

**Analysis of horse performance at the Snaffle Bit
Futurity**

by

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ABSTRACT

The cow horse industry has experienced an increasing growth in both numbers and prize money over the years. This raises several questions related to industry trends to the center of attention of horse owners and other industry stakeholders. There is a growing interest in examining the trends to understand what trainers are continually at the top, what sires are producing quality offspring, and what breeders have an impact on the horse making it to the top. The breeders are interested to learn whether there are optimal breeding techniques and particular lines that can optimize the chance of winning and maximize the return on investment. Some observable trends include million-dollar riders repeatably making it to the finals, million-dollar sires producing offspring who continually score high, and a trend in the gender of horses that make it to the finals. The objective of this thesis is to generate insights into the potential effect of factors such as trainers, sires, gender, and linebreeding may have on producing a constant top performer through the analysis of trends in the Snaffle Bit Futurity Finalists data set.

The literature uncovered that there are trends in other industries with linebreeding to produce certain qualities and traits. There are remaining questions such as what else might influence a high performing horse besides genetics. The data that was used in this study consisted of 570 horses who have made the Snaffle Bit Futurity Finals from 1970 – present. The data that was captured consisted of riders, owners, breeders, year shown, score, linebreeding, and gender. A regression analysis was used to estimate the significance of these factors on the overall population.

The results of this study uncovered that although the descriptive statistics show trends there are no statistically significant effects detected in the results of regression

analysis. The top descriptive results showed that linebreeding is heavily used within this industry when looking at the first four generations. Additionally, over the years certain million-dollar riders and stallions repeatably make it to the finals. Lastly, there was also a common trend on the owners who made it to the finals. While the trends that were found in the descriptive statistics indicated potential relationships, the results of regression analysis did not indicate statistically significant relationships. Given the limited scope of the data and the analysis, this study was unable to identify and uncover specific factors that can have a significant effect on a horse becoming a top scoring finalist. One important limiting factor is the inability to capture the extent to which genetic factors and line breeding may affect the chances of success. Further studies should investigate how the percent of linebreeding affects the overall score of the finalist.

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CHAPTER I: INTRODUCTION

This thesis gives helpful insights on potential impact of select factors on a horse making to the Snaffle Bit Futurity Finals. The Snaffle Bit Futurity is the largest horse show of the year in the cow horse industry. The winner takes home substantial prize money and the prestigious title. The cow horse industry has experienced an increasing growth in both numbers and prize money over the years. This raises several questions related to industry trends for horse owners and other industry stakeholders. There is a growing interest in examining the trends to understand what trainers are continually at the top, what sires are producing quality offspring, and what breeders have an impact on the horse making it to the top. The breeders are interested to learn whether there are optimal breeding techniques and particular lines that can optimize the chance of winning and maximize the return on investment. Some observable trends include million-dollar riders repeatably making it to the finals, million-dollar sires producing offspring who continually score high, and a trend in the gender of horses that make it to the finals. The objective of this thesis is to generate insights into what potential effect factors such as trainers, sires, gender, and linebreeding may have on producing a constant top performer through the analysis of trends in the Snaffle Bit Futurity Finalists data set.

The literature uncovered that there are trends in other industries with linebreeding to produce certain qualities and traits. There are remaining questions such as what else might influence a high performing horse besides genetics. The data used in this study was obtained through the National Reined Cow Horse Association (NRCHA) and American Quarter Horse Association (AQHA). It consists of 570 horses who have made the Snaffle Bit Futurity Finals from 1970 – present. The data that was captured consisted of riders,

owners, breeders, year shown, score, linebreeding, and gender. A regression analysis was used to estimate the significance of these factors on the overall population.

The results of this study uncovered that although the descriptive statistics show trends there are no statistically significant effects detected in the results of regression analysis. The top descriptive results showed that linebreeding is heavily used within this industry when looking at the first four generations. Additionally, over the years certain million-dollar riders and stallions repeatably make it to the finals. Lastly, there was also a common trend on the owners who made it to the finals. While the trends that were found in the descriptive statistics indicated potential relationships, the results of regression analysis did not indicate statistically significant relationships. Given the limited scope of the data and the analysis, this study was unable to identify and uncover specific factors that can have a significant effect on a horse becoming a top scoring finalist. One important limiting factor is the inability to capture the extent to which genetic factors and line breeding may affect the chances of success. Further studies should investigate how the percent of linebreeding grouping effects the overall score of the finalist.

The rest of the thesis is organized as follows. Chapter II presents background on the cow horse competition industry and the Snaffle Bit Futurity. Chapter III provides overview of relevant literature. Chapter IV discusses the methods including description of the conceptual framework and the data. Chapter V presents results followed by conclusions in Chapter VI.

CHAPTER II: BACKGROUND

National Reined Cow Horse Association, commonly referred to as the NRCHA was established in 1948. Its tradition and values stemmed from the California vaquero who tended to cattle and the ranch caretakers. What is known as the cow horse today was a tool for the vaquero to get by in their daily lives. As time progressed and the industry evolved the cow horse today is now seen as a luxury item. “The purpose of the NRCHA today is to improve the quality of the western reined stock horse: to perpetuate the early Spanish traditions of highly trained and well reined working cow horses.” ((b) Association, n.d.). Every year the NRCHA hosts a prestigious event in October currently being held in Fort Worth, Texas known as the Snaffle Bit Futurity. Any rider is eligible to enter this event. For the horse to qualify, it must be three years of age only, show in the snaffle bit, and will compete in herd work, rein work, and cow work. The Snaffle Bit Futurity is also open to any breed so long as the horse is three years old as of January 1st per NRCHA guidelines. The winner of this event earns \$200,000 and the event itself is known for paying out more than \$1 million in total.

The event has the preliminaries where every horse and rider will compete in the three events. From these three events horses will then compete in the same three events in the finals. Depending on the number of horses that are entered in the show will determine the number of horses that qualify for the finals. The number of horses that advance to the finals is defined in the following manner according to the NRCHA rulebook: 50 or less entries = 20 horses to finals and is paid to the 15th place, 51-99 entries = highest 20 plus ties and is paid to the 20th place, 100-111 entries = 25 highest scoring plus ties and is paid to the 20th place, 111+ entries = 30 highest scoring horses plus ties and is paid to the 30th place ((a) Association, 2022, p. 43). It should be noted that entries have continued to climb over

the years and last year brought over 280 horses and overall averages 267 entries over the years according to data given from 2000-2021. The horse that has the highest combined score in the finals wins the overall futurity. Data given from 2000-2021 show that the average score to take the win for the futurity is 658. It should also be noted that the Snaffle Bit Futurity is open to all breeds to compete. The horses that compete in these events must be unjudged in the cow work or any event that is not sanctioned with the NRCHA ((b) Association, n.d.). The NRCHA carefully outlines the equipment specifications, eligibility, and entry questions, see appendix for more details under NRCHA Rulebook on Snaffle Bit Futurity or Scoring in the Appendix A and B.

2.1 Scoring

Scoring is based on a point system that ranges from 60-80 points per judge in each of the three events (cow work, rein work, and herd work). Points are given in a plus or minus system in .5 increments given the level or difficulty or inability to execute the maneuvers required for each of the events. Cow work is simply taking the cow through a designated set of maneuvers. Points are given on the difficulty of the cow and the horse and riders ability to get the maneuvers done within the given parameters. Rein work is seven different maneuvers with eight different patterns that the judges can chose. It is up to the horse and rider to execute these patterns within the given parameters and will get scored based on their ability to execute in a willing and effortless manner. Herd work is the action of cutting two to three cows from a large herd and working them in a 2 minute 30 second window ((a) Association, 2022). Please see the Appendix A for more detailed information from the NRCHA rulebook on scoring and the parameters of each of these events.

2.2 Payouts and Rider Earnings

The Snaffle Bit Futurity is one of the highest paying shows that the NRCHA sanctions. The added money according to the NRCHA website is \$578,000 for 2022 and paying out \$11,000 per go around in total. The NRCHA have increased the payout to the open winner to \$200,000 with the top 30 riders chasing this dream.

Riders strive to make it to the million-dollar lifetime earnings marker. These riders have earned more than 1 million plus dollars in NRCHA events. This is an extremely prestigious milestone for horse trainers and open riders in the NRCHA. As of January 1, 2021, riders that have earned more than \$2 million are: Todd Crawford, Corey Cushing, and Todd Bergen; riders that have earned more than \$1 million are: Jake Telford, Ted Robinson, Anne Reynolds, Zane Davis, Jon Roeser, Boyd Rice, Doug Williamson, Justin Wright, Jay McLaughlin, Chris Dawson, Jake Gorrell, John Ward, Lance Johnston, Phillip Ralls, Kelby Phillips, Bob Avila, Ron Ralls, and Lyn Anderson. ((b) Association, n.d.). Many of these riders are top riders that have made it back to the Snaffle Bit Futurity Finals year after year.

2.3 Top Snaffle Bit Futurity Rider

The top 15 riders that are found within this data set include Jake Telford, Todd Bergen, Robbie D. Boyce, Jay McLaughlin, Ted Robinson, Sandra Collier, Justin T Wright, Chris Dawson, Todd Crawford, Boyd Rice, John Ward, Zane Davis, Jon Roeser, Kelby Phillips, and Corey Cushing. See Riders in the Appendix for more information on each of these influential riders ((b) Association, n.d.).

2.4 Million-Dollar Sires

There are twenty-two sires who have made an impact of being a million-dollar sire and are listed below. See appendix under Million Dollar Sires for NRCHA excerpts. It is important to understand the contributions that each of these stallions have had to the industry to understand trends in riders, owners, diseases, and overall cost of horses as these are all directly influenced by these sires. Additionally, it is important to make note of these sires because they are ones that will be found repeatedly within the results. These stallions include Nu Cash, Shining Spark, Smart Chic Olena, Grays Starlight, Reminic, Mister Dual Pep, Smart Little Lena, Very Smart Remedy, Peptoboonsmal, Chic Please, Smart Little Pepinic, One Time Pepto, Nic It In The Bud, Dual Rey, WR This Cats Smart, Gallo Del Cielo, CD Lights, Metallic Cat, Smooth As A Cat, Bet Hesa Cat, Dual Smart Rey, and Woody Be Tuff ((b) Association, n.d.).

2.5 Breeders

Breeders are an extremely important part of the equine industry. Their knowledge and understanding of optimizing bloodlines are critical to the industry. The following section strives to show the top nine breeders that will be described in the results.

Carol Rose has been in the industry for many years and her contributions are endless. She is the owner of Carol Rose Quarter Horses out of Gainesville, Texas. She is proclaimed to be the number one cow horse breeder and the number five reining breeder (Carol Rose Quarter Horses, n.d.). One of her most renowned stallions is Shining Spark with over \$10 million in progeny earnings and \$62,674 in career earnings. Of the 24 horses she bred that made it to finals, five of these horses were reserve champions of the Snaffle Bit Futurity.

San Juan Ranch of Weatherford, Texas is another powerhouse in the horse industry. According to their website they are a \$2.1 million-dollar breeder and the number three NRCHA breeder. They stand the stallions CD Diamond LTE \$153,320 and SJR Diamond Mist LTE \$179,883. Their mare, Little Oak LTE \$125,702, won them their first Snaffle Bit Futurity win (San Juan Ranch, n.d.). Two of these stallions have been accredited to winning the Snaffle Bit Futurity. No other breeder has been able to accomplish this milestone.

Garth and/or Amanda Gardiner who, own Gardiner Quarter Horses, bred a total of 12 horses to make it to finals. Gardiner Quarter Horses is out of Ashland, Kansas. One of their most influential horses is Time For The Diamond who won the Snaffle Bit Futurity in 2013 and also bred Hickory Holly Time who is another influential sire in the industry. Additionally, they have had three other reserve Snaffle Bit Futurity Champion including Jule Smart Rey, Bet Hes Black, and Plain Wright. They accredit their success to the trainers who have influenced their life like Doug Williamson, Todd Crawford, Kelby Phillips, and Erin Taormino (Gardiner Quarter Horses, n.d.).

Wagonhound Land & Livestock LLC is in Douglas, Wyoming and is home to acclaimed stallions: WR This Cats Smart LTE \$236,514 with offspring's earnings of over \$15,500,000, Graceful Smart Cat LTE \$97,150, and Fiddle and Steel LTE \$195,186. They accredit their success as well to their prodigious selection of broodmares that bring talent to their program (Wagonhound Ranch, n.d.). Wagonhound Ranch accredits "fashionable cutting and reined cow horse bloodlines from other ranches...being infused into the Wagonhound bloodlines through prominent stallions," (Wagonhound Ranch, n.d.) .

Center Ranch owned by Finis Welch who passed in 2020 of Centerville, TX consisted of 8700 non-continuous acres and held their dispersal sale December 9, 18, and 20, 2021 (Sallyharrison.com, 2021). They were home of Woody Be Tuff LTE \$351,062 with offspring earnings of \$7.6 million. It should also be noted that the sale of their stallion Woody Be Tuff set a record upon sale for \$1.3 million. Of their horses that was bred by them is accredited with winning the Snaffle Bit Futurity. The 2021 Snaffle Bit Futurity Champion, Zak 34 with an LTE of \$190,000 and won the SRCHA Pre – Futurity in 2021 (Fischer Farms Too, n.d.).

Another influencing breeder, J Peason ttee JWP TR 5/11/88 have little to no information on their location or history.

Polo Ranch bought eight horses to finals over the years. Polo Ranch is in Marietta, Oklahoma and was home to the great stallions Gallo Del Cielo LTE \$28,438 (only showing his four-year-old year), Soula Jule Star (LTE \$130,000), and Boonlight Dancer (LTE \$136,236 and 2001 Snaffle Bit Futurity Champion). Polo Ranch is owned by Joe and Karalyn Schuchert who bred horses for the cutting, cow horse, and reining industries (Morrison, 2008). Unfortunately, Polo Ranch held their dispersal sale October 17, 2008, and has not bred anything since (Morrison, 2008)

Arcese Quarter Horses USA is from Italy. They are home to Gunnatrashya (LTE \$236,457 and an \$8 million-dollar sire) and Walla Walla Whiz (LTE \$187,820 and a \$4 million-dollar sire) with their home base located in Verona, Italy. Eleuterio Arcese, is the all-time leading owner in the National Reining Horse Association (NRHA). They strive to make “purchases made with an eye toward style and substance” (Arcese, n.d.). In research, there have been other breeders with similar names that may correlate with Arcese Quarter

Horses USA. These names include Arcese Enterprise, Arcese / Pontisso Enterprice, and Arcese & Crawford. If these are included in the total that brings this breeder to a total of 12 horses to the finals and would change them to tying for third for breeders with offspring in the Snaffle Bit Futurity Finals.

Anne M Reynolds is the only non pro to run with these larger breeders and LLC's. Taking a closer look at the horses she has brought to the finals three have had Shirley McInain as a Dam and four have had Very Smart Remedy as a sire. There is little information on the breeding methods used by Anne. A resident of King Hill, Idaho, she is accredited for being the winningest Non-Pro in NRCHA history according to the NRCHA website ((b) Association, n.d.). Additionally, according to the NRCHA she is the first women and non-Pro to reach the million-dollar rider milestone winning a total of 4 Snaffle Bit Futurity Non-Pro Championships.

2.6 Breeding and Techniques

There are different breeding techniques such as ancestral breeding, genetic relationships, outcrossing, and inbreeding in the horses that have made it to the Snaffle Bit Futurity Finals. This study aims to analyze if these horses in the finals have maintained genetic integrity or if they have followed the trend of line breeding. It should also be noted who the breeder is as each breeder will have their own techniques and preferences. Line breeding is defined as the “presence of an ancestor twice or more in a horse’s pedigree with at least one strain present from each parent” (Brinsfield, 2010). The cow horse industry started using the technique of line breeding to incorporate highly desired genes into pedigrees. Additionally, it can be argued that this type of breeding ensures superior traits of common ancestors will be passed down. Other types of breeding techniques are outbreeding and cross-bred. Outcrossing/Outbreeding: There are several forms of

outbreeding: outcrossing, grading up, line crossing, crossbreeding, and mating animal of other species. For the purposes of this research, we will focus solely on outcrossing.

Outcrossing is breeding two species with different lineage. Crossbred can be identified as taking two different types of breeds of horses. For example, crossing a Quarter Horse with a Draft horse.

It is important to note what many breeders are trying to accomplish while breeding a horse for this prestigious event. A good working cow horse will be athletic, conformationally correct, and have a good cow sense about them. In other words, the desired skills come naturally for them, and the goal of training is to fine tune these skills and to bring the horse to its optimum potential. There are a couple of stallions that people will choose to bring different traits to the table. It is extremely important that a horse is conformationally correct to ensure that it has the best chance at success and that it does not sustain an injury due to conformational defects.

There are several common methods of breeding horses. These include embryo transfer, transported semen, frozen semen, and live coverage. Live coverage is that act of both horses being physically present for breeding. Transported semen requires the semen to be collected from the stallion and then subsequently transported to the mare at a separate location. When considering this method, it is important to note, that the semen should promptly be packed and not be submitted to high temperatures or direct sunlight. It is recommended to utilize a veterinarian to ensure proper handling, packaging, and shipping. Most stallion stations offer shipping and collection on certain days of the week (typically 3), and it is important to ensure that those days will work for the mare. Frozen semen is very similar to transported semen. Frozen semen is stored in liquid nitrogen at -196 degrees

C and should be thawed immediately prior to use according to Colorado State University. In terms of getting the mare bred it is recommended by Colorado State to “inseminate a mare with one dose of frozen semen within 8 to 12 hours before she is predicted to ovulate and again within 6 to 8 hours after she is confirmed to have ovulated, if two doses are available” (McCue, n.d.).

It is important to ensure your mare is cycling for both transported and frozen semen. There are two ways to ensure your mare is ready to take. The first is to give an injection of prostaglandin. For this injection to work the mare must be cycling prior or this method will fail (Services, n.d.). The second method give the mare Regumate for 15 days and then give the shot of prostaglandin. According to Equine Services after using this method the mare will come into heat on day 19 and bred between day 21 and 23 (Services, n.d.).

The information on the cost of breeding was obtained from subject matter expert interviews. According to Santa Lucia Farm’s breeding manager Kiley Williams, typically a horse that stays with them and has no issues arise during the breeding process typically costs \$1,575 to breed in total. This cost includes chute fee to one of their farm stallions, board, hormone therapies and uterine treatments. Some clients of theirs chose to leave their mares until they have a heartbeat on the foal which happens at 28 days. This can lead to higher board costs. Clients that ship cooled semen from another clinic but are having their mare bred at Santa Lucia costs range around \$1,700 still covering the two attempts. Clients who chose to use frozen semen only get one try and costs typically are around the \$1,700. If the mare does not take on the first try the fee is an additional \$300. It is important to note that there is a lot more that goes into getting a mare pregnant with frozen semen as the

pricing reflects. All horses are different, and costs will vary as these are estimates based on 2023 contracts (Williams, 2022).

In terms of keep a stallion at Santa Lucia Farm's Kiley states that their breeding season is February 15th – July 1st. Boarding costs are \$35/day and stallions are put on the Eurocisor daily. Costs can increase with the additional add on options of Aqua tread sessions, laser therapy sessions, under saddle conditioning, grass hay feedings, etc. However, the minimum cost of keeping a stallion is \$4,725 with no extras included. Stallions that are in high demand get to the farm early February and leave July 1. Some stallions however will not arrive at the farm until the busier months. (Williams, 2022).

2.7 Diseases in the Quarter Horse Industry

Five-panel testing is becoming exceptionally popular in the industry to help prevent the spread of disease. This panel tests for the following diseases: Glycogen Branching Enzyme Deficiency (GBED), Hereditary Equine Regional Dermal Asthenia (Herda or N/HRD), Hyperkalemic Periodic Paralysis (HYPP), Myosin-Heavy Chain Myopathy (MYHM) , Malignant Hyperthermia (MH) , Polysaccharide Storage Myopathy (PSSM1) . It usually takes up to two weeks to process the test according to Veterinary Genetics Laboratory. (UC Davis Veterinary Medicine, n.d.).

HYPP is found in Quarter Horses and is characterized by paralysis and muscle tremors. MYHM is described as muscle loss and damage and muscle atrophy. MH is described as a stress triggered disease that causes an adverse reaction to anesthesia. It can cause death if it is not caught at the first sign of reaction. PSSM1 is a large amount of sugar in muscle cells. It eventually leads to the horse being in extreme discomfort and unwillingness to move. Herda or N/HRD according to UC Davis is described as hyper elastosis cutis, is an autosomal recessive, inherited degenerative skin disease characterized

by lesions that develop along the back, primarily under the saddle area. It has been identified in American Quarter Horses and other breeds with Quarter Horse lineage, such as American Paint Horses and Appaloosas, with the highest incidence in cutting horse line. (UC Davis Veterinary Medicine, n.d.). This makes the horse unable to be ridden due to the skin sensitivity. HERDA currently has no cure except to DNA test both parents into order to ensure that there is no overlap with HERDA carriers. Horses can also be DNA tested through hair follicle samples that can be submitted to UC Davis. GBED is found in American Quarter and Paint horses. It is described as the lack of sugars in skeletal muscles. “When a foal is missing GBE, the glycogen in its tissues lacks the normal branched structure and thus cannot effectively store sugar molecules. The tissues that rely heavily on glycogen as a fuel are skeletal muscle, heart muscle, and the brain. When foals lack GBE, tissues become weak and unable to function properly” (Nichol Schultz, n.d.). Typically, horses that carry this disease will be born stillborn or die at a very early age. According to research from the University of Minnesota about 10% of all American Quarter Horses may be a carrier of this disease. Excessive white is the last disease that will be looked at. This is the result of the Overo Lethal White Syndrome gene or OLWS. According to University of Minnesota Extension this disease occurs in horses with white markings and a foal that contains two copies of the mutated gene to get the disease. These foals typically have blue eyes and a white coat. Foals that are born with this mutation quickly pass due to their inability to process food which will lead to colic. There is currently no cure for this disease besides euthanasia for sick foals who have the signs of OLWS (Nichol Schultz, n.d.).

2.8 Costs of going to the Snaffle Bit Futurity

Getting a horse to the Snaffle Bit Futurity costs upwards of \$50,000 or more dollars. Costs include but are not limited to, entry fees, training fees from the time they are two years of age to the time they are competing at the event, vet bills, shoeing bills, the cost of the horse itself or the cost of breeding the horse, schooling show fees to prepare the horse for the event, hauling fees, stall fees, and your trainer's day fees for the shows. It is important to factor all these costs together when looking at the amount of money that has the potential to be won. See the table below for the costs to be factored. Please see table 2.1 for a breakdown of these costs.

Table 2.1: Costs of getting to Snaffle Bit Futurity

Variable	Cost	Notes
Training Fees	\$33,000.00	\$1500 / month at 22 months
Shoes Trim	\$480.00	8 trims at \$60
Shoes	\$880.00	8 shoeing's at \$110
Vet	\$2,500.00	Preventive maintenance
Entries Slot	\$3,050.00	This entry type can be sold
Weanling Cost	\$10,000.00	Purchase price of the horse
Coggins/Health Certificate	\$150.00	Vet giving your horse a clean bill of health
Stall Futurity	\$265.00	Where you will keep the horse at the show
Shavings Futurity	\$260.00	30 bags of shavings to bed horses stall
Tack Stall	\$265.00	Sometimes shared with others in the barn and where you can store your items such as saddles, bridles, and pads.
Training Day Fees	N/A	Variable: costs of a trainer being at a show with you
Paid Warmups	N/A	Variable: how many practice runs you need at the show
Schooling Shows	\$2,500.00	Variable; local shows to practice with your horse
Hauling (from CA)	\$1,275.00	At \$.85 / mile (could be more)
Total	\$54,625.00	Variables could increase or decrease with trainer preferences. All numbers are estimates.

These values are estimated based on previous horse show experience and people in industry ((b) Association, n.d.).

CHAPTER III: LITERATURE REVIEW

3.1 Optimizing Pure Line Breeding Strategies Utilizing Reproductive Technologies Review

The primary focus of this study is to highlight the reproductive techniques that are now offered to the industry. These methods have greatly increased due to the introduction of artificial insemination (AI). Stallion selection increases because there are no limits like there are with live coverage. This article also suggests that using MOET, or multiple ovulation and embryo transfers, is more successful than live coverage. However, the authors do note that the MOET process can be harder to implement in larger herd sizes. With the MOET method, it was also discovered that a higher rate of inbreeding occurred when analyzed side by side with conventional methods. The article does note that there are some ways to reduce inbreeding but goes on to state that future developments like in vitro maturation and vitro feralization will further narrow the gene pool which would then create a higher likelihood of inbreeding. The purpose behind the research was to create a higher milk producing cow, but when it came to getting secondary desirable traits, they were unable to accurately record these (e.g. things like health and fertility) (Meuwissen, 1998, p. 53).

3.2 Inbreeding Calculated with Runs of Homozygosity Suggests Chromosome-Specific Inbreeding Depression Regions in Line 1 Hereford

This study focused on the inbreeding depression of Line 1 Herefords who have had closed lines for over 80 years. According to this study this line started with 2 half sibling bulls and 50 unrelated cows to create its formation. What they found within this study is that although this is a closely related gene pool the effects are moderate because of the deleterious alleles in the population (Bethany Pilon, 2021).

3.3 Genetic Diversity and Trends of Ancestral and New Inbreeding in Deutsch Drahthaar Assessed by Pedigree Data

This study states that although they have created a superior hunting dog it does severely limit the genetic diversity. One strong point from this article is that they thought it was important to separate recent inbreeding and ancestral inbreeding. They also concluded in this study that with the shrinking gene pool came the loss of genetic diversity (Distl, 2022).

3.4 Historic Genetic Characterization of King Ranch Quarter Horses

This study strives to analyze the integrity of the King Ranch Quarter Horses. These horses have some of the most influenceable sires in the Quarter Horse industry. The pedigree analysis wanted to see how King Ranch was able to maintain their genetic integrity while keeping linebreeding to a minimum. According to this research many of the qualities that we are breeding for disappear in the second generation. Many breeders today are breeding for “disposition, conformation, intelligence, and smoothness of action,” (Dobson, 2008, p. 5). It was found that most of the horses in the Quarter horse industry derived from the breeding of Thoroughbreds to find the most desirable qualities. The use of arrow diagrams was found throughout this research to show the relationships between multiple horses and one ancestor. It is stated on page 14 that “for any purebred animal, when complete pedigrees are available there will be some level of inbreeding.” (Dobson, 2008, p. 14). This literature took a close look at the relationships that the King Ranch horses had to Mr. San Peppy, Peppy San Badger, and Mr. San Peppy. It utilized an eight-generation pedigree to find genetic relationships of each horse. This article also outlines the basis for foundation quarter horses’ guidelines being that it must have 90% or more foundation genetics to be considered foundation bred. The conclusion of this article is that

it is possible to “achieve low inbreeding levels, while maintaining high genetic relationships,” (Dobson, 2008, p. 28).

3.5 Conclusions from Literature Review

The study by Meuwissen (1998) is the only article that takes a deep dive into what the methods of breeding are being widely used in the industry and boundaries that they are breaking. It is important that these concepts talked about because they offer such a wide variety of stallion selection which will be talked about later in this thesis.

One topic that reoccurs throughout this thesis is qualities that are bred for when using the technique of linebreeding and how a certain line occurred. Studies by Pilon (2021) and Distl (2022) both talk about how they are using one set of horses to create a dominate blood. Inbreeding Calculated with Runs of Homozygosity Suggests Chromosome-Specific Inbreeding Depression Regions in Line 1 Hereford refers to the small gene pool of the Hereford cattle and Section Historic Genetic Characterization of King Ranch Quarter Horses talks about the start of the King Ranch Horses. Both articles put a high value on keep the integrity of the bloodline and not diluting it with too much outcrossing. Each article had one dominate trait that they were in search of master or improving.

Article Genetic Diversity and Trends of Ancestral and New Inbreeding in Deutsch Drahthaar Assessed by Pedigree Data is the only article that talks about linebreeding limiting genetic diversity. The article “Inbreeding Calculated with Runs of Homozygosity Suggests Chromosome-Specific Inbreeding Depression Regions in Line 1 Hereford” and “Historic Genetic Characterization of King Ranch Quarter Horses” both would disagree. They state that it is important however to separate recent inbreeding with line breeding which is chosen to only analyze the first four generations within this thesis.

Overall, all these articles capture the idea that linebreeding is extremely important in the industry to keep integrity in the lines and to also create a superior animal.

CHAPTER IV: METHODS

To achieve the objective of this study, an analytical framework with specific steps followed. First, the data from the results of Snaffle Bit Futurity for the period from 1970 to 2022 are obtained from the organization's website. The Snaffle Bit Futurity website houses all the horse show results for the association. Once the results were found for that year they were incorporated into the database. Second, the breeding information for horses was obtained from the American Quarter Horse Association. The AQHA is the record keeper for all horses that are registered within the association. This association was chosen because many of the horses shown at the NRCHA Snaffle Bit Futurity were Quarter Horses. Horses that were not found within the AQHA system were left blank as the records were not available for free. Third, using data from both sources a database was compiled in Excel. Once all the data was inputted from the NRCHA's website on the Snaffle Bit Futurity results and AQHA website it was then organized into a table. From there it was organized in ascending order to help group and identify trends. Some trends required further investigation and were placed into pivot tables when appropriate. After trends were investigated descriptive graphs and charts were created within Excel to help explain upcoming regression. Fourth, key variables were identified to specify a model for the regression analysis. The variables included following: if linebreeding was present within the first four generations a 1 was given and for all others a 0, if the rider was a part of the million dollar and over in earnings it was given a 1 otherwise a 0, if the horse was a stallion or gelding it was given a 1 mares were given a 0, lastly if the horse was sired by a million dollar in offspring earnings it was given a 1 otherwise a 0. The score was used as a dependent variable. Fifth, an OLS estimation approach was used for the regression

analysis. Gretl was chosen to use for running this model for its user-friendly interface and graphing capabilities.

4.1 Data

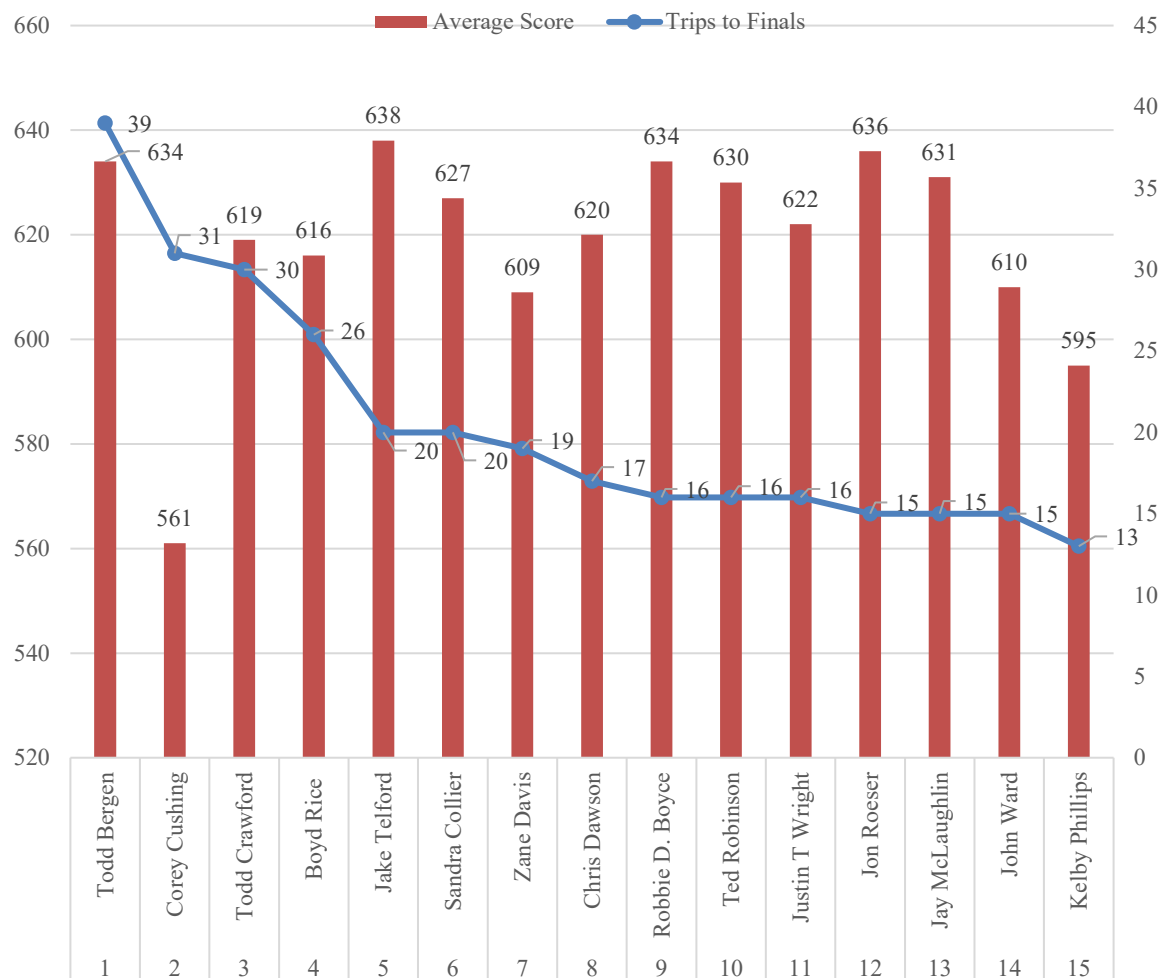
The dataset was compiled over a period from April 2022-September 2022. The main two sources that were used to gather this data is the American Quarter Horse Association and the National Rein Cow Horse Association. Data collection began by taking the overall Snaffle Bit Futurity Results for every year and then looking at the data for all winners over the last 51 years. From there data was inputted manually into an Excel sheet for further analysis. The AQHA website provided their free records search to help guide the linebreeding, breeders, diseases, and gender of these horses. Another source for information was CAB Direct and ProQuest Central searches. These were used to compile literature reviews to help guide my research and this project's objectives.

4.2 Descriptive Analysis

4.2.1 Riders

The descriptive analysis of the data indicates trends among riders who consistently made it to the Snaffle Bit Futurity Finals. It should be considered that the scores here are the average scores of all the runs they have completed in the finals. Therefore, there are this chart shows both data points. The leader in the average scores is Jake Telford with a 638, but the leader of trips to the finals is Todd Bergen with 39 trips.

Figure 4.1: Average Final Score's and Trips



4.2.2 Breeders

Carol Rose has been in the industry for many years and her contributions are endless as stated above. It should be noted that Carol's preferred method of breeding used was embryo transfers and brought a total of 24 horses to the finals between 1970-2021. Of these, five of these horses were reserve champions of the Snaffle Bit Futurity.

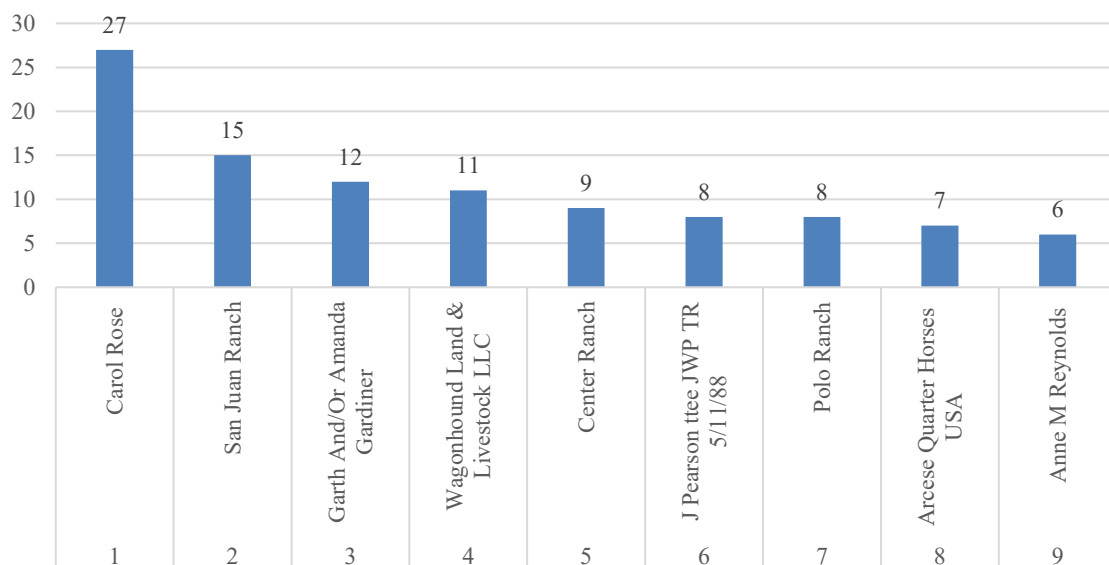
Second is San Juan Ranch of Weatherford, TX. Of the 15 horses that they brought to the finals the most common breeding method that they used was Embryo Transfer.

Garth and/or Amanda Gardiner who own Gardiner Quarter Horses bred a total of twelve horses to make it to finals. Their leading method of breeding is transported semen.

They have had one Snaffle Bit Futurity winner, and three reserve winners. Wagonhound Land & Livestock LLC is located in Douglas, Wyoming. Of the eleven horses that they brought to finals the most common method used to breed was transported semen. Center Ranch brought nine horses to the finals in total with a every horse being bred using the embryo transfer method. Of these horses one is accredited with winning the Snaffle Bit Futurity in 2021.

Next brings in a tie between J Pearson ttee JWP TR 5/11/88 and Polo Ranch each bringing eight each to finals over the years. Arcese Quarter Horses USA brought a total of seven horses to finals. Anne M Reynolds brought in six horses to finals. There is little information on the breeding methods used by Anne.

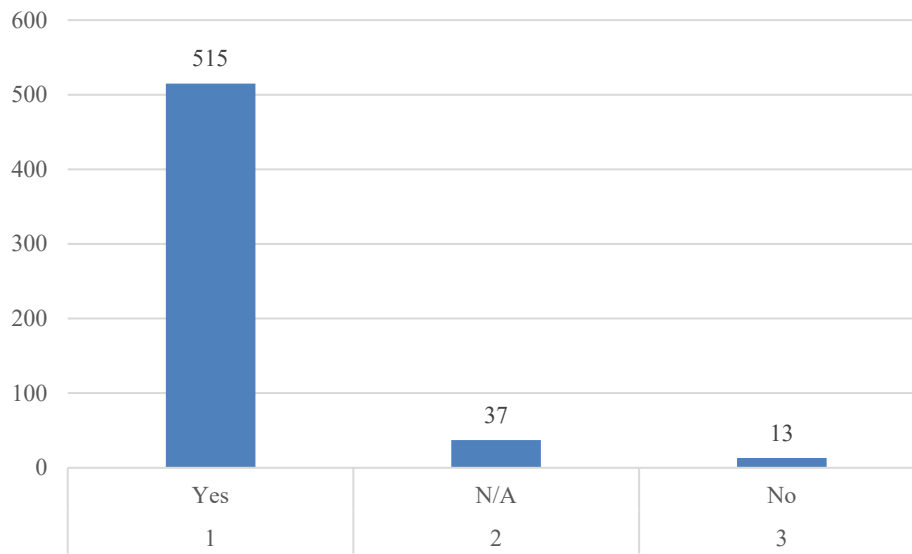
Figure 4.2 Breeders in the Final Results



4.2.3 Linebreeding

This data strives to look at the proportion of horses within this population that have line breeding that occurs within the first four generations of their lineage. Linebreeding is a common practice in the industry to keep qualities and characteristics in the bloodline.

Figure 4.3 Linebreeding

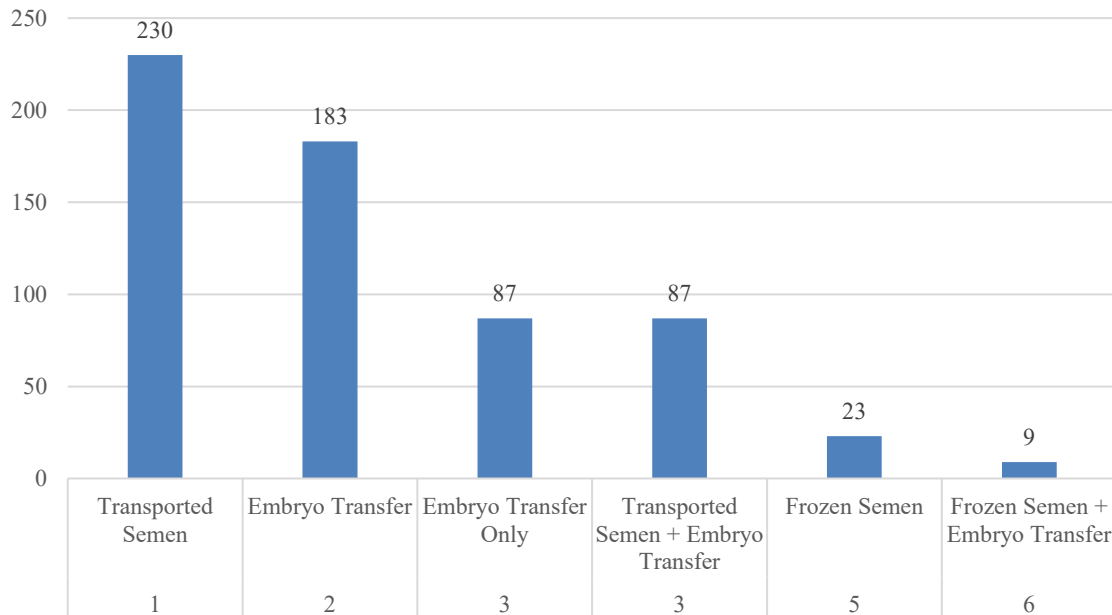


4.2.4 Techniques for Breeding

When looking at the data that is given it is important to note that not all the horses that were finalist had this given information. Of the 571 horses only 340 had information on the breeding techniques that were used.

Transported semen comes in as the leader for the preferred method followed by embryo transfers as the second preferred method. It is important to note that the embryo transfers noted in here were the combination of embryo transfers, transported semen, and frozen semen.

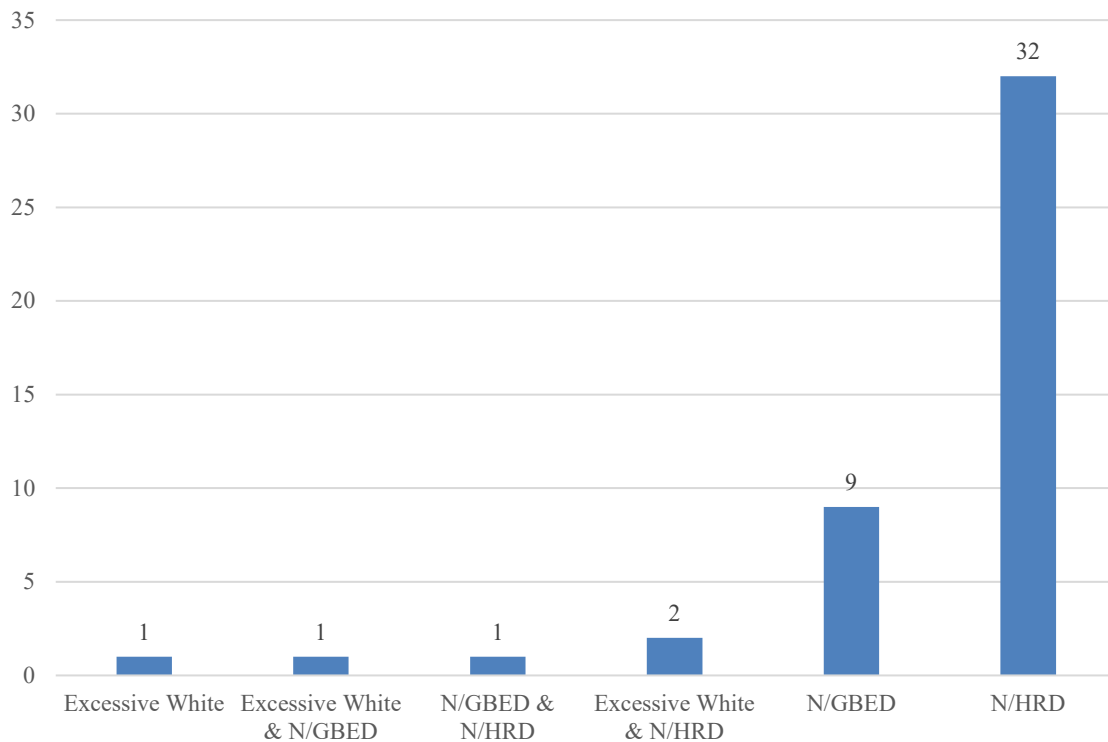
Figure 4.4 Breeding Techniques Used on Finalist Horses



4.2.5 Diseases

Of the 571 horses that were listed only 193 of these had their panel testings available. Of the 193 horses we found that 1 reported excessive white, 1 reported excessive white and N/GBED, 2 reported excessive white and N/HRD, 9 reported N/GED, 32 reported N/HRD, and 1 reported N/GBED and N/HRD.

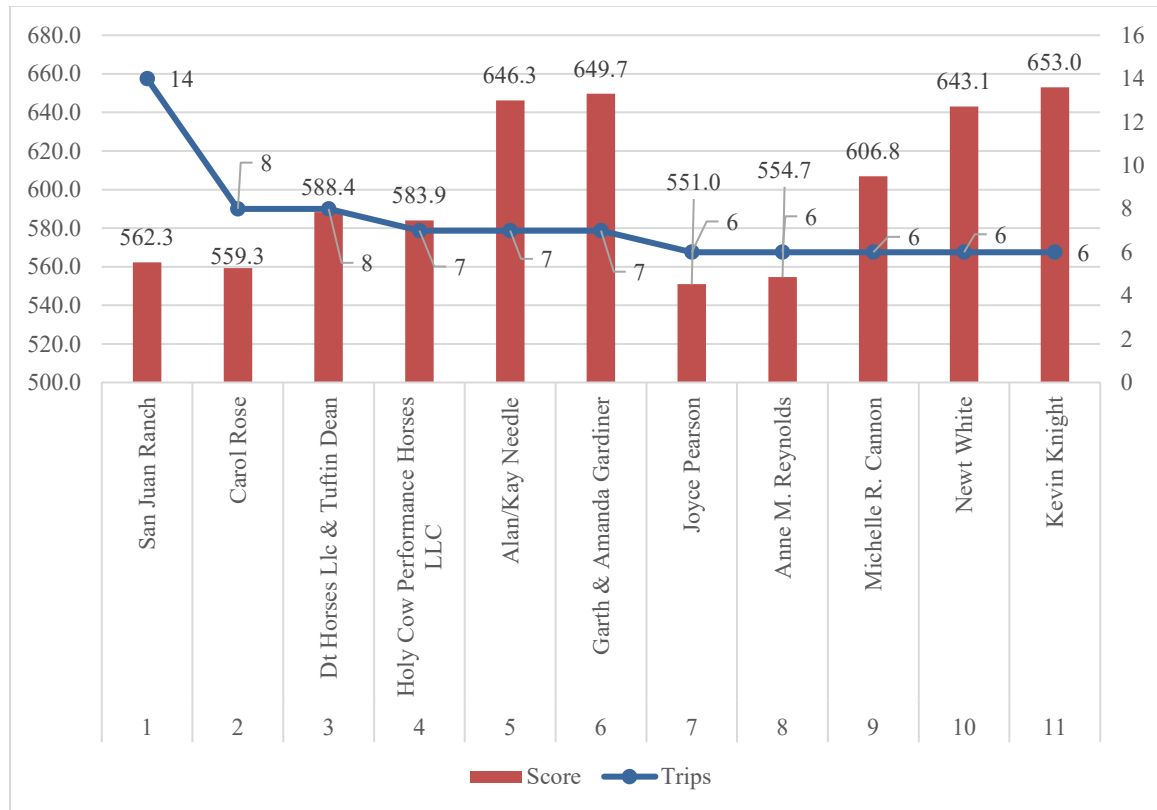
Figure 4.5 Diseases in the Finalists



4.2.6 Owners

It is important to realize that there is also a direct correlation between owners who have had horses who have made it to finals and horses who make it to the finals. There were 11 owners who stood out in this data set. It should be noted that the data displayed in the graph below displays the average scores of the horses that have made it to the finals. This data reflects the number of trips that each owner has had to the finals. This is important as it shows positive trend in relationship and scores. It should be believed that ownership and ability to pay to get these horses to finals is a big factor.

Figure 4.6 Score vs. Finals Trips for Owners of Snaffle Bit Futurity Horses



4.2.7 Genders

Trends in gender data are transparent. The tables below show the count in genders to make it to the finals. Although stallions tend to win the overall championship at the Snaffle Bit Futurity geldings tend to make the finals more. It should also be noted in this data that there were 15 participants that did not have data available.

Table 4.1 Genders of All Finalists

Gender	Count
Gelding	209
Stallion	152
Mare	195
N/A	15

Table 4.2 Genders of Overall Winners of the Snaffle Bit Futurity

Gender	Count
Stallion	26
Mare	18
Gelding	9

4.2.8 Summary of descriptive analysis

It is important to look at the results in terms of the 1st place horse from 1970 to current to see what trends or history might have been made. Over 51 years there has only been one dam to produce more than one winner of the NRCHA Snaffle Bit Futurity, Honey's Best. It should also be noted that these champions were both by King Fritz, and they were shown by two completely different riders. Leocita Chex was a mare that won in 1970 in a tie with Bobby Ingersoll and Strain Ranches as the owner. Big M Nu King a gelding won in 1974 shown by Duane Pettibone and owned by Pat Risley. There was a three-way tie with stallions who had offspring to win the futurity being King Fritz, Master Remedy, Nu Cash, and Smart Chic Olena all having three offspring who won. The only owner to make it to the finals three times is San Juan Ranch. The only rider to make it win the finals seven times is Ted Robinson. In terms of gender, stallions take it by a landslide at 26 in total finals wins.

Within this data it was found that in terms of rider selection Jake Telford had the highest overall scores, but it should be noted that Todd Bergen was four points behind and had 19 more trips to the finals. Breeding was dominated by Carol Rose. In terms of analyzing if linebreeding played a factor in making the finals it could be determined that it is a large factor. Most horses who made it to the finals were in fact line bred within the first four generations. The preferred breeding method was transported semen. Leading disease that was found in these horses was Herda. Owners that have successfully made it to the

finals the most is San Juan Ranch, but the leader in terms of score is Kevin Knight. Lastly, the gender that won the overall futurity the most was stallions, however the gender to make to finals the most is geldings.

4.3 Regression Analysis

Regression models were specified using score as the dependent variable. The regression model that was used was $\text{Score} = f(\text{rider, linebreeding, sex, million-dollar earning offspring sire})$. This model was chosen based on the theoretical, practical, and logical considerations. See Table 4.3 below for summary statistics.

Table 4.3 Summary Statistics Table for Regression Analysis

Variable	Description	Average
Score	This was the dependent variable that was used for the regression analysis.	591
Sex	The gender of the horse. The values used were Mares and Geldings and Stallions were grouped as one.	0.63
Million Dollar Rider	Whether or not the rider that showed the horse was a part of the million dollar rider club.	0.61
Linebreeding	If the horse displayed linebreeding within the first four generations.	0.9
Million Dollar Sire	If the sire of the horse was a part of the million dollar sire club.	0.54

CHAPTER V: RESULTS

There was a total of 570 observations that were analyzed for the model. The average of horses that were linebred in this data set were .90, horses ridden by a million-dollar plus earning rider .61, horses that were a gelding or a stallion .63, and horses with a sire that has offspring of a million plus in earnings .54. Table 5.1 presents the OLS Model and displays that the score for Geldings is 87 points higher than then genders that are not applicable. However, even though these are key factors in the industry, the parameter estimates indicated no statistically significant relationship to the score in this dataset as seen in Table 5.1.

Table 5.1 OLS Model

OLS, using observations 1-570
Dependent variable: Score

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	517.146	48.5139	10.66	<0.0001	***
LineBreeding	-9.27609	22.0094	-0.4215	0.6736	
Rider	5.55505	13.2032	0.4207	0.6741	
GenderStallion	61.8645	48.3142	1.280	0.2009	
GenderGelding	87.3350	47.6954	1.831	0.0676	*
GenderMare	70.0335	47.8498	1.464	0.1439	
MillionSire	11.6829	12.9325	0.9034	0.3667	
Mean dependent var	591.3649	S.D. dependent var	152.8356		
Sum squared resid	13138940	S.E. of regression	152.7657		
R-squared	0.011449	Adjusted R-squared	0.000913		
F(6, 563)	1.086695	P-value(F)	0.368985		
Log-likelihood	-3671.750	Akaike criterion	7357.499		
Schwarz criterion	7387.918	Hannan-Quinn	7369.368		

Some limitations that should be noted in this research is the lack of hereditary data when looking at the 7th generation and beyond. Additionally, not all horses had generational data that was available. Another key point that should be factored in is that

some of the geldings list could have been stallions at the time of finals. The date the horse was gelded was not given though AQHA records.

There are several unobservable factors that was not possible to capture in the analysis. The first one being what a trainers program entail. Every trainer will have a different program and style. This is what makes them all unique and mesh well with the variety of horses that come through their barn doors. It is important to note that within this research there are key trainers that show up continually throughout the project as making the finals.

Another important factor that is not captured in the analysis is the horse's personality type and should be factored into this research. Not all horses are born with the same level of athleticism and drive. This is like different personality types in humans. No two are the same. Additionally, not all horses are born with the same health. Even though horses are strategically bred for confirmation and durability there are some cases in where the horse still outlying factors like navicular, kissing spine, and tendinitis to name a few issues that are out of an owner or trainer's control. Although some issues that arise are treatable not every horse will get to complete at the Snaffle Bit Futurity. While these factors are difficult and/or impossible to measure precisely and incorporate in the regression analysis, they are likely to have an impact on judges scoring.

CHAPTER VII: CONCLUSION

The objective of this thesis is to generate insights into the potential effect of factors such as trainers, sires, gender, and linebreeding have on producing a constant top performer through the analysis of trends in the Snaffle Bit Futurity Finalists data set. The Snaffle Bit Futurity is the largest horse show of the year in the cow horse industry. The winner takes home substantial prize money and the prestigious title. The cow horse industry has experienced an increasing growth in both numbers and prize money over the years. There is a growing interest in examining the trends to understand what trainers are continually at the top, what sires are producing quality offspring, and what breeders have an impact on the horse making it to the top.

The analysis is based on a combination of qualitative descriptive analysis and regression analysis based on a dataset of 570 horses who have made the Snaffle Bit Futurity Finals from 1970 – present. The data that was captured consisted of riders, owners, breeders, year shown, score, linebreeding, and gender. A regression analysis was used to estimate the significance of these factors on the overall population. The results of this study uncovered that although the descriptive statistics show trends there are no statistically significant effects detected in the results of regression analysis. The top descriptive results showed that linebreeding is heavily used within this industry when looking at the first four generations. Additionally, over the years certain million-dollar riders and stallions repeatably make it to the finals. Lastly, there was also a common trend on the owners who made it to the finals. While the trends that were found in the descriptive statistics indicated potential relationship, the results of regression analysis did not indicate statistically significant relationship. Given the limited scope of the data and the analysis, this study was unable to identify and uncover specific factors that can have a significant effect on a horse

becoming a top scoring finalist. One important limiting factor is the inability to capture the extent to which genetic factors and line breeding may affect the chances of success. –

Further studies should investigate how the percent of linebreeding effects the overall score of the finalist. This could be captured by grouping the percent of linebreeding influence found in each horse and giving it the values of 50% if found in Generation 1, 25% in Generation 2, 12.5% in Generation 3, 6.25% in Generation 4, 3.125% in Generation 5, 1.5625% in Generation 6, .78125% in Generation 7, .390625% in Generation 8, .1953125% in Generation 9, and .09765625% in Generation 10. Once trends have been identified they can be grouped together based on the percentage of linebreeding that is present and run a regression based on those results. Other limitations are related to only using one show results and not analyzing the maternal grandsire influence. Potential future studies could look at the percent of linebreeding influence on each horse and the common trends of maternal grandsires. Additionally, if show results from multiple shows and years were used to grasp a better understanding of trends over a longer period of time.

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APPENDIX A

NRCHA Rulebook

This link should be used to look up rules and regulations set out by the NRCHA. These include but are not limited to score, Snaffle Bit Futurity Rules, and equipment.

https://nrcha.com/wp-content/uploads/2021/12/2022NRCHARuleBook_OfficialWeb_12.7.2021.pdf

APPENDIX B

NRCHA Snaffle Bit Futurity 2022 Information

All information pertaining to the Snaffle Bit Futurity 2022 Finals can be found using this link. This includes, but is not limited to, event costs, entries, sponsorships, and exhibitor information packet.

<https://nrcha.com/snaffle-bit-futurity/>

APPENDIX C

Million Dollar Plus Riders



“Jake Telford joins an elite, and small, club as he becomes the fourth National Reined Cow Horse Association trainer to become a \$2 Million Dollar Rider. After conquering the milestone for Million Dollar Rider Club in 2012 where he was

the eighth rider with only twelve years in NRCHA competition it was another victory in Telford's hat. Over the course of his NRCHA career, Telford has earned multiple titles, including 2020 World's Greatest Horseman Co-Reserve Champion aboard Sparktilion, 2015 Snaffle Bit Futurity Open Champion aboard Starlight Kissesm and One Time Rey Jay, to a Reserve finish at the NRCHA Snaffle Bit Futurity in 2012,” ((b) Association, n.d.).



“Jon Roeser was the third NRCHA Million Dollar Rider inducted in 2006. With titles such as NRCHA Open Snaffle Bit Futurity Champion and World's Greatest Horseman. In 2006 he was Open Reserve Champion just days after his father Jim was inducted into NRCHA Hall of Fame,” ((b) Association, n.d.).



“Todd Bergen was the sixth NRCHA Million Dollar rider and the first rider to achieve Million Dollar status in two different associations! (2004 National Reining Horse Association Million Dollar Rider). His first NRCHA Snaffle Bit Futurity was won in 2001 aboard Boonlight Dancer. He has also had two Open Snaffle Bit Futurity Reserve Championships. He has won the NRHA Open Futurity twice in 1995 on Todasmyluckyday, and in 1998 with Chic Please,” ((b) Association, n.d.).



“Jay McLaughlin’s father, Mike, was a versatile professional horse trainer who prepared Quarter Horses and mother, Julann, built a successful 4-H program from the ground up, and operated it for decades. According to NRCHA records, McLaughlin earned his first reined cow horse paycheck in 1999. Just five years later, in 2004, he made his debut at the Snaffle Bit Futurity, enjoying success that few first timers can claim, qualifying for the Open and Intermediate Open Futurity Finals on SS Rosa. McLaughlin’s resume also includes 12 NRCHA and American Quarter Horse Association World Championships. He was the 2013 NRCHA Futurity Open Reserve Champion and the 2015 NRCHA Stakes Open Champion aboard Blind Sided,” ((b) Association, n.d.).



“The Million-Dollar Award was created in 2006 by the NRCHA Board of Directors to honor the riders who have surpassed one million dollars in earnings. The first recipient passed that mark some time ago and as of his induction in 2006,

Ted Robinson’s earnings exceed \$1.8 million. He is one of the winningest riders in the history of the reined cow horse, with seven NRCHA Open Snaffle Bit Futurity Championships and two World’s Greatest Horseman titles to his name,” ((b) Association, n.d.).



“Justin Wright had a successful youth and non pro career. When he was in his mid-teens, Wright saw his path was laid to become a horse trainer. Wright has been an open rider since 2009 and has won multiple NRCHA major limited aged event championship titles. In 2019 Wright achieved million-dollar

status,” ((b) Association, n.d.).



“Chris Dawson thought he would become a veterinarian before stepping into horse training. As a youth rider in the Appaloosa breed industry, Dawson’s stepfather trained cow horses, launching his interest in the sport. He received his first NRCHA cow horse check in 2001. In the fall of 2018, he

surpassed the seven-figure milestone at the Southwest Reined Cow Horse Association Pre-Futurity. In 2019, Dawson was acknowledged the NRCHA’s sixteenth Million Dollar Rider at the young age of 36. Now, Dawson is focused on continuing to make his living

and his family with wife, fellow NRCHA professional Sarah Dawson,” ((b) Association, n.d.).



“Todd Crawford became an NRCHA Million Dollar Rider in 2006, the same year he won the NRCHA Snaffle Bit Futurity Open Championship aboard Smart Crackin Chic. In 2011, he became the first NRCHA competitor to achieve Two Million Rider status, passing that milestone with his earnings at the Snaffle Bit Futurity that year.

A lifelong passion for horses led him to the competitive arena as a youth. Todd later attended Findlay College in Ohio and was in the first class of students to graduate with Bachelor of Science degrees from the school established by legendary horseman Dale Wilkinson. Todd eventually returned to Findlay as an instructor, then set up his own training facility in California. Eventually, he moved to Blanchard, Oklahoma, where he and his wife, Pam, continued to operate Crawford Performance Horses.

His contribution to the NRCHA extends far beyond the show arena. With multiple terms of service as NRCHA President and member of the Board of Directors, as well as a strong interest in the NRCHA Youth program, Todd is one of the association’s most trusted and valued leaders,” ((b) Association, n.d.).



“Boyd Rice won the 2014 National Reined Cow Horse Association World’s Greatest Horseman Championship in Fort Worth, Texas, aboard his 2007 NRCHA Snaffle Bit Futurity Champion, Oh Cay N Short and he became the only rider in the association’s history to win both

those titles on the same horse. Just a few months later, Rice achieved another historical milestone: NRCHA Million Dollar Rider status! Already a National Cutting Horse Association multi-million-dollar earner, Rice’s resume now also includes \$1,009,381 in NRCHA money. In 2002, the first year Rice qualified for the NCHA Futurity finals, he also branched out into the reined cow horse arena, showing his first Snaffle Bit Futurity horse, Deltas” ((b) Association, n.d.).



“The name Ward is almost synonymous with reined cow horse, bringing to mind a long history of great wins and top-notch cow horses. John Ward won his second NRCHA Snaffle Bit Futurity title in 2008, on the home-bred Black Pearl. Ten years earlier, he won the Championship on Masteroani,” ((b) Association, n.d.).



“February 15, 2015 Zane Davis’s earnings made him the twelfth person to achieve the association’s elite Million Dollar Rider status. The son of saddle bronc rider and rodeo producer Shawn Davis, Zane grew up around horses and cattle and competed in rodeo rough stock events in high school to win multiple championship titles. While in high school, he dabbled in the racehorse world, breaking and exercising Thoroughbreds on the track, although he has said he doesn’t regret the teenage growth spurt which made him unsuited for a jockey career. Instead of the typical career path of a cow horse newcomer – assisting an established professional to learn and grow before going out on his own – Davis chose to be self-taught. The NRCHA recorded his first show earnings in 2004. Just five years later, in 2009 won the Snaffle Bit Futurity Open Championship on Reymanator. Riding Ruby’s Radar Davis was the 2014 NRCHA Hackamore Classic Open Champion and the 2014 Stakes Open Reserve Champion. He is a multiple World’s Greatest Horseman finalist, an American Quarter Horse Association Working Cow Horse World Championship finalist, and a fixture in the Open finals at every NRCHA Premier Event,” ((b) Association, n.d.).



“Kelby Phillips surpassed the mark in 2020 with earnings aboard multiple horses, including most recently capturing the 2020 NRCHA Stallion Stakes Open Bridle Spectacular with Duals Lucky Charm. The gelding was also reserve in the 2020 World’s Greatest Horseman competition. Phillips, who trains out of DT Horses, LLC, is the 2013 NRCHA Snaffle Bit Futurity Intermediate Open Champion and the 2019 Snaffle

Bit Futurity Open Reserve Champion as well as holding multiple other premier event champion and reserve champion titles, including the NRCHA Open Hackamore World Championship,” ((b) Association, n.d.).



“Corey Cushing, 32, became the youngest ever NRCHA Million Dollar honoree and the Snaffle Bit Futurity Champion – a long time dream in 2012. Cushing fulfilled the promise of his considerable talents most visibly when he rode CD Diamond to a \$100,000 victory at the 2012 NRCHA Snaffle Bit Futurity. He qualified four horses for the Open finals and walked away from the 2012 event with over \$158,000 in earnings. His first professional breakthrough came in 1999, at the National Reining Horse Association Futurity, when Cushing, as a 19-year-old assistant trainer, won the NRHA Futurity Intermediate Open Championship and qualified for the Open Finals aboard Twice As Shiny. As his career steadily progressed, Cushing’s reined cow horse accomplishments moved into the spotlight. In 2007, he claimed his first major NRCHA title, winning the Stakes Open Championship aboard CC Spin Cycle. He won the 2009 NRCHA Derby on Smart Boons. Cushing also earned back-to-back American Quarter Horse Association Senior Working Cow Horse World Championships in 2011 and 2012 on the mare Rising Starlight. In 2014, Cushing captured his second Snaffle Bit Futurity championship title aboard Good Time. October 20, 2018, Cushing becomes the third National Reined Cow Horse Association Two Million Dollar Rider. Piloting four horses to the 2018 NRCHA Snaffle Bit Futurity Finals and capturing the win and \$125,000 paycheck aboard SJR

Diamond Mist (CD Diamond x Cat Mist x High Brow Cat), owned by San Juan Ranch, secured Cushing's third Snaffle Bit Futurity championship title and second time crossing the seven-figure milestone," ((b) Association, n.d.).

APPENDIX D

Million Dollar Sires



“Nu Cash became an NRCHA Million-dollar sire in 2003. The 1984 stallion, by Colonel Freckles and out of Nu Rendition, is the only NRCHA Open Snaffle Bit Futurity Champion to sire three Open Snaffle Bit Futurity Champions. Nu Cash won the Futurity in 1987 and his offspring swept the Futurity from 1995 to 1997 – The Nu Colonel in 1995, She’s A Lot Of Cash in 1996 and Smart Little Cash in 1997. Offspring have earned more than \$1.7 million in competition, with more than \$1 million alone in cow horse events. He is also the sire of: Nu Chex To Cash, the 2002 NRHA Intermediate and Limited Open World Champion, as well as Non Pro and Intermediate Non Pro Reserve World Champion; 2004 AQHA Amateur Select Team Penning World Champion Nu Jingles Beau; 1997 AQHA Amateur Working Cow Horse Reserve World Champion Nu Cash Blues; AQHA Open Champion Nu Fancee Cash; and 2001 AQHA Youth Working Cow Horse World Champion Cee Nifty Cash,” ((b) Association, n.d.).



“Shining Spark is an NRCHA \$4 Million Dollar Sire. The NRCHA’s second Million Dollar Sire, Shining Spark, reached million-dollar status in 2004. He made headlines when he won the AQHA Junior Reining World Championship in 1993 and the NRHA Open Derby Championship in 1994. Having marked a 230.5 to win his NRHA Derby title, has been known to sire extremely talented performers. His offspring dominate both reining and reined cow horse competition, but they also take the spotlight in roping events. At the 2005 AQHA World Show alone, his offspring picked up four World Championships. Shining Spark is the NRHA’s youngest Two Million Dollar. For 17 years, Shining Spark reigned as the king of cow horse sires. He reached all-time leading sire status first in 2003, and remained at the top until September 2021. He was the first sire to reach Three Million Dollar Sire status in the NRCHA and is the Number One Maternal Grandsire of Cow Horse Money Earners, according to Equi-Stat records. His highest money-earning offspring in the NRCHA is Smart Shinetta,” ((b) Association, n.d.).



“Smart Chic Olena also became an NRCHA Million Dollar Sire in 2004. The late Smart Chic Olena could not only do it all, he also passed on his versatile genetics to legions of performers in the reined cow horse, reining and cutting horse arenas. Smart Chic Olena’s talents were developed under the guidance of cutting horse trainers Bill Glass, Bill Freeman, Dell Bell, and Randy Butler. He later branched out into the reining arena with professional Craig Johnson in the saddle. Smart Chic Olena earned \$167,471 in cutting, reining, and reined cow horse, including a third place in the 1989 NCHA Super Stakes, where he won nearly \$33,000. His other performance accolades included the 1990 AQHA Senior Cutting World Championship and the 1993 AQHA Senior Reining World Championship. However, his most memorable contribution to the Western performance horse industry was as a sire. Year after year, offspring of “Chic” have proven their worth in every discipline, earning more than \$3 million in the NRCHA and approximately \$12 million across all disciplines. In 2004, Smart Chic Olena achieved NRCHA Million Dollar Sire status and joined the National Reining Horse Association Hall of Fame,” ((b) Association, n.d.).



“Grays Starlight, By Peppy San Badger and out of Doc’s Starlight, was born in 1984. He was an exemplary performer, earning over \$35,000 in National Cutting Horse Association earnings. But as a breeding stallion, he was even more exceptional.

Grays Starlight has sired many outstanding offspring, including the 2003 Snaffle Bit Futurity Open Bridle Champion, Starlight Playmate. He has surpassed the Million Dollar Sire Mark in both Reining and Cutting, with total offspring earnings over \$10 Million,” ((b) Association, n.d.).



“Reminic, by Docs Remedy and out of Fillinic was born in 1978, and was destined for greatness, earning over \$90,000 himself in the National Cutting Horse Association.

Then he became a sire for the record books. He sired NRCHA Snaffle Bit Futurity Champion Reminics Pep, has sired NRHA Futurity Open and Non-Pro Champions and is a Million Dollar Sire in reined cow horse, reining and cutting,” ((b) Association,

n.d.).



“Mister Dual Pep (Peppy San Badger x Miss Dual Doc x Doc’s Remedy) became the sixth NRCHA \$1 Million Sire in early 2011. In his performing years, Mister Dual Pep worked his way to \$43,929 in cutting competition, guided by John Ward. They banked their

largest paycheck in 1997, earning \$27,040 for a fourth-place finish at the National Cutting Horse Association Super Stakes Open. Mister Dual Pep foals have earned \$1,172,739.33 in NRCHA competition. Some of his leading performers are Mister Smart Remedy; Playgirls Miss; and Ima Smoking Mister,” ((b) Association, n.d.).



“Smart Little Lena (Doc O’Lena x Smart Peppy x Peppy San), joined the ranks of the NRCHA \$1 Million Sires in 2011. The legendary stallion carried his career-long trainer and rider, the late Bill Freeman, Rosston, Texas, to the first Triple Crown in

National Cutting Horse Association history in 1982 and 1983. Smart Little Lena’s reined cow horse performing offspring have earned \$1,033,534.03 in NRCHA competition.

Several have achieved their own places in NRCHA history. Lil Miss Smarty Chex became a NRCHA Hall of Fame horse in 2012. Two Smart Little Lena sons, Smart Chic Olena and Very Smart Remedy,” ((b) Association, n.d.).



“Very Smart Remedy (Smart Little Lena x Remedys Response x Doc’s Remedy) earned \$103,601 in his own competitive career, proving his excellence in both NRCHA and NCHA competition. Leading NRCHA professional Jon Roeser piloted

the stallion to consecutive NRCHA Derby Championships in 2003 and 2004, and in 2005, the pair won the World’s Greatest Horseman Championship. One of his offspring is ridden by top NRCHA rider Todd Bergen trained and showed Smart Luck to more than \$228,000 in career earnings, including the 2009 Snaffle Bit Futurity Open Finals, fifth place in the National Reining Horse Association Futurity Open, the 2010 NRCHA Derby Championship, the 2011 NRCHA Stakes Championship and the Holy Cow Performance Horses Open Bridle Spectacular Championship at the 2012 and 2013 NRCHA Derby.

Reynolds guided two Very Smart Remedy offspring to great success at the Snaffle Bit Futurity in 2012, making the Open Finals on Very Black Magic and Very Black Magic’s full brother, Smart Medicine Man. In 2011, Reynolds won the Non Pro Futurity on a full

sister, Smart Magic Trick, and also claimed the NRCHA Non Pro Derby Championship on Smart Magic Trick this year. At the 2010 Snaffle Bit Futurity, when Reynolds won the Non Pro Championship and Reserve Championship on two Very Smart Remedy mares, Very Smart Playmate and Smart As Sister, and tied for third place on a Very Remedy gelding, Very Shiney,” ((b) Association, n.d.).



“Peptoboonsmal’s offspring earnings across all disciplines exceed \$20 million. He has been a top cutting horse sire every year since his first foal crop came of show age in 2001. His NRCHA-performing foals have won \$1,152,368.59. The top-earning cow horse sired by Peptoboonsmal is the 2005 red roan stallion Smart Boons. Shown primarily by NRCHA \$1 Million Rider Corey Cushing, Smart Boons earned \$191,273, including the 2009 NRCHA Derby Open Championship, before retiring from the show pen in 2012. Other leading cow horses by Peptoboonsmal include the 2001 NRCHA Snaffle Bit Futurity Open Champion, Boonlight Dancer, Jasons Peptolena, and Picka Patcha Pepto,” ((b) Association, n.d.).



“Chic Please (Smart Chic Olena x San O Lenita x Tenino San), foaled in 1995. Trained and shown by NRCHA \$1 Million Rider Todd Bergen, Chic Please achieved the remarkable feat of capturing the NRCHA Snaffle Bit Futurity Open Reserve Championship and then, a few weeks later, winning the National Reining Horse Association Open Championship. Chic Please earned \$209,184 in reining and cow horse money during his competitive career. Chic Please has fathered offspring with \$1,028,481.96 in NRCHA earnings. His top performing cow horse foal is No Chic Flicks. Shown in Open competition by NRCHA Professional Justin Wright, and in the Non-Pro by the Richards’ daughter, Laurie Richards Ward, No Chic Flicks has earned \$124,150 in reined cow horse money. Other leading Chic Please offspring include More Magic ARC Sparkin, ARC Hollys Chicadee, and Ima Chic Please,” ((b) Association, n.d.).



“Smart Little Pepinic’s offspring elevated their sire to elite status when their earnings at the 2013 National Reined Cow Horse Association Snaffle Bit Futurity surpassed the lifetime \$1 million mark. Smart Little Pepinic (Smart Little Uno x Pepinic x Peppy San Badger) was foaled in 1993. According to Equi-Stat, Smart Little Pepinic’s own performance earnings totaled \$87,762. John Ward piloted him to the majority of that money, both in the National Cutting Horse Association and the NRCHA arenas. Smart Little Pepinic made his debut as a cutting horse, qualifying for the Open finals at the 1997 Gold Coast Winter Derby and the Abilene Spectacular Derby. In the reined cow horse show pen, John Ward guided Smart Little Pepinic to numerous Championships and top placings, including a NRCHA Two-Rein National

Championship; the Open Two-Rein Championship at the 1999 NRCHA Futurity, NRCHA Stakes and NRCHA Hackamore Classic; 3rd place at the 2000 NRCHA World's Greatest Horseman; and the 2007 World's Richest Stock Horse Championship. Smart Little Pepinic was recognized at the 2014 NRCHA Snaffle Bit Futurity,” ((b) Association, n.d.).



“The elite list of those that have achieved \$4 Million Dollar Sire status in the National Reined Cow Horse Association now totals three with the inclusion of One Time Pepto. The red roan stallion, now has NRCHA earners of more than \$4,078,998.37, as of January 5, 2022. Sired by Peptoboonsmal and out of One Time Soon, by Smart Little Lena. When the horse achieved NRCHA Million Dollar Sire status in 2014, there were only 61 NRCHA earners to his credit. Now, 232 offspring have contributed to the stallions astounding \$4 million mark. The foals continue the red roan stallion's show pen success, where under trainer Matt Gaines, One Time Pepto earned more than \$330,000 in the cutting pen. The sire's top offspring include household names in the reined cow horse industry, including 2013 NRCHA Snaffle Bit Futurity Open Champion Time For The Diamond 2012 NRCHA Snaffle Bit Futurity Open Reserve Champion This One Time and the 2018 World's Greatest Horseman Champion Hickory Holly Time. However, it is Rubys Radar that takes the top spot in One Time Pepto's offspring earnings with \$258,138.98 and the title of the 2021 The Run For A Million Fence Challenge Champion. The stallion has seven offspring with more than \$100,000 in earnings, and the total continues to climb. Additionally, One Time Pepto has National Cutting Horse Association offspring with earnings that put him as the number five leading sire,” ((b) Association, n.d.).



“Nic It In The Bud (Reminic x Genuine Redbud x Genuine Doc), a 1997 stallion is a versatile performer with accolades in both reined cow horse and reining. Trained and shown by NRCHA Million Dollar Rider Todd Bergen, Nic It In The Bud made his futurity debut in Reno, qualifying for the Open finals in 2000. Less than three months later, he traveled to the National Reining Horse Association Futurity in Oklahoma City, again earning a berth in the Open finals. In 2001, as a four-year-old, Nic It In The Bud added to his NRCHA resume by winning both the Stakes and Derby Open Championships under Bergen’s saddle. He also was an American Quarter Horse Association World Championship finalist in Junior Reining that year. When he advanced to bridle horse age in 2003, Nic It In The Bud proved he could go the distance, earning the World’s Greatest Horseman Reserve Championship with Bergen aboard, and making the Top 10 at the AQHA World Show in Senior Working Cow Horse. He retired with lifetime earnings right at the \$149,000 mark. As a sire, Nic It In The Bud quickly established his credentials, becoming a NRCHA top 12 and NRHA top 30 Leading Sire in 2009. He climbed still higher in both associations’ rankings in in 2011, becoming a top 10 reined cow horse and reining sire. Nic It In The Bud’s reined cow horse performers have earned a combined \$1,001,722. His top five NRCHA money-earning foals are; Nics Black Diamonds, Nic It Smartly, Peppy Nicolena, Lenas Buddy Nic, and Kickback Nic,” ((b) Association, n.d.).



“Dual Rey, has been firmly established in the cutting horse industry for more than a decade. Since 2005, he has been ranked as the No. 1 or No. 2 sire in the NCHA, and his foals have earned more than \$26 million in the cutting arena. Now, with total NRCHA offspring earnings of \$1,001,696, Dual Rey (Dual Pep x Nurse Rey x Wyoming Doc), leaves no doubt

about his versatility as a sire. The 1994 stallion began his performance career at the NCHA Futurity, where he tied for 6th place. Some of his cutting accomplishments beyond his 3-year-old year included the NCHA Super Stakes, where he split 5th place, and he won the Memphis 4-Year-Old Open Futurity Championship. Dual Rey retired from the competitive arena with \$105,038 in earnings. His sparkling sire career has countless highlights. In 2009, a Dual Rey foal won both the NRCHA Futurity Open and the NCHA Futurity Open Championships. The NRCHA Snaffle Bit Futurity Champion was Reymanator. On the cutting horse side, Rocking W won the coveted NCHA Championship in 2009. Dual Rey’s top five NRCHA money-earning foals are: Reymanator, Dom Dualise, Reygangs Smart Lena, Desire Rey and Play Dual Rey as of November 2014,” ((b) Association, n.d.).



“The 1999 stallion WR This Cats Smart (High Brow Cat x The Smart Look x Smart Little Lena) began his performance career in the National Cutting Horse Association arena. The fancy sorrel earned \$236,514 in NCHA money and became a finalist at 24 major NCHA aged events as a 4, 5, and 6-year-old. His accolades include the 2005 NCHA Open Finals Championship. The first foal crop by WR This Cats Smart arrived in 2005, and he has sired 968 American Quarter Horse

Association-registered offspring. His foals quickly proved their abilities in multiple performance arenas, earning more than \$6.1 million in all disciplines, primarily cutting. Eighty-seven foals by WR This Cats Smart contributed to his NRCHA Million Dollar Sire status, winning a total \$1,080,082 in the multi-event reined cow horse arena. WR This Cats Smart has been bred to some of the industry's finest mares, including leading NRCHA dam and Hall of Fame horse Smoke Time Tuck (Doc Tom Tucker x Ima Smoke x Mr Fools Smoke). One foal from that particular cross, the 2007 gelding Tuckers Smart Cat, has become WR This Cats Smart's top NRCHA money-earner, with more than \$150,000 and a Supreme Reined Cow Horse designation on his resume. Other top cow horses by WR This Cats Smart include Sinful, TF The Gus Man, Halo Cat, Camilla The Cat, and Shine Smarter," ((b) Association, n.d.).



"Gallo Del Cielo (Peppy San Badger x Doc Starlight x Doc Bar), also known as "Rooster," left an indelible impact on the entire Western performance horse industry. One of his most recent accolades is Million Dollar Sire status in the National Reined Cow Horse Association. Rooster was foaled in 1989. His own show career was brief. He competed only as a 4-year-old year, winning \$28,438 in National Cutting Horse Association money. Though Rooster was trained as a cutting horse, his offspring demonstrated particular flair for the reining maneuvers, making Rooster a \$3 Million Sire status in the National Reining Horse Association. His more than 500 performing foals have earned more than \$5.8 million across all disciplines. Rooster babies do more than spin and slide; they also have risen to

the top in the multitasking reined cow horse arena. In the NRCHA, 112 Rooster foals shared in their sire's Million Dollar Sire achievement, with combined earnings of \$1,010,778. The top reined cow horse by Rooster is Roo Star, Son Shining Rooster, Roosters Chicaroo, Sheza Roo, and Roosters Hickory," ((b) Association, n.d.).



“As offspring of CD Lights (CD Olena x Delight Of My Life x Grays Starlight), have officially surpassed the seven-figure earnings milestone in March, 2017. CD Lights is the 17th American Quarter Horse stallion to earn Million Dollar Sire status in the NRCHA. Known to many in the performance horse industry by his nickname, “Boss,” CD Lights is a 1999 stallion. CD Lights earned \$234,000 in five seasons of NCHA competition. He became a finalist at 14 major NCHA limited age events, including the 2002 NCHA Futurity Open and the 2003 NCHA Derby Open. Another career accolade for CD Lights was marking a 229 to win the 2006 NCHA World Finals Championship, after which the stallion was retired from showing. CD Lights passed on his superior physical ability and disposition to his offspring, beginning with his full foal crop which arrived in 2005. As 3-year-olds, those youngsters began proving themselves with substantial earnings in the 2008 futurities. CD Lights babies made their earliest impression in NCHA competition, but quickly crossed over to assert themselves as champions in the demanding triathlon of reined cow horse. Hansma has continued his role in CD Lights' career by training and showing his offspring to major titles in the cutting horse and cow horse arenas, winning the 2013 NRCHA Snaffle Bit Futurity Limited Open Championship on Bossy

Brother. In 2017, the leading NRCHA money earner by CD Lights is CD Dee Vee Dee,”
((b) Association, n.d.).



“Metallic Cat is the current NRCHA All-Time Leading Sire (as of 10/1/2021) Metallic Cat (High Brow Cat x Chers Shadow x Peptoboonsmal) is the 18th stallion to achieve NRCHA Million Dollar Sire status, with more than \$1.4 million in offspring cow horse earnings. The 2005 red roan stallion, referred to as “Denver”, has lifetime earnings of \$637,711, Metallic Cat won several prestigious titles, including the 2008 NCHA Open Futurity Championship and 2009 NCHA Horse of the Year. Denver made just 12 trips to the show pen, never missing a finals. After Metallic Cat’s impeccable show career, he retired to the breeding barn, where he would quickly become one of the Western performance horse industry’s all-time leading sires. While Metallic Cat is a well-established name in the cutting horse world, closing in on \$19 million in NCHA money-earners, his impact is also greatly felt within the reined cow horse industry. Becoming one of the industry’s most sought-after generics, Metallic Cat’s offspring are known for their trainability and cow smarts. Metallic Cat’s offspring reached this incredible achievement in just five foal crops. His first foal crop debuted at the 2013 futurities and have been dominating the demanding triathlon of reined cow horse ever since. The red roan stallion’s offspring has cut, reined and gone down the fence to the tune of more than \$4,250,000*. In 2018, Metallic Cat became an NRCHA Million Dollar Sire and less than a year later surpassed the Two Million Dollar Sire mark. Metallic Cat passed the Three Million Dollar Sire mark in August 2020, and again took less than a year to pass

his next major sire milestone. Metallic Cat's top two NRCHA stallion offspring are both horses that have competed in all aspects of reined cow horse events. Call Me Mitch, a 2011 stallion out of Miss Hickory Hill and Cats Picasso, a 2012 stallion out of Playboys Vixen (by Hickoryote).

Though the older horses rise to the top of the 437-horse list of Metallic Cat's offspring in the NRCHA database, the young performers are just as competitive. In April, 2016 stallion Hazardouz Material, out of Scooters Daisy Dukes, earned the NRCHA Stallion Stakes Open Championship and lifetime earnings to \$104,517.62. In July, 2017 stallion Ricato Suave, out of Hip Hip Sue Rey took the Dom Conicelli Memorial Eastern Derby Open Derby Champion title to push that horse's earnings to \$104,601.49. With all that he's given to the equine industry as a \$42 million dollar sire in cutting, reining and reined cow horse, Metallic Cat's connections, led by long-time manager Roberts, continue to heavily support the NRCHA both in and out of the arena," ((b) Association, n.d.).



“With more than \$1.1 million in reined cow horse earnings, Smooth As A Cat offspring have proven their sire's stellar genetics and diversity, making him the 19th stallion to achieve NRCHA Million Dollar Sire status. Before becoming one of the Western performance horse industry's top sires, Smooth As A Cat (High Brow Cat x Shes Pretty Smooth x Wheeling Peppy) first made his mark in the show pen, collecting more than \$500,000 in NCHA open and non pro earnings. In addition to his impressive show career, and being a finalist 43 times, Smooth As Cat was also named 2005 NCHA Horse of the

year. After four successful years in the show pen, Smooth As Cat retired to the breeding barn, completely sound and ready for the next phase of his life. The stallion's first foal crop arrived in 2004 and proved to be a success, when all seven American Quarter Horse Association-registered foals became money-earners; making him a 100% producer right out of the gate. Smooth As A Cat has gone on to produce more than \$25 million in earners, across all disciplines, and is the only sire to produce two NCHA Open Horses of the Year. Smooth As A Cat's pleasant disposition, willingness to train and athletic ability have become some of the most desired traits for breeders, owners and competitors. With eighty-three reined cow horse money-earners, the top five Smooth As A Cat offspring have earned more than one-half million dollars, as of June 30, 2018 These horses are Smooth N Cash, Smooth Bellingrath, Cats Shiney Pistols, Smooth Classical, and Two Kitties," ((b) Association, n.d.).



“Bet Hesa Cat a 2006 red roan stallion has sired NRCHA earners of \$1,155,263.14 to rank 19th overall on the NRCHA top sires list, as of March 2020. An earner of \$267,465 in the National Cutting Horse Association, Bet Hesa Cat is by No. 1 all-time leading cutting horse sire High Brow Cat and out of the Freckles Playboy daughter Bet Yer Blue Boons. One of Bet Hesa Cat's most noted NRCHA money earner is 2017 Open Snaffle Bit Futurity Champion Plain Catty. Bet He Sparks is another Bet Hesa Cat's top earner. Bet He Sparks has numerous NRCHA wins to his credit, among them the 2019 NRCHA Hackamore Classic Open championship and 2019 NRCHA Derby Open championship. In 2017, Bet He Sparks was the NRCHA Futurity Intermediate Open

Reserve Champion. Bet Hesa Cat also sired the 2017 Open Snaffle Bit Futurity reserve champion Bet Hes Black, and is one of only three stallions in NRCHA history to sire horses that went on to earn the Open Snaffle Bit Futurity championship and reserve championship in the same year,” ((b) Association, n.d.).



“When the National Reined Cow Horse Association wrapped the 2021 show year, offspring earnings tallied showed Dual Smart Rey achieved the earnings milestone to become NRCHA Million Dollar Sires. The NRCHA Million Dollar Sire accolade has only been earned by 22 sires since the association’s inception in 1949. Dual Smart Rey (Dual Rey x The Smart Look x Smart Little Lena), a 2002 Quarter Horse, has NRCHA earners of \$1,038,613.54 as of December 1, 2021. The stallion earned more than \$330,000 and the NCHA Open Super Stakes Champion title in the arena. An offspring, Duals Lucky is the 2016 NRCHA Snaffle Bit Futurity Open Championship. The win drew the eye of reined cow horse breeders, and after also winning the 2020 World’s Greatest Horseman, Duals Lucky Charm, is Dual Smart Rey’s highest money earning reined cow horse with \$273,753. In 2021, the Non Pro Snaffle Bit Futurity Champion Abbie Phillips rode was sired by Dual Smart Rey—TRR Dual Smart Olena, That win boosted Dual Smart Rey’s offspring earnings by \$25,000,” ((b) Association, n.d.).



“Woody Be Tuff (Nitas Wood x Tuffs Junie x Tuff Wood) was inducted in 2021. He sired the 2021 NRCHA Snaffle Bit Futurity Open Champion Zak 34, which helped to catapult him

over the million-dollar mark to claim \$1,176,601.12 in reined cow horse offspring earnings. This Quarter Horse stallion stamps many of his offspring with his signature sorrel color with a flaxen mane and hair and, often, white legs or blazed face. When a horse matching that description enters the arena with a “Sigma” brand, it is more than likely sired by Woody Be Tuff,” ((b) Association, n.d.).