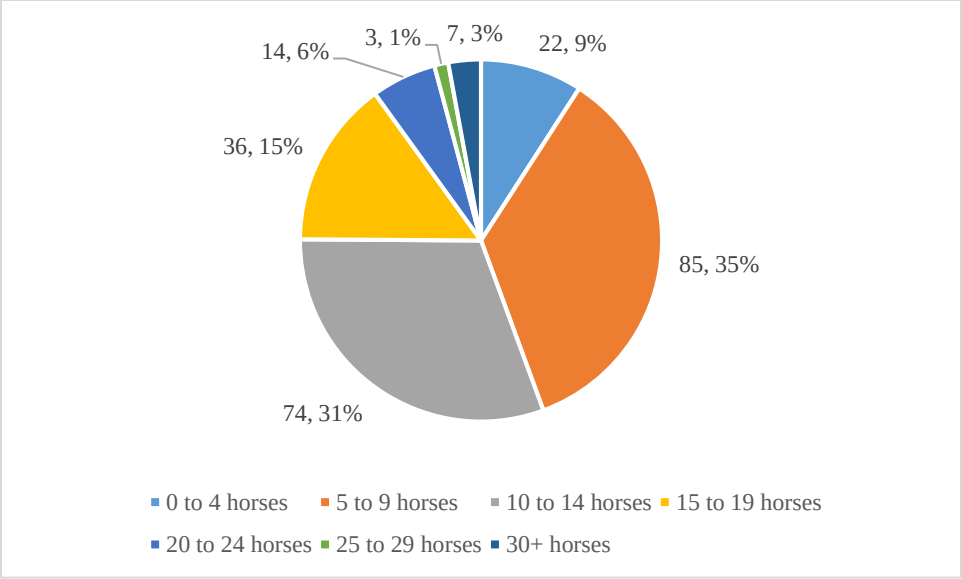

Figure 16. Total number of horses in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 241)

18. How many of your horses are each gender? Number of horses of each gender was converted to percentages by dividing the responses in each gender category by the total number of horses from Question 17 within each program. Mean percentage of mares was 34.56 ± 21.44%, mean percentage of geldings was 65.16 ± 21.89%, and mean percentage of stallions was 0.28 ± 2.48% (n = 237). Percentage of mares and geldings responses ranged from 0 to 100% while percentage of stallions ranged from 0 to 30%. Overall, the majority of therapeutic horses were geldings. This is not surprising as geldings tend to be more even tempered, which is a characteristic of the ideal THR horse (Anderson et al., 1999). In addition, as mares age and become unable to perform in their first career, many still have value as breeding animals. Geldings, on the other hand, can have little to no value after their first career and may be donated to THR programs in higher frequencies than mares. It is suspected that the positive response to the stallion category was a typing error, but this was not investigated.

19. How many of your horses belong to each breed? Number of horses of each breed category was converted to percentages by dividing the responses in each breed category by the total number of horses from Question 17 within each program. Respondents were given breed categories of Quarter Horse, Paint, other stock; pony; draft, draft-cross; Thoroughbred; Warmblood; and other. Some respondents reported breeds in the other category that would be better suited in an existing category (e.g. Fjord in Draft). During data review, those responses were moved into the appropriate category for analysis (Table 5). The breed category with the highest mean percentage was Quarter Horse, Paint, other stock, and the lowest mean percentage was Other (Table 6).

Table 5. Horse breeds in categories for PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 240)

Breed Category	Other Applicable Breeds
Quarter Horse, Paint, other stock	Mustang, Appaloosa, Morgan, Morgan-cross, Rocky Mountain Horse, Tennessee Walking Horse, Missouri Fox Trotter
Pony	Miniature Horse/pony, Connemara
Draft, Draft-cross	Fjord, Haflinger, Gypsy Vanner
Thoroughbred	Thoroughbred-cross
Warmblood	Warmblood-cross, Trahkner
Other	Arabian, Arabian-cross, Equid (Donkey/Mule), Grade, Bashkir Curly, Paso Fino, Lipizzan, Icelanic

Table 6. Percentage of horses belonging to breed categories in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 240)

Breed Category	Mean (%)	Standard Deviation (%)	Minimum (%)	Maximum (%)
Quarter Horse, Paint, other stock	54.02	25.07	0	100
Pony	20.06	16.40	0	100
Draft, Draft-cross	13.84	15.02	0	100
Thoroughbred	4.34	8.24	0	50
Warmblood	4.27	9.05	0	75
Other	3.48	8.45	0	60

20. How many of your horses fall into the following age ranges? The number of horses in each age range was computed by summing all responses in that range. Percent of total horses was computed by dividing the number of horses in an age range by the total number of horses entered in all age ranges. The most common age range of horses was 16 to 20 years while very few horses (1.28%) were under five years of age (Table 7). Older horses tend to be more even-tempered than younger horses, which is in line with the ideal THR horse (Anderson et al., 1999).

Table 7. Age of horses in PATH Intl.-affiliated therapeutic horseback riding programs in the United States (n = 240)

Age Range	No. of Horses	Percent of Total Horses
Less than 5 years of age	35	1.28
6 to 10 years of age	276.5	10.07
11 to 15 years of age	719	26.19
16 to 20 years of age	950	34.60
Greater than 20 years of age	765	27.86
Total No. of Horses	2745.5	100.00

Section 4: Contact Information

Questions in this section were intended to gather contact information for respondents that would like to be notified of the results of this study and any other information the respondents would like to share. If the respondent answered Yes to Question 21. May I contact you for follow-up questions?, Question 24. Please enter your contact information. appeared next before moving on to Questions 22 and 23. If the respondent answered No to Question 21, Questions 22 and 23 immediately followed and Question 24 did not appear.

Over 200 respondents allowed for follow-up questions, and 215 requested results once the study was completed. Other comments varied from critiques on the ambiguity of certain questions (which were addressed in the next chapter) to overwhelming support. Many respondents were excited about research into this field and eager to see the outcome of this study.

Chapter 5

Conclusions and Implications

The results of this study indicated that horses were ridden by clients less than PATH Intl.'s standards manual maximum recommendation of six days per week and six hours per day (PATH Intl., 2018d). Average lesson length was 47.04 minutes, and horses traveled the majority of the lesson at the walk. In addition to client ride time, over half of horses were schooled to maintain training and obedience one to four times per week.

About half of horses were donated to THR programs. This was likely due to lack of funds in the program as many are non-profit organizations that rely on donations and fundraisers. However, there was variability in the method of acquiring horses. Horses stayed in the programs an average of 7.08 years and most commonly left due to aging. The amount of clients in a riding ability category and with a certain disability type was variable. Few programs served clients with a consistent riding ability, which is mirrored in the variety of disabilities served by THR programs.

Over half of horses were barefoot. Likely due to lack of funds, programs decided to keep horses barefoot unless there was a physical condition to correct or alleviate. Most therapy horses likely did not exercise enough to warrant shoes or to have major recurring physical health issues, but the most common issues seen were limb lameness, back soreness, and hoof issues. About 20% of respondents indicated that most THR horses

received chiropractic adjustment and massage. Several respondents that indicated this mentioned chiropractic and massage services were donated. The average number of horses in THR programs was 11. The majority were geldings, of a stock-type breed, and aged 16 to 20 years.

Recommendations for Future Surveys

If this survey is repeated, the author recommends the following changes:

- Q1: Edit the question to read, “Do you offer riding in sessions (defined as a group of rides over a period of weeks)?”
- Create a question asking about lesson length specifically and define lesson length as the length of one ride within the question
- Q2: Edit the question to read, “On average, how many days per week and hours per day is each horse ridden by clients?”
- Q4: Specify to enter minutes
- Q5: Add an online/electronic option
- Q8: Edit the question to read, “What is the most common reason horses leave your program after any trial period?”
- Q9: In ability descriptions, replace ‘pulling on horse’s mouth’ with ‘pulling on horse’s mouth or head with reins’
- Q10: Add a choice with Attention Disorders (ADHD, ADD)
- Q13: Edit the question to read, “How do you determine if horses need time off from the program for reasons other than a physical issue?”

- Q15: Add Once per year by Veterinarian and Twice per year by Veterinarian as options and remove the Once per session by Veterinarian option
- Q16: Modify question type to be a mutually exclusive multiple choice question and edit to read, “How are horses most commonly housed when not in work?”
- Q19: Give breed examples with each breed category option

Appendices

Appendix A

PATH Intl. Equine Welfare and Management Standards

PATH Intl. 2018d. Equine Welfare and Management Standards. Professional Association of Therapeutic Horsemanship International Standards for Certification and Accreditation, 2018 Edition. http://www.pathintl.org/images/pdf/standards-manual/2018/2018-path-intl-standards-complete-manual.pdf

EQM1

Does the center have written criteria for the initial screening of prospective equines appropriate for the activities/therapies offered?

Yes **No**

Interpretation: General considerations of a prospective equine for any EAAT program should include but not be limited to the following:

- Age appropriate to the activity and workload
- Soundness appropriate to carry out the work
- Temperament
- Height, build, conformation and movement appropriate for the activity and participants
- Gender and herd dynamics
- Equines selected for Vaulting and Driving have additional criteria that should be considered. See guidelines pp. 165, 166.

Compliance Demonstration: Visitor observation of WRITTEN criteria and interview of personnel.

EQM2

Does the center have written procedures for the:

1. **Evaluation of the suitability of new equines prior to participating in center activities/ therapies?**
2. **Evaluation for the permanent removal of equines no longer/not suited for participating in center activities/therapies?**

Yes No

Interpretation: Having written standard procedures for evaluation and removal of equines provides centers an unbiased tool for effective measurement of the abilities and suitability of all equines participating in center activities/therapies.

The written procedures for intake suitability should delineate the following:

- Who is the ultimate decision maker?
- Who performs the equine evaluations?
- What specific criteria/behaviors an equine must demonstrate prior to being placed into each activity/therapy, such as the following examples:
  - Standing quietly at the halt for grooming, tacking, harnessing or other activities and during mounting, dismounting or putting to for driving
  - Behaving appropriately with personnel, volunteers, participants and other equines as well as wheelchairs and other adaptive equipment
  - Responding appropriately to participant's aids, both natural and artificial, and the many different working conditions specific to the activity/therapy including sidewalkers or therapists working closely on both sides
  - Tolerating hugging, hair pulling, loud noises, erratic behavior and other disturbances
  - Accepting training specific to the equine activity or therapy

The written procedures for the permanent removal of equines that do not meet program qualification or are unable to continue working in program activities and therapies should delineate the following:

- Who is the ultimate decision maker?
- Who performs the equine evaluations?
- Specific criteria to be considered during the evaluation
- What becomes of the equine after removal (return to owner, sale, adoption, retirement, euthanasia, etc.) from center activities/therapies?

Once these written procedures are developed and implemented, they should be reviewed and modified as needed, as long as the written procedures match center practices.

Compliance Demonstration: Visitor observation of WRITTEN procedures for equine suitability and WRITTEN procedures for equine removal, and personnel explanation of the procedures.

EQM3

Is there an implemented equine training and conditioning program that is specific to each equine-assisted activity or therapy at the center?

Yes No

Interpretation: An equine's satisfactory performance depends on being exercised regularly by experienced personnel who can effectively carry out the schooling and conditioning specific to the equine-assisted activity or therapy. Specific fears, sensitivities and vices of an equine should be addressed. Training and conditioning for a driving program should be done in a harness.

It is understood that the quality of the results achieved in hippotherapy are directly related to the quality of movement of the hippotherapy equine. It is important to maintain the suppleness and strength of the hippotherapy equine through training and conditioning. In T-HPOT, due to increased stress, it is particularly important that the conditioning emphasize the elevation of the topline. The equine has to become gradually accustomed to the distribution of weight behind the center of gravity and desensitized to the input of the additional leg pressure near the flank.

Compliance Demonstration: Visitor interview and personnel description of training and conditioning program.

***EQM4 MANDATORY**

DNA (does not apply): If the center does not offer interactive vaulting.

Does the equine training and conditioning program for interactive vaulting also include the following:

1. **Lungeing?**
2. **Equipment specific to interactive vaulting?**
3. **Mounted gymnastic exercises?**
4. **Continued conditioning?**
5. **Ongoing training to varied vaulting exercises and movement games on and around the equine?**

Yes No DNA

Interpretation: An interactive vaulting equine is one that is obedient on the long-line and can maintain a circle while in balance at all of the gaits being requested. A progressive training and conditioning program is one that allows the equine to build skills based on previous training sessions. Strength and endurance must be developed over a period of time for the equine to become comfortable performing the work that is being asked. The equipment and activities used are specific to the discipline and require additional training to ensure safety.

Compliance Demonstration: Visitor interview and personnel description of training and conditioning program.

EQM5

Is there an implemented procedure for the appropriately credentialed PATH Intl. Certified Professional to do the following?

1. **Check for changes in physical soundness and behavior of each equine prior to its assignment to an activity or therapy session so as to ensure that the equine is able to perform as needed?**
2. **Make assignment and proceed with session as scheduled or remove equine from participation in session(s) until soundness and behavior issues can be addressed?**

Yes **No**

Interpretation: Problems with sore feet, sore backs, sore stifles, etc., can affect an equine's performance and disposition; changes in behavior may be the first clues that point to an underlying problem. The equine's behavior and ability to work should be assessed prior to the participant's involvement in the activity or therapy session. Equines with underlying soundness issues or other health problems that negatively impact their ability to work should be removed from activity or therapy sessions until their problems can be resolved.

Compliance Demonstration: Visitor observation and personnel description of procedures.

***EQM6 MANDATORY**

Is there documentation regarding equine workload limits that includes the following:

1. **A <u>written</u> policy that sets a maximum limit for each equine's working session to no more than three continuous hours and workday to no more than six hours?**
2. **<u>Written</u> records of the number of hours and types of sessions for each equine per day?**

Yes No

Interpretation: A Some equines may not be conditioned sufficiently to maintain a schedule based on current recommendations for a specific activity or therapy and will need additional adjustments in scheduling. Centers may set any workday/continuous hour limit policy as long as it is implemented by the center and does not exceed the maximum. Centers may want to consider giving each equine a day off per week as working with participants may be stressful. Consideration should be given to the size and type of participant served when scheduling each equine.

A record should be kept of the number of hours and in what capacity each equine works, whether it is ground, mounted, driving, interactive vaulting, hippotherapy, tandem hippotherapy, psychotherapy sessions, etc. Many activities have additional scheduling recommendations that should be followed. The equine's condition, attitude, pace, size and type of participant are factors to be considered when making scheduling decisions.

A working session is a period of continuous service without any lengthy breaks. As climate, equine conditioning and center activities/therapies vary considerably from center to center, each center should define "lengthy break" for themselves. The definition of "lengthy" does not need to be written, but center personnel should be consistent in their definition. A break for an equine would be time without tack or other equipment where the equine is not tied but allowed to move freely in a pen, stall, pasture or other area and has access to water.

Compliance Demonstration: Visitor observation of WRITTEN policy and WRITTEN record of equine workload and personnel description of scheduling procedures.

EOM7

DNA (does not apply): If equines are not under center's jurisdiction.

Are there current, written equine health records available on-site that include the following:

1. **Vaccinations?**
2. **De-worming schedule?**
3. **Hoof care?**
4. **Teeth care?**
5. **Sickness and injury?**

Yes No DNA

Interpretation: Equines shall be provided with proper foot care including trimming and/or shoeing on a regular basis. Equines shall be health checked, vaccinated and de-wormed on a regular schedule. Teeth shall be inspected and floated as needed. Records should also be kept of any equine sickness or injury.

Compliance Demonstration: Visitor observation of WRITTEN documentation and personnel interview.

EOM8

DNA (does not apply): If the center is not responsible for feeding equines.

Is there a written feed chart for each equine easily accessible to the person feeding?

Yes No DNA

Interpretation: Written feed charts for each equine help to ensure that equines receive proper daily rations. Feed charts should be easily accessible.

Compliance Demonstration: Visitor observation of WRITTEN feed chart.

EOM9

Are equines provided with a clean, plentiful supply of water?

Yes No

Compliance Demonstration: Visitor observation of water supply.

EOM10

DNA (does not apply): If equines are not under the center's jurisdiction.

Does the center provide shelter to protect equines from inclement weather?

Yes No DNA

Interpretation: Shelters may include two- to four-sided loafing or run-in sheds with roof or natural shelter available in the geographic location of the center.

Compliance Demonstration: Visitor observation and personnel interview.

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Appendix B

Survey Invitation Email

Masters Thesis Research - Horse Use in Therapeutic Riding Programs

Emily Watson <ewatson8@murraystate.edu> Fri, Jan 19, 2018 at 3:44 PM
To: Emily Watson <ewatson8@murraystate.edu>

Dear {{Facility Name}},

I am a graduate student at Murray State University in Murray, Kentucky, conducting research on how therapeutic riding facilities in the United States utilize horses in their programs. I would like to invite you to participate in this survey. Should you choose to contribute, the survey should be completed by the person at your facility that has the most knowledge of how horses are used in the program. Click on the survey link below and complete it by Wednesday, November 15th, 2017.

https://www.surveymonkey.com/r/8BVPC9K

If the hyperlink does not work, copy and paste the link into your web browser.

This survey should only take about 30 minutes to complete. Your responses are voluntary and will be kept confidential. Your responses will also be kept anonymous, but you may choose to provide your contact information for me to follow up with any additional questions. There will be no compensation offered for your participation, but I will be happy to send you the final data when the study is completed.

If you would like more information, have any questions, or have any issues completing the survey, feel free to email me at ewatson8@murraystate.edu or contact my thesis advisor, Dr. Shea Porr, at cporr@murraystate.edu or 270-809-6908.

I look forward to receiving your response!

Thank you,

Emily Watson, Graduate Assistant
Hutson School of Agriculture

Appendix C

Survey Questions

Horse Use in Therapeutic Riding Operations Survey

Instructions

Thank you for agreeing to participate in this survey! Please have the person at your facility with the most knowledge of how your horses are used in the therapeutic riding program complete this survey. Your responses are voluntary and will be kept confidential and anonymous. If you will allow me to contact you with any follow-up questions or would like a copy of the final data when the study is complete, please indicate so at the end of the survey.

Horse Use in Therapeutic Riding Operations Survey

General Program Questions

The following are general questions about your therapeutic riding program.

1. Do you offer riding in sessions? If yes, how long do your sessions last? If no, please explain how your program works.

Yes. The sessions last:	
No. Please explain:	

2. On average, how many days per week<u>and</u> hours per day are horses ridden by clients? Please enter a **<u>number</u>**.

Days per week	
Hours per day	
Other comments.	

3. How often are horses schooled by someone more experienced than a client? Please be as specific as possible.

4. During each lesson, approximately how long do horses stay in each gait?

Walk	
Trot/Jog	
Canter/Lope	
Other comments.	

5. How do you track horse use in your program? Check all that apply.

- [ ] Daily
- [ ] Weekly
- [ ] Verbally
- [ ] Written
- [ ] Other. Please explain.

6. How are horses in your program acquired? Enter a **percentage** acquired by each method.

Donated	
Purchased	
Privately owned and leased to program	
Other. Please explain.	

7. On average, how many **years** do horses remain in your program?

8. What is the most common reason horses leave your program?

- ( ) Chronic lameness
- ( ) Personality or behavior issues
- ( ) Aging
- ( ) Other. Please explain.

9. What **percentage** of clients fall into the following categories relative to their riding ability?

Very Limited (not able to steer horse; frequent inappropriate pulling on horse's mouth; very little trunk and upper body support; travels primarily at the walk; requires one or more sidewalkers)

Limited (able to steer horse, but may occasionally inappropriately pull on horse's mouth; some trunk and upper body support; can cue horse with legs; travels primarily at the walk and trot; requires one or no sidewalker)

Moderate (able to steer horse with little inappropriate pulling on horse's mouth; good trunk and upper body support; can cue horse with legs; travels primarily at the walk and trot; requires one or no sidewalker)

Moderately Advanced (able to steer horse with no inappropriate pulling on horse's mouth; good trunk and upper body support; can cue horse with legs; travels primarily at the walk and trot; does not require a sidewalker)

Advanced (able to independently steer horse and cue with legs; excellent trunk and upper body support; can travel at the lope; does not require a sidewalker)

10. What percentage of clients with the following does your program serve? Enter a **percentage** of your total client base in each applicable category.

Autism Spectrum Disorder	
Cerebral Palsy	
Downs Syndrome	
At-risk youth (behavioral disturbances)	
Veterans rehabilitation	
Other. Please explain.	

Horse Use in Therapeutic Riding Operations Survey

Equine Health and Care

The following are questions regarding equine health and care.

11. What **percentage** of horses in your program are shod?

Barefoot	
Front shoes only	
Front and rear shoes	

12. What are the types and frequencies of physical health issues typically encountered each year? Please enter the **total number** of horses with these issues.

Limb lameness (knee/hock, fetlock, or pastern issue)	
Back soreness	
Shoulder or hip lameness	
Ulcers	
Colic	
Hoof abscesses	
Hoof wall cracks	
Other. Please explain.	

13. How do you determine if horses need time off from the program? Check all that apply.

- [ ] Frequent biting of horse handler while ridden by client or being tacked
- [ ] Excessive unwillingness to perform tasks when asked
- [ ] Personality changes with no obvious cause (for example, an injury to the horse may result in personality changes, so that would be an obvious cause)
- [ ] Other. Please explain.

14. In the last year, what **percentage** of horses have received the following:

Glucosamine	
Joint injections	
Chiropractic adjustment	
Massage	
Acupuncture	
NSAIDS (bute, banamine) for lameness	
NSAIDS (bute, banamine) for reasons other than lameness	
Other. Please explain.	

15. How often are health evaluations of horses conducted by staff and/or veterinarians? Check all that apply.

- ☐ Daily by Staff
- ☐ Weekly by Staff
- ☐ Monthly by Veterinarian
- ☐ Once per session by Veterinarian
- ☐ Other. Please explain.

16. How are horses primarily housed when not in use? Please enter a **percentage**.

Stall	
Dry lot (dirt paddock with no grass)	
Small paddock (with some grazing)	
Pasture (with significant grazing)	
Other. Please explain.	

Horse Use in Therapeutic Riding Operations Survey

Equine Demographics

The following are questions regarding equine demographics.

17. How many horses are in your therapeutic riding program?

18. How many of your horses are each gender?

Mare	
Gelding	
Stallion	

19. How many of your horses belong to each breed?

Quarter Horse, Paint, or other stock type	
Pony breeds	
Draft or Draft-cross	
Thoroughbred	
Warmblood	
Other. Please explain.	

20. How many of your horses fall into the following age ranges?

Less than 5 years of age	
6 to 10 years of age	
11 to 15 years of age	
16 to 20 years of age	
Greater than 20 years of age	

Horse Use in Therapeutic Riding Operations Survey

21. May I contact you for follow-up questions?

- ◯ Yes
- ◯ No

22. Would you like a copy of the final data once the study is completed? If so, please provide an email address.

23. Are there any other comments you would like to share?

Horse Use in Therapeutic Riding Operations Survey

Contact Information

24. Please enter your contact information.

Name	
Phone Number	
Email	

Horse Use in Therapeutic Riding Operations Survey

Thank You

Thank you for completing this survey. Your responses are greatly appreciated.

Appendix D

Reminder Email

Masters Thesis Research - Horse Use in Therapeutic Riding Programs - Reminder

Emily Watson <ewatson8@murraystate.edu> Fri, Jan 19, 2018 at 3:44 PM
To: Emily Watson <ewatson8@murraystate.edu>

Dear {{Facility Name}},

Fall is a busy time for everyone, and I understand time is valuable. I'm hoping that you would give me about 30 minutes of your time to help me collect information about howtherapeutic riding facilities use horses.

If you have already completed the survey, I greatly appreciate your participation and you can disregard this email. If you have not yet responded, I would like to urge you to complete it by Wednesday, November 15th, 2017.

Please click the link below or copy and paste this link into your web browser to complete:

https://www.surveymonkey.com/r/8BVPC9K

If you would like more information, have any questions, or have issues completing the survey, feel free to email me at ewatson8@murraystate.edu or contact my thesis advisor Dr. Shea Porr at cporr@murraystate.edu or 270-809-6908.

Thank you in advance for completing the survey. Your responses are greatly appreciated.

Sincerely,

Emily Watson, Graduate Assistant
Hutson School of Agriculture

Appendix E

Assumptions and Limitations

Limitations

The limitations of conducting this study were:

1. Even though as many PATH Intl.-affiliated organizations as possible will be surveyed, the response rate may not have been large enough to allow generalization across the United States.
2. The survey measured an organization at a specific point of time and did not factor in changes made between survey completion and data publication.
3. Respondents most likely estimated responses throughout the survey.

Assumptions

The assumptions of conducting this study were:

1. Respondents completed the survey honestly and with no bias.
2. The respondent had the appropriate organizational and horse use knowledge to complete the survey accurately.
3. Respondents had adequate time to complete the survey accurately.

References

Agne, B. 2010. Diagnosis and treatment of foot infections. J. Equine Vet. Sci. 30:510-512. doi:10.1016/j.jevs.2010.07.019.

American Psychiatric Association. 1994. Diagnostic and statistical manual of mental disorders, DSM-IV. 4th ed. Am. Psych. Assoc., Washington, DC.

Anderson, M. K., T. H. Friend, J. W. Evans, and D. M. Bushong. 1999. Behavioral assessment of horses in therapeutic riding programs. Appl. Anim. Behav. Sci. 63:11-24. doi:10.1016/S0168-1591(98)00237-8.

Baine, A. 1965. Pony riding for the disabled. Physiother. 51:263-265.

Bass, M. M., C. A. Duchowny, and M. M. Llabre. 2009. The effect of therapeutic horseback riding on social functioning in children with autism. J. Autism Dev. Disord. 39:1261-1267. doi:10.1007/s10803-009-0734-3.

Bieber, N. 1983. The integration of a therapeutic equestrian program in the academic environment of children with physical and multiple disabilities. In: A. Katchor, A. Beck, editors, New perspectives on our lives with companion animals. University of Pennsylvania Press, Philadelphia, PA.

Bobath, B. and K. Bobath. 1975. Motor development in the different types of cerebral palsy. Heinemann Medical: London, UK.

Cherng, R., H. Liao, H. W. Leung, and A. Hwang. 2004. The effectiveness of therapeutic horseback riding in children with spastic cerebral palsy. Adapt. Phys. Activ. Q. 21:103-121.

Clayton, H. M., L. J. Kaiser, B. de Pue, and L. Kaiser. 2011. Center-of-pressure movements during equine-assisted activities. Am. J. Occ. Ther. 65:211-216. doi:10.5014/ajot.2011.000851.

Davis, E., B. Davis, R. Wolfe, R. Raadsveld, B. Heine, P. Thomason, F. Dobson, and H. K. Graham. 2009. A randomized controlled trial of the impact of therapeutic horse riding on the quality of life, health, and function of children with cerebral palsy. Dev. Med. Child Neurol. 51:111-119. doi:10.1111/j.1469-8749.2008.03245.x.

Dillman, D. A., J. D. Smyth, and L. M. Christian. 2014. Internet, phone, mail, and mixed-mode surveys: the tailored design method, 4th ed. John Wiley & Sons, Inc., Hoboken, NJ.

Evans, N. and C. Gray. 2012. The practice and ethics of animal-assisted therapy with children and young people: is it enough that we don't eat our co-workers? Br. J. of Soc. Work 42:600-617. doi:10.1093/bjsw/bcr091.

Gabriels, R. L., J. A. Agnew, K. D. Holt, A. Shoffner, P. Zhaoxing, S. Ruzzano, G. H. Clayton, and G. Mesibov. 2012. Pilot study measuring the effects of therapeutic horseback riding on school-age children and adolescents with autism spectrum disorders. Res. Autism Spectr. Disord. 6:578-588. doi:10.1016/j.rasd.2011.09.2007.

Hatch, A. 2007. The view from all fours: a look at an animal-assisted activity program from the animals' perspective. Anthrozoos 20:37-50.

Heimlich, K. 2001. Animal-assisted therapy and the severely disabled child: a quantitative study. J. Rehabil. 67:48-54.

Kane, A. J., J. Traub-Dargatz, W. C. Losinger, and L. P. Garber. 2000. The occurrence and causes of lameness and laminitis in the U.S. horse population. Proc. AAEP Ann. Con. 46:277-280.

Kaneene, J. B., W. A. Ross, and R. Miller. 1997. The Michigan equine monitoring system. II. Frequencies and impact of selected health problems. Prev. Vet. Med. 29:277-292. doi:10.1016/S0167-5877(96)01080-X.

Lagarde, J., C. Peham, T. Licka, and J. A. Kelso. 2005. Coordination dynamics of the horse-rider system. J. Mot. Behav. 37:418-424.

Levine, M. A. 1999. Investigating the origins of horse domestication. Equine Vet. J., Suppl. 36:6-14.

Meregillano, G. 2004. Hippotherapy. Phys. Med. Rehabil. Clin. N. Am. 15:843-854.

Mundy, G. D. 2000. Racing. J. Am. Vet. Med. Assoc. Anim. Welfare Forum: Equine Welfare 216:1243-1246.

NAHMS. 2017a. Changes in the U.S. equine industry, 1998-2015. United States Department of Agriculture Veterinary Services Equine Report 2. https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/monitoring-and-surveillance/nahms/nahms_equine_studies

NAHMS. 2017b. Equine management and select equine health conditions in the United States, 2015. United States Department of Agriculture Veterinary Services Equine Report 3. https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/monitoring-and-surveillance/nahms/nahms_equine_studies

PATH Intl. 2018a. About the Professional Association of Therapeutic Horsemanship International. https://www.pathintl.org/about-path-intl/about-path-intl. PATH Intl. January 23, 2018.

PATH Intl. 2018b. Name Change to Professional Association of Therapeutic Horsemanship International. https://www.pathintl.org/132-general/company/598-name-change. PATH Intl. March 20, 2018.

PATH Intl. 2018c. Standards for Certification and Accreditation Manual. https://www.pathintl.org/quick-links/standards-manual. PATH Intl. March 20, 2018.

PATH Intl. 2018d. Equine Welfare and Management Standards. Professional Association of Therapeutic Horsemanship International Standards for Certification and Accreditation, 2018 Edition. http://www.pathintl.org/images/pdf/standards-manual/2018/2018-path-intl-standards-complete-manual.pdf

Reeves, M. J., J. V. Yovich, and A. S. Turner. 1989. Miscellaneous conditions of the equine foot. Vet. Clin. N. Am. Equine Prac. 5:221-242.

Rigby, B. R. and P. W. Grandjean. 2016. The efficacy of equine-assisted activities and therapies on improving physical function. J. Altern. Complement. Med. 22:9-24. doi:10.1089/acm.2015.0171.

Ross, W. A. and J. B. Kaneene. 1996. An operation-level prospective study of risk factors associated with the incidence density of lameness in Michigan (USA) equine operations. Prev. Vet. Med. 28:209-224.

Russell, D. J., P. L. Rosenbaum, D. T. Cadman, C. Gowland, S. Hardy and S. Jarvis. 1989. The gross motor function measure: a means to evaluate the effects of physical therapy. Dev. Med. Child Neurol. 31:341-352.

Schonholtz, C. M. 2000. Animals in rodeo – a closer look. J. Am. Vet. Med. Assoc. Anim. Welfare Forum: Equine Welfare 216:1246-1249.

Skipper, L. 2007. Understanding horse behavior. Skyhorse Publishing, Inc., New York NY.

Sterba, J. A., B. T. Rogers, A. P. France, and D. A. Vokes. 2002. Horseback riding in children with cerebral palsy: effect on gross motor function. Dev. Med. Child Neurol. 44:301-308. doi:10.1017/S0012162201002122.

Visser, E. K., F. Neijenhuis, E. de Graaf-Roelfsema, H. G. Wesselink, J. de Boor, M. C. van Wijhe-Kiezebrink, B. Engel, and C. G. van Reenen. 2014. Risk factors associated with health disorders in sport and leisure horses in the Netherlands. J. Anim. Sci. 92:844-855. doi:10.2527/jas2013-6692.

Zhao, H. 2017. Horse use and management in university equine programs (Master's Thesis). Retrieved from http://digitalcommons.murraystate.edu/etd/67.