Colorado Voters for Animals
191 University Blvd., #345
Denver, CO 80206
roland@covoan.org – 303-720-9293

Dear Committee Member

SB23-038 - Concerning a prohibition on slaughtering equines for human consumption – is a much-needed piece of legislation that will prevent horses from being sent to slaughter for processing into food as well as prevent slaughter plants from opening in Colorado in the future.

Within this packet you will find:

1. An American Veterinary Medical Association article: "*A review of horses sent to slaughter for human consumption: impact of horsemeat consumption, residual banned drugs, and public health risk*" "*(A)ll horses that are administered banned substances in the United States must be removed from the slaughter pipeline as exists for all other food-producing animals. If resources do not permit strict oversight, the United States must end the transportation of American horses across both borders for slaughter for human consumption*".

2. An article published in the journal *Animals: Estimating the Availability of Potential Homes for Unwanted Horses in the United States* reporting on a survey among 3,036 adults indicating there is capacity to accommodate the so-called "unwanted horse" problem.

3. A Facebook page from Jason Fabrizius, a Colorado "kill buyer" who preys on people by telling them if they don't buy his horses, he will send them to slaughter.

4. Summary of a judgment in the amount of $210,000 against this same kill buyer (above) for multiple USDA violations including Interstate movement of diseased animals and failure to secure interstate certificates of veterinary inspection.

5. An article from the Pacific Standard entitled "Fuzzy Math" that exposes errors in the Government Accounting Office report that claimed horse neglect and abuse increased when U.S. horse slaughter houses shut down, which was false.

6. A letter from two Colorado Veterinarians who believe sending horses to slaughter is inconsistent with their duty to care for animals.

7. Testimony from Patrick Craig, founder of The Wild Animal Sanctuary.

AJVR

AVMA

A review of horses sent to slaughter for human consumption: impact of horsemeat consumption, residual banned drugs, and public health risks

Klaus Weber, DVM[1]; Michael E. Kearley, DVM[2]; Ann M. Marini, PhD, MD[3]; Peter Pressman, MD[4]; A. Wallace Hayes, PhD, DABT, ERT[5]*

[1]AnaPath Services GmbH, Liestal/Oberbuchsiten, Switzerland
[2]Land of Lakes, Tampa, Florida
[3]Uniformed Services University of the Health Sciences, Bethesda, Maryland
[4]Saba University School of Medicine, The Bottom, Netherlands Caribbean
[5]University of South Florida, Tampa, Florida

*Corresponding author: Dr. Hayes (awallacehayes@comcast.net)

doi.org/10.2460/ajvr.22.10.0185

ABSTRACT

Nearly all of the American horses exported to Mexico and Canada are slaughtered for human consumption, and their meat is either exported around the world or consumed locally. Previous work showed that 18 Thoroughbred racehorses purchased by rescues that would have otherwise been sold for export for the sole purpose of slaughter to produce meat for human consumption were administered phenylbutazone. We report the number of American horses exported to Canada and Mexico from 2016 to 2021, the presence of contaminated horsemeat from Canadian slaughterhouses, and the human use and idiosyncratic effects of veterinary phenylbutazone and side effects of clenbuterol, 2 of the drugs that were found in contaminated Canadian horsemeat. The number of live American horses exported to Canada declined precipitously from 2016 to 2017, and a second decline occurred in 2020. All food-producing animals are under strict regulatory control to prevent animals administered banned drugs to enter the food chain. A major principle of this program is zero tolerance for banned drugs and testing for compliance. No regulatory process is in place to remove horses administered banned drugs such as phenylbutazone. The efficacy lasts for more than 24 hours as a result of the irreversible binding to cyclooxygenase, slow elimination, and long elimination half-life of its metabolite oxyphenbutazone. High or frequent doses of phenylbutazone result in disproportionately increased plasma concentrations, which result in the residual presence in tissues. It is this fact that underlies the ban of this drug in food-producing animals. No human clinical surveillance program is in place to monitor individuals on the possible short- and long-term consequences of banned drugs in contaminated horsemeat. If the United States is unable to put in place a regulatory program to remove horses administered banned drugs as exists for all food-producing animals, the exportation of American horses across both borders for the sole purpose of slaughter for human consumption must end.

Introduction

Global horsemeat market

Institutional, economic, religious, cultural, intellectual, and social forces together with escalating food insecurity appear to dictate the consumption of horsemeat. Some countries such as Norway, Iceland, and Sweden have banned horsemeat consumption. In contrast, China, Kazakhstan, the United States, and Mexico are the 4 top producers of horsemeat. Despite this fact, there are no operating horse slaughter plants in the United States. European countries are the main consumers of horsemeat. Data obtained in 2014 list Italy as the largest importer of horsemeat followed by Belgium and France with Finland importing the least amount of horsemeat whereas Belgium, Argentina, Canada, and Mexico are the top exporters of horsemeat. Belgium (1.2 kg/person/year), Italy (1.0 kg/person/year), Netherlands (1.0 kg/person/year), and Luxembourg (0.75 kg/person/year) are the top consumers of horsemeat. Overall, about 10% of the approximately 60 million horses worldwide are slaughtered for human consumption. There was about a 2.75% increase in the number of horses slaughtered around the world in 2013 compared with 2009 although there was a 3% and 10% reduction in world exports and imports, respectively. However, the flow of horsemeat in markets varies. There was a 14% reduction and an 82% increase in European imports and exports of horsemeat, respectively, from 2009 to 2011. Still, horsemeat exports are an ~500 million US dollars per year industry.[1]

Regarding taste preferences, a group of subjects from Alberta, Canada were surveyed about different aspects of certain meats, including horsemeat. Words such as "cruelty," "aversion," "disgust," "pet,"

"unethical," and "entertainment" were cited by this cohort pertaining to horsemeat, whereas beef was synonymous with "barbeque" and "burger," terms that were not used to describe horsemeat.[2]

Horse slaughter in the United States

The Food and Drug Administration (FDA) considers horses as companion animals and not food-producing animals.[3] Economically, marketing horsemeat in the United States would likely not fare well as most Americans are opposed to horse slaughter and there are a variety of other types of meats available. Despite the elevated status of horses in the United States, multiple horse slaughter plants were scattered across the country more than a decade ago. Most went out of business but there were 3 remaining horse slaughter plants in the United States, 2 in Texas and 1 in Illinois. All 3 plants were foreign owned and all of the horsemeat was sent overseas for human consumption. A Congressional amendment removed funding for inspections of live horses at these plants in 2006. In 2007, the 3 remaining horse slaughter plants were shut down permanently as a result of existing changes to state laws. From 1989 to the time all horse slaughter plants closed, the number of horses slaughtered for food in the United States declined from approximately 350,000 in 1989 to less than 50,000 in 2007.[4] A major goal of the present review is the examination of what has recently changed in the United States regarding the export of live horses destined for slaughter.

Methods

This work was performed using the guidelines of PRISMA.[5] The number of horses exported to Canada for human consumption is located at the website,[6] and by sending a message one can be added to the distribution list at: aafc.redmeat-vianderouge.aac@agr.gc.ca. The number of horses exported to Mexico for slaughter and human consumption was obtained on the website.[7] Searches were conducted in PubMed and Evidence-Based Medicine (EBM) reviews-Cochrane Database of Systematic Reviews. The search was limited to articles published in English. The search strategy was designed to find studies on banned veterinary drugs in food-producing animals, hematological and other adverse effects in humans of banned drugs in food-producing animals, and adverse effects of contaminated horsemeat in humans. We identified 330 papers in EBM reviews; none were relevant to this article. In PubMed, there were 8,982 citations on phenylbutazone alone as a keyword and 3 citations using phenylbutazone and horsemeat in combination. Forty-seven citations from the PubMed literature search and another 30 eligible articles found in the reference lists were used in the preparation of this study. Keywords were as follows: phenylbutazone, bone marrow suppression, oxyphenbutazone, aplastic anemia, agranulocytosis, thrombocytopenia, food-producing animals, horsemeat, idiosyncratic, human effects, teratogenic, genotoxic, clenbuterol, contamination, adverse effects, veterinary, horses, legal drugs, illegal drugs, and banned drugs.

Results

The United States has been exporting horses to slaughter to Canada and Mexico since 1999. Canada ships the vast majority of its horsemeat to Europe and non-European Union (EU) countries with a relatively small amount for domestic consumption. Mexico slaughters horses across the country, regards horsemeat as a poor substitute for beef, and uses horsemeat as a filler domestically.[4] The number of American horses exported to Canada from 2016 to 2021 is shown **(Figure 1)**. On average, American horses represent about 50% of the horses slaughtered for food in Canada. The results show a precipitous reduction in the number of horses exported to Canada for slaughter in 2017 and another almost 50% reduction in 2020 compared with 2017. The number of American horses exported to Mexico for slaughter is shown (Figure 1). The percentage of American horses sent to Mexico for slaughter compared with the overall annual number of horses slaughtered in Mexico is not available. Here, the precipitous reduction in the number of American horses exported for slaughter occurred in 2020.

In response to the contaminated horsemeat scandal in the United Kingdom, the European Union instituted a new policy in 2017. This policy change was

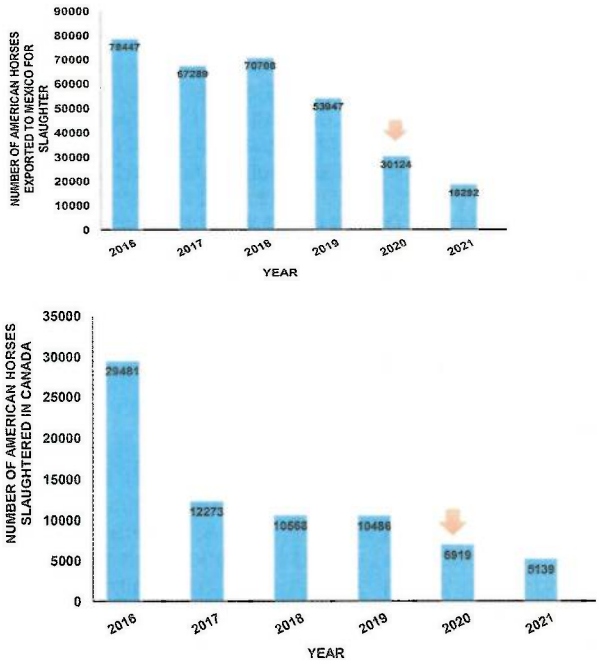


Figure 1—The number of American horses slaughtered for human consumption by Canada and Mexico. The number of American horses exported to Canada[6] (A) and Mexico[7] (B) for slaughter for human consumption from 2016 to 2021 is represented on the x-axis and the year is represented on the y-axis. The arrow (orange) indicates the year of the Coronavirus pandemic.

due to a variety of reasons including our prior report[8] demonstrating that all identified rescued racehorses were administered the banned drug phenylbutazone that would otherwise have been sent to slaughter for human consumption. As a result, horses slaughtered in Canada whose meat would be shipped to the European Union must be held for 6 months in Canada before slaughter.[9] American horses can be imported into Canada and slaughtered for human consumption within 4 days,[10] and the meat can probably be shipped to some non-EU countries. As a result of research published in 2013, all Swiss, several Belgian, French, and Dutch supermarkets stopped importing horsemeat from Mexico. In 2015, the largest Swiss importer, Basler GVFI, stopped the importation, which was mainly due to animal welfare reasons. In Switzerland, horsemeat imports from overseas have fallen by around 75% over the past 9 years.[11,12] The new 6-month policy was most likely responsible for the precipitous drop in the number of American horses imported into Canada for slaughter for human consumption in 2017.

Later, in 2020, the COVID-19 pandemic caused urban lockdowns, closure of amenities, border restrictions, travel bans, curfews, and high levels of unemployment across the United States and elsewhere. The severe public health-dictated restrictions in mobility across the country reduced the demand for transportation services.[13] The transportation industry itself suffered substantial unemployment during the pandemic compared with other industries; truck tonnage decreased by about 9% between March and April of 2020.[14] The negative economic impact of the COVID-19 pandemic on the transportation industry ranging from lockdowns across the country to high unemployment and deaths among workers possibly contributed significantly to a further reduction in the number of horses exported to Mexico and Canada for slaughter in 2020 and 2021 (Figure 1).

Horsemeat, food safety, and public health risk

Horses are prone to developing musculoskeletal injuries due to their various roles including pleasure riding, hunter/jumper, racing, and other performance-type work. The most common drug to treat musculoskeletal injuries in horses is phenylbutazone. Based on the annual sales of phenylbutazone in the United States, our group estimated that every adult horse receives at least 1 dose of phenylbutazone during its lifetime.[8] There are 500 pounds of dressed horsemeat per horse. The number of American horses exported to Canada for slaughter in 2019 was 10,486; this translates into 5,243,000 pounds of dressed horsemeat. Given that the US Department of Agriculture does not have a system to remove horses administered banned substances from the slaughter pipeline, more than 5,000,000 pounds of dressed horsemeat sent to the EU and non-EU countries in 2019 were likely contaminated with banned substances.

The FDA considers American horses as companion animals and as such all approved drugs can be administered.[15] The "administration" of phenylbutazone or any other banned substance is not allowed in food-producing animals. Both EU and non-EU governments have published a list of banned drugs and drugs with withdrawal periods.[16,17]

The journalistic record

Newspaper articles have been published about horses given banned drugs and slaughtered for food. In 2013, a racehorse named Backstreet Bully, a Canadian racehorse, was sent to slaughter for human consumption in Canada. At the time, the Stronach Farm (Ontario) tried to no avail to rescue this horse from the Canadian slaughter plant. The reporters obtained the medical records for the horse from the Stronach farm, the former owner of the horse. The horse had been administered phenylbutazone, nitrofurazone, and stanozolol, 3 banned drugs on the Canadian list (ie, these drugs have no withdrawal times). According to the newspaper report, nitrofurazone and phenylbutazone were administered to Backstreet Bully "dozens of times." The *Toronto Star* also reported on the discovery of the falsified equine identification document (EID). EIDs have been required by the Canadian government since January 2010. Backstreet Bully's owner stated he had "uninterrupted care and possession of the horse for the last six months, had been drug-free for the last six months" and "had not been given any nonpermitted substances listed on the government's website." In short, the horse owner owned him for about 24 hours before the horse was slaughtered. The Canadian slaughter plant refused to say whether the horse's meat was shipped overseas for people to eat.[18] The European Commission had severe reservations about the validity of the EIDs. In 2012, an audit of European-run slaughter plants in Mexico discovered that officials were unable to confirm the validity of documents pertaining to American horses that were so-called drug-free where about 80% of the slaughtered horses were American. In that same year, the FDA sent a letter to a feedlot owner for horses destined for slaughter for export stating that a horse tested positive for phenylbutazone and clenbuterol.[19] In 2011, a report[20] showed that 63 EIDs were incomplete including omissions and descriptions of individual horses that did not match the horse pictures at a slaughter plant in Canada; the vast majority of the horses at the plant were American. Also, some of the EIDs had written "drug-free six months" in the same handwriting or with the same ink pen indicating that auction house workers were adding this information on the EID.[20] An article[21] published by the *Toronto Star* in 2013 also reported irregularities with EIDs at an auction where they found that signatures did not match and that auction house workers filled out some of the information on the EID rather than owners as required. This article also cited evidence of glaring inconsistencies in the EIDs of horses at the auction; however, these horses were not held and were sold for slaughter. A trail horse with falsified/misleading statements on the EID was slaughter bound. Rescuers were allowed to purchase the

horse because the horse dealer thought he could make a substantial profit by selling the horse rather than sending it to slaughter. The small amount of time afforded to this horse allowed the horse to be rescued. This horse had also been administered phenylbutazone and nitrofurazone just weeks before being sold at auction.[21] In another case, 2 horses were brought to auction without the permission of the owner, and the EID was falsified indicating that the horses were his and were sold for slaughter. The owner took this person to court who was convicted and ordered to pay a fine and restitution. However, it was too late for the owner's horses as they had already been slaughtered.[22] In 2012, a Standardbred named Silky Shark was slaughtered for human consumption in Canada. The horse had laryngeal surgery twice and had been administered phenylbutazone.[23] As per Canadian regulations, this horse along with Backstreet Bully, the trail horse, and all of the horses with falsified EIDs should never have been eligible for slaughter for human consumption.

Racing Quarter Horses have been the subject of doping scandals in regulated and nonregulated racetracks. It has been known for a long time that horses are administered legal and illegal drugs to enhance performance. On the legal side, phenylbutazone is a drug known to be administered just before a race at certain US tracks.[24] Lasix (furosemide), a diuretic, is another drug administered to horses on race day to reduce the risk of hemorrhage in the lungs.[25] In a recent study,[26] over 50,000 blood and urine samples from racing thoroughbreds and racing Quarter Horses, the number one horse sent to slaughter from the United States, were analyzed postrace from all 4 racetracks operating in the state of Louisiana from 2016 to 2020. Results showed that phenylbutazone with or without other drugs and clenbuterol (a sympathomimetic amine bronchodilator) were the most common drugs detected in thoroughbred and Quarter Horse racehorses. While the authors stated that medication violations in racehorses in Louisiana represented 1% of the total number of samples analyzed, only postrace racehorse blood and urine samples were analyzed for testing.[26] Significantly, these results correlate well with the same 2 drugs detected in contaminated horsemeat by food safety organizations.

The thoroughbred industry is replete with examples of medication violations by trainers. Last year, a trainer was fined on 3 occasions in 1 year after 2 of his horses tested positive for phenylbutazone and 1 tested positive for isoflupredone (a synthetic corticosteroid), while a second trainer was fined because a horse tested positive for methocarbamol (a skeletal muscle relaxant).[27] In 2019, 2 horses tested positive for phenylbutazone and the trainer was fined for the medication violations in both cases. In addition, the California Horse Racing Board found a medication cabinet unlocked containing 25 medications that were not properly labeled and an unsecured phenylbutazone paste.[28] While this trainer has been cited for multiple medication violations, he was not alone. The most egregious example of the illegal use of doping came in 2020 when American horse trainers and veterinarians were indicted for the illegal administration of performance-enhancing drugs to racehorses. Twenty-seven people were charged for administering performance-enhancing drugs that were either very difficult or impossible to be detected by standard testing methods. The compounds either increased endurance, blocked pain signals, increased oxygen carriage capacity, or had anti-inflammatory properties. Seven of the defendants pleaded guilty to the charges of doping in 2021.[29]

Perhaps, the most illustrative example of the number of drugs administered to racehorses was exemplified by a thoroughbred racehorse named Coronado Heights. As illustrated in the *New York Times* article, Coronado Heights was administered phenylbutazone, estrone, flunixin, hyaluronic acid, Lasix, adequan, xylazine, detomidine, vitamin B1, methylprednisolone, and calcium[30] once or twice over a week before race day. This is just 1 example of the number and frequency of drugs administered to racehorses. Racing Quarter Horses are also administered legal and illegal drugs at tracks. At 1 nonregulated racetrack, cocaine, methamphetamine, and methylphenidate were identified in syringes around the track by the horse racing laboratory at the University of California at Davis.[31]

In 2020, the Association of Racing Commissioners International (ARCI) approved a multiple medication violation penalty system. In this system, classes of legal and illegal drugs are categorized using a point system that is then assigned and registered against trainers with class violations. The severity of the violation is then used to assign an appropriate penalty.[32] Those trainers that incur the maximum number of points, maintained by the ARCI, can be suspended from racing for 1 to 60 months.[33]

The Horseracing Integrity and Safety Act (HISA) was passed by Congress and signed into law at the end of 2020. The law creates one standard for thoroughbred racing throughout the United States. The Federal Trade Commission has oversight of HISA; HISA has 2 standing committees, a racetrack safety standing committee and an anti-doping and medication control standing committee. HISA started its work in July 2022.[34] This organization oversees important aspects of the racing industry. Unfortunately, there is no oversight over the nonregulated racetracks that span 89 tracks in 27 states across the country.

Drug residue found in horsemeat

In 2017, oxyphenbutazone, an active metabolite with a long half-life, of the banned drug phenylbutazone, was detected in Canadian horsemeat.[35] The total amount of horsemeat affected was 7,333.86 kg. In 2019, the Rapid Alert System for Food and Feed (RASFF) in the European Union found phenylbutazone in Canadian horsemeat; the risk classification was determined to be "serious."[36] The EID stated that the horse had not been given any drugs over the past 6 months, which was apparently false. In another case, Canada recalled horsemeat because the

banned drug clenbuterol was detected at the Bouvry slaughter plant in 2019[37] and at the Viande Richelieu slaughter plant in 2020.[38] Recent information from the Canadian Food Inspection Agency (CFIA) indicates that < 1% of horse carcasses are tested for drug residues. Overall, these findings indicate that Canada's reliance on the honor system for traceability of banned drugs using the EIDs for horses sent for slaughter for human consumption is seriously flawed. Moreover, the fact that drug-tainted horsemeat has been slipping through the monitoring system in Canada and is then being picked up by either the Canadian government or the EU surveillance program clearly indicates why horses that are not raised for food must never enter the food chain. The magnitude of the issue is further complicated by the fact that Canadian residue testing represents < 1% of the total carcasses tested. Further exacerbating the health risk is the practice of trucking American racehorses in sealed trailers and slaughtering them within 4 days in Canada where the horsemeat is then exported overseas presumably to non-EU countries.[10] In summary, there are no assurances that hazardous and banned drugs/chemicals can be kept out of horsemeat derived from American horses.

Discussion

The United States has been exporting live horses to slaughter across the Mexican and Canadian border since 1999. Unlike horses destined for the human food chain in other countries, American horses are not raised for food. American horses can be administered drugs that are banned in food-producing animals. The United States does not have a program in place to remove horses administered banned drugs before they are exported across the borders to slaughter for human consumption.

Food agencies around the world are tasked with keeping drug-tainted horsemeat out of the food chain in those countries that sell/serve it. Canada, the EU and non-EU countries, and Japan must realize that the absence of a drug history of the legal drugs administered to horses in addition to the illegal drugs/compounds (ie, doping administered to horses) makes them ineligible for slaughter for human consumption and puts the public at elevated risk compared with eating meat from food-producing animals where regulations and safeguards are in place to protect public health. Furthermore, the practice of using sealed trailers to transport American horses to Canada and slaughtering them within 4 days is particularly disturbing in that it appears to circumvent standard drug-monitoring practices. The health risk to consumers is further increased when the meat is then shipped to some non-EU countries without adequate safeguards, a list of banned drugs, and safety guidelines in place.

We presented online reports from the European Union that document horsemeat contaminated with phenylbutazone; oxyphenbutazone, an active metabolite of phenylbutazone; and clenbuterol (see Results). The testing level of horse carcasses by the CFIA is not publicly available. However, contaminated Canadian horsemeat has been detected by the European Union, some of which has been determined to be serious using the best testing method,[39] which underscores the importance of testing for negative levels of banned drugs with zero tolerance.

The hematological side effects of phenylbutazone and oxyphenbutazone have been extensively reviewed in the literature. Chaplin[40] stated that oxyphenylbutazone and phenylbutazone are 10 and 4 times more likely to cause potentially fatal bone marrow suppression, respectively, than Indocin, another nonsteroidal anti-inflammatory drug on the market for human use, and that these numbers may likely be an underestimate. Indeed, the recent report[41] of a horsewoman who developed leukopenia, thrombocytopenia, and acute kidney injury after consuming about 1 gram of veterinary phenylbutazone over 3 days underscores the fact that doses lower than those cited in the literature can induce a blood dyscrasia and that the number of cases of these disorders is incomplete. There are other examples of veterinary phenylbutazone that induced side effects in humans including blood dyscrasias.[42,43] Children are especially sensitive to phenylbutazone-induced bone marrow suppression.[44] Adding to the complexity of the phenylbutazone-induced blood dyscrasias is the half-life in humans versus horses. The reported half-life in humans is 50 to 105 hours whereas the half-life in horses is 4 to 6 hours.[45] As stated by Chaplin,[40] "There is no evidence from these data that age, dose or duration of exposure to phenylbutazone are predictive of the development of agranulocytosis," where doses ranged from 5 to 400 grams, the duration of treatment ranged from 2 weeks to 30 months, and the interval to detection of the disorder was 0.5 to 30 months. Chaplin[40] states that "both phenylbutazone and oxyphenbutazone, therefore, cause blood dyscrasias in an unpredictable fashion....," meaning that phenylbutazone/oxyphenbutazone-induced blood dyscrasias (aplastic anemia, agranulocytosis, thrombocytopenia, pancytopenia, leukopenia) are idiosyncratic in nature.[40,46] The idiosyncratic effects of phenylbutazone also occur in other types of animals.[47] Gamma-hydroxyphenylbutazone is also a metabolite of phenylbutazone,[45] and it is pharmacologically active, but its side effect profile in humans is unknown.

Many American horses that go to slaughter are older or may have been ill before slaughter adding to the level of drug residue that may be present. Multiple doses of phenylbutazone lead to the dose-dependent kinetics of the drug due to the liver being overwhelmed at relatively low levels resulting in the accumulation of the drug despite being 99% bound to albumin. Thus, the elimination half-life increases with increasing dose and age. The lipophilicity of phenylbutazone results in the accumulation of the drug in tissues with long-term repeated doses. Many horses may have received these drugs over several months or longer with chronic laminitis, and the protein level decreases in these aged horses. The drug will no longer be 99% protein bound, and there will be more free drug available to be distributed in tissues.[48,49]

An early report[50] showed that about 20% of clenbuterol was found in rat muscle after intravenous administration of 10 mg/kg and the half-life was 3 times longer in muscle compared with serum (6 h vs 2 h). The longer half-life of clenbuterol in muscle increases the risk of contaminated meat. Side effects include the following: cardiac problems, accelerated heart rate, heart, anxiety, tremors, fatigue, and even myocardial infarction if overdoses in humans. Four cases of symptoms in humans developed after eating lamb and bovine meat contaminated with clenbuterol in Portugal.[51] In 1998, 62 people in Italy developed cardiac rhythm abnormalities including atrial fibrillation after eating beef containing clenbuterol residue over a range of 0.8 to 7.4 mg/kg.[52] In 2000, 15 people developed diffuse tremors, palpitations, headache, tachypnea, hyperglycemia, and hypokalemia after ingesting meat contaminated with clenbuterol.[53] Taken together, clenbuterol residue in food has not resulted in fatalities in humans, but symptoms that develop after ingestion of meat containing clenbuterol residue include tremors, tachycardia, headache, muscle aches and pains, nausea, nervousness, and dizziness. Clearly, in hemodynamically vulnerable individuals, these symptoms may precipitate serious pathology.

The incidence of bone marrow depression in humans who consume horsemeat is unknown. No surveillance program has been instituted in countries that eat horsemeat derived from American horses. Despite the extensive evidence that horses are administered legal drugs not permitted in food-producing animals as well as illegal drugs, these animals continue to be slaughtered for food. Whether phenylbutazone found in certain tissues but undetectable in animal muscles has the potential to inflict harm in humans remains unknown. However, 'knowing that phenylbutazone may act as a "weak genotoxin"..... it would be prudent to continue adopting a zero human exposure regulation for phenylbutazone."'[54] This statement is certainly consistent with the FDA and other food agencies tasked with ensuring that the food we eat is safe.

In a disturbing report this month, Europol and the Spanish Civil Guard discovered a fraudulent horsemeat operation in Spain that may have sold dangerous horsemeat in at least 4 countries. Thirty-five people and 6 companies are under investigation and half a ton of horsemeat was confiscated from butcher shops in Spain because of a public health risk. Shockingly, traceability information was altered including identification documents, similar to the altered EIDs identified in the Canadian horsemeat industry. Horse passports and microchips were also tampered with according to authorities.[55]

In summary, all horses that are administered banned substances in the United States must be removed from the slaughter pipeline as exists for all other food-producing animals. If resources do not permit strict oversight, the United States must end the transportation of American horses across both borders for slaughter for human consumption.

Acknowledgments

The authors thank the Canadian Horse Defence Coalition and Italian Horse Protection Onlus for vital information and documents. The authors also thank John Holland and Daniel Cordero Fernandez for insightful discussions.

References

1. Stanciu S. 2nd global conference on business, economics, management and tourism, 30–31 October 2014, Prague, Czech Republic. *Proc Econ Finance.* 2015;23:697–703. doi:10.1016/S2212-5671(15)00392-5
2. Popoola IO, Anders S, Feuereisen MM, Savarese M, Wismer WV. Free word association perceptions of red meats; beef is 'yummy', bison is 'lean game meat', horse is 'off limits'. *Food Res Int.* 2021;148:110608. doi:10.1016/j.foodres.2021.110608.
3. Center for Veterinary Medicine, United States Food and Drug Administration. Global feed safety platform. Food and Agriculture Organizations of the United Nations. Accessed August 3, 2022. https://www.fao.org/feed-safety/databases/organizations-institutions/institutions-details/en/c/1025182/
4. Jacobson J, Holland J, Charlton D Jr. A study of equine slaughter/abuse patterns following closure of horse slaughter plants in US. Aminal Law Coalition. Accessed September 6, 2022. https://animallawcoalition.com/a-study-of-equine-slaughter-abuse-patterns-following-closure-of-horse-slaughter-plants-in-us/
5. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Equator Network. Accessed November 1, 2022. https://www.equator-network.org/reporting-guidelines/prisma/
6. Government of Canada. Red meat and livestock market information. Accessed July 12, 2022. https://agriculture.canada.ca/en/agriculture-and-agri-food-canada/canadas-agriculture-sectors/animal-industry/red-meat-and-livestock-market-information?utm_source=print&utm_medium=vanity_url&utm_campaign=legacy&utm_content=2021-06-25_80
7. US Department of Agriculture. Reports. Agricultural Marketing Service. Accessed August 3, 2022. https://mymarketnews.ams.usda.gov/filerepo/reports?field_slug_id_value=&name=al_ls635&field_slug_title_value=&field_published_date_value=&field_report_date_end_value=&field_api_market_types_target_id=All
8. Dodman N, Blondeau N, Marini AM. Association of phenylbutazone usage with horses bought for slaughter: a public health risk. *Food Chem Toxicol.* 2010;48(5):1270–1274. doi:10.1016/j.fct.2010.02.021
9. Government of Canada. New requirements for export of horse meat to the EU now in effect. Accessed June 13, 2022. https://inspection.canada.ca/exporting-food-plants-or-animals/food-exports/new-requirements-for-export-of-horse-meat-to-the-e/eng/1488311247045/1488311328841
10. Government of Canada. Import conditions for horses from the United States for immediate slaughter. Accessed October 4, 2022. https://inspection.canada.ca/animal-health/terrestrial-animals/imports/import-policies/live-animals/2010-14/eng/1320889560104/1320889734552
11. EU-Parlament diskutiert, Schweizer Bundesamt interveniert, Schweizer Importverband VPI liquidiert. Animal Welfare Foundation. Accessed December 1, 2022. https://www.animal-welfare-foundation.org/blog/pferdefleischimporte-schweiz
12. Berset will Pferdefleisch aus Übersee verbieten. Schweiz. Accessed December 1, 2022. https://www.tagesanzeiger.ch/berset-will-pferdefleisch-aus-uebersee-verbieten-437682055670

13. Abu-Rayash A, Dincer I. Analysis of mobility trends during the COVID-19 coronavirus pandemic: exploring the impacts on global aviation and travel in selected cities. *Energy Res Soc Sci.* 2020;68:101693, doi:10.1016/j.erss.2020.101693
14. Mack EA, Agrawal S, Wang S. The impacts of the COVID-19 pandemic on transportation employment: a comparative analysis. *Transp Res Interdiscip Perspect.* 2021;12:100470. doi:10.1016/j.trip.2021.100470
15. US Food and Drug Administration. The ins and outs of extra-label drug use in animals: a resource for veterinarians. Accessed June 13, 2022. https://www.fda.gov/animal-veterinary/resources-you/ins-and-outs-extra-label-drug-use-animals-resource-veterinarians
16. Government of Canada. E.5 list of veterinary drugs not permitted for use in equine slaughtered for food with Canadian brand name examples (10 March, 2010). Accessed June 4, 2022. https://inspection.canada.ca/food-safety-for-industry/archived-food-guidance/meat-and-poultry-products/manual-of-procedures/chapter-17/annex-e/eng/1370023131206/1370023203607#e5
17. European Commission. Residues of veterinary medicinal products. Accessed June 4, 2022. https://food.ec.europa.eu/safety/chemical-safety/residues-veterinary-medicinal-products_en
18. Ormsby M, Brazao D. Star investigation: Ottawa refuses to say whether drug-tainted horse meat entered food chain. *Toronto Star*. March 29, 2013. Accessed July 7, 2022. https://www.thestar.com/news/investigations/2013/03/29/star_investigation_ottawa_refuses_to_say_whether_drugtainted_horse_meat_entered_food_chain.html
19. Drape D. Doping at U.S. tracks affects Europe's taste for horsemeat. *New York Times*. December 9, 2012. Accessed July 7, 2022. https://www.nytimes.com/2012/12/09/sports/drugs-injected-at-the-racetrack-put-europe-off-us-horse-meat.html
20. Canadian Horse Defence Coalition. Pasture to plate: the true cost of Canada's horsemeat industry: a report by the Canadian Horse Defence Coalition on equine slaughter at Les Viandes de la Petite Nation Inc./Le Cerf de Boileau St. André-Avellin, Quebec. July 13–14, 2011. Accessed August 2, 2022. https://canadianhorsedefencecoalition.org/wp-content/uploads/2021/06/pasturetoplate.pdf
21. Ormsby M, Brazao D. Star investigation: drugged horses slipping through 'inadequate' food system. *Toronto Star*. May 24, 2013. Accessed July 7, 2022. https://www.thestar.com/news/investigations/2013/05/24/star_investigation_drugged_horses_slipping_through_inadequate_food_system.html
22. The Canadian Press. Southern Alberta man fined for selling woman's horses for slaughter. *Toronto Star*. August 8, 2019. Accessed July 7, 2022. https://www.thestar.com/news/canada/2019/08/15/southern-alberta-man-fined-for-selling-womans-horses-for-slaughter.html
23. Canadian Horse Defence Coalition. Proof of CFIA failure. CHDC provides evidence of phenylbutazone entering the human food chain. Accessed August 30, 2022. https://canadianhorsedefencecoalition.files.wordpress.com/2012/12/proof_of_cfia_failure_dec_11_2012.pdf
24. Soma LR, Uboh CE, Maylin GM. The use of phenylbutazone in the horse. *J Vet Pharmacol Ther.* 2012;35(1):1–12. doi:10.1111/j.1365-2885.2011.01299.x
25. Hinchcliff KW, Muir WW 3rd. Pharmacology of furosemide in the horse: a review. *J Vet Intern Med.* 1991;5(4):211–2118. doi:10.1111/j.1939-1676.1991.tb00951.x
26. Waller P, Lomnicka I, Lucas C, Johnson S, Dirikolu L. The medication violations in racehorses at Louisiana racetracks from 2016 to 2020. *Vet Med Sci.* 2022;8(2):553–560. doi:10.1002/vms3.724
27. Ross D. Third class 4 drug complaint issued against miller this year. *Thoroughbred Daily News*. October 7, 2021. Accessed October 10, 2022. https://www.thoroughbreddailynews.com/third-class-4-drug-complaint-issued-against-miller-this-year/
28. Ehalt B. Drug violations, mislabeling in NYRA's Baffert charges. *Bloodhorse*. January 3, 2022. Accessed October 10, 2022. https://www.bloodhorse.com/horse-racing/articles/255917/drug-violations-mislabeling-in-nyras-baffert-charges
29. Stempel J. Top horse racing trainer pleads guilty in New York in global doping scheme. Reuters. August 11, 2021. Accessed October 10, 2022. https://www.reuters.com/lifestyle/sports/top-horse-racing-trainer-pleads-guilty-new-york-global-doping-scheme-2021-08-11/
30. One horse, one week of injections. *New York Times*. April 29, 2019. Accessed August 2, 2022. https://archive.nytimes.com/www.nytimes.com/interactive/2012/04/29/us/one-horse-one-week-of-injections.html?ref=us
31. Garcia-Roberts G. A horse track with no rules. *Washington Post*. August 5, 2022. Accessed August 3, 2022. https://www.washingtonpost.com/sports/2022/08/05/bush-track-horse-racing-georgia/
32. Uniform classification guidelines for foreign substances and recommended penalties model rule. Association of Racing Commissioners International. Accessed August 4, 2022. http://tharacing.com/wp-content/uploads/2020/02/ARCI-Classification-Guidelines-and-Penalties.pdf
33. Multiple medication violations (MMV). Thoroughbred Horsemen's Association. Accessed August 4, 2022. http://tharacing.com/wp-content/uploads/2016/12/2016_12_20_22_17_13.pdf
34. Horseracing Integrity and Safety Authority. HISA homepage. Accessed October 31, 2022. https://www.hisaus.org/
35. Unauthorised drug found in Canadian horsemeat. Humane Society International. Accessed August 2, 2022. https://www.hsi.org/news-media/tainted-canada-horsemeat-found-belgium-022117/
36. Randox Food Diagostics. Canadian horse meat flagged..... again. Accessed August 4, 2022. https://www.randoxfood.com/levels-of-phenylbutazone-detected-in-canadian-horse-meat/
37. Government of Canada. Bouvry Exports Calgary Ltd. brand horse meat recalled due to presence of clenbuterol. Accessed August 4, 2022. https://recalls-rappels.canada.ca/en/alert-recall/bouvry-exports-calgary-ltd-brand-horse-meat-recalled-due-presence-clenbuterol
38. Government of Canada. Viande Richelieu Meat brand horse meat recalled due to presence of clenbuterol. Accessed August 5, 2022. https://recalls-rappels.canada.ca/en/alert-recall/viande-richelieu-meat-brand-horse-meat-recalled-due-presence-clenbuterol#affected-touches
39. Boison JO, Dowling T, Johnson R, Kinar J. Analysis of phenylbutazone residues in horse tissues with and without enzyme-hydrolysis by LC-MS/MS. *Drug Test Anal.* 2016;8(5–6):535–538. doi:10.1002/dta.2020
40. Chaplin S. Bone marrow depression due to mianserin, phenylbutazone, oxyphenbutazone, and chloramphenicol–part I. *Adverse Drug React Acute Poisoning Rev.* 1986;5(2):97–136. Erratum in: *Adverse Drug React Acute Poisoning Rev.* 1986;5(4):233.
41. Sawalha K, James R, Mazahreh F, et al. "Ain't she a bute?": the importance of proper history taking in a case of inappropriate use of horse NSAID in a human. *Clin Pract.* 2021;11(3):455–458. doi:10.3390/clinpract11030060
42. Ramsey R, Golde DW. Aplastic anemia from veterinary phenylbutazone. *JAMA.* 1976:236(9):1049. doi:10.1001/jama.1976.03270100049030
43. Carpenter SL, McDonnell WM. Misuse of veterinary phenylbutazone. *Arch Intern Med.* 1995;155(11):1229–1231. doi:10.1001/archinte.1995.00430110153017
44. Scanaill P. Phenylbutazone and its availability in Ireland–prudent prescribing and dispensing. *Irish Vet J.* 2010;63:766–768.

45. Lees P, Toutain PL. Pharmacokinetics, pharmacodynamics, metabolism, toxicology and residues of phenylbutazone in humans and horses. *Vet J.* 2013;196(3):294–303. doi:10.1016/j.tvjl.2013.04.019
46. Mittal D, Jain A, Singh H, et al. Fatal blood dyscrasia with over-the-counter drug use. *Int J Clin Pharmacol Ther.* 2020;58(10):565–567. doi:10.5414/CP203716
47. Weiss DJ. Drug-associated blood cell dyscrasias. *Compend Contin Educ Vet.* 2012;34(6):E2.
48. Davis JL. Pharmacologic principles. In: Reed S, Bayly W, Sellon D, eds. *Equine Internal Medicine.* 4th ed. Elsevier; 2018:79–137.
49. Davis JL. Introduction to equine pharmacotherapy In: Mealey KL, ed. *Pharmacotherapeutics for Veterinary Dispensing.* Wiley; 2019:471–500.
50. Chang JC, Lee WC, Wu YT, Tsai TH. Distribution of blood-muscle for clenbuterol in rat using microdialysis. *Int J Pharm.* 2009;372(1–2):91–96. doi:10.1016/j.ijpharm.2009.01.015
51. Barbosa J, Cruz C, Martins J, et al. Food poisoning by clenbuterol in Portugal. *Food Addit Contam.* 2005;22(6):563–566. doi:10.1080/02652030500135102
52. Sporano V, Grasso L, Esposito M, Oliviero G, Brambilla G, Loizzo A. Clenbuterol residues in non-liver containing meat as a cause of collective food poisoning. *Vet Hum Toxicol.* 1998;40(3):141–143.
53. Brambilla G, Cenci T, Franconi F, et al. Clinical and pharmacological profile in a clenbuterol epidemic poisoning of contaminated beef meat in Italy. *Toxicol Lett.* 2000;114(1–3):47–53. doi:10.1016/s0378-4274(99)00270-2
54. Combes RD. Is phenylbutazone a genotoxic carcinogen? A weight-of-evidence assessment. *Altern Lab Anim.* 2013;41(3):235–248. doi:10.1177/026119291304100307
55. News Desk. Europol and Spain lead horse meat fraud investigation. *Food Safety News.* December 2, 2022. Accessed December 2, 2022. https://www.foodsafetynews.com/2022/12/europol-and-spain-lead-horse-meat-fraud-investigation/

animals

MDPI

Article

Estimating the Availability of Potential Homes for Unwanted Horses in the United States

Emily Weiss *, Emily D. Dolan, Heather Mohan-Gibbons, Shannon Gramann and Margaret R. Slater

Research and Development, Community Outreach, American Society for the Prevention of Cruelty to Animals (ASPCA ®), New York, NY 10128, USA; emily.dolan@aspca.org (E.D.D.); heather.mohan-gibbons@aspca.org (H.M.-G.); shannon.gramann@aspca.org (S.G.); margaret.slater@aspca.org (M.R.S.)

* Correspondence: Emily.weiss@aspca.org; Tel.: +1-917-574-7533

Received: 8 May 2017; Accepted: 13 July 2017; Published: 20 July 2017

Simple Summary: There are approximately 200,000 unwanted horses annually in the United States. Many are shipped to slaughter, enter rescue facilities, or are held on federal lands. This study aimed to estimate a potential number of available homes for unwanted horses in order to examine broadly the viability of pursuing re-homing policies as an option for the thousands of unwanted horses in the U.S. The results of this survey suggest there could be an estimated 1.2 million homes who have both the perceived resources and desire to house an unwanted horse. This number exceeds the approximately 200,000 unwanted horses living each year in the United States. These data suggest that efforts to reduce unwanted horses could involve matching such horses with adoptive homes and enhancing opportunities to keep horses in the homes they already have.

Abstract: There are approximately 200,000 unwanted horses annually in the United States. This study aimed to better understand the potential homes for horses that need to be re-homed. Using an independent survey company through an Omnibus telephone (land and cell) survey, we interviewed a nationally projectable sample of 3036 adults (using both landline and cellular phone numbers) to learn of their interest and capacity to adopt a horse. Potential adopters with interest in horses with medical and/or behavioral problems and self-assessed perceived capacity to adopt, constituted 0.92% of the total sample. Extrapolating the results of this survey using U.S. Census data, suggests there could be an estimated 1.25 million households who have both the self-reported and perceived resources and desire to house an unwanted horse. This number exceeds the estimated number of unwanted horses living each year in the United States. This study points to opportunities and need to increase communication and support between individuals and organizations that have unwanted horses to facilitate re-homing with people in their community willing to adopt them.

Keywords: horses; slaughter; rescue; adoption

1. Introduction

Estimates of the total number of horses in the U.S. vary widely but the number most often cited, 9.2 M, comes from a 2005 economic impact study commissioned by the American Horse Council (AHC) [1]. There are many thousands of unwanted horses annually in the United States. Unwanted is defined by the Unwanted Horse Coalition [1] (a program of the AHC) as "horses which are no longer wanted by their current owner because they are old, injured, sick, unmanageable, fail to meet their owner's expectations (e.g., performance, color or breeding), or their owner can no longer afford them". The reasons horses are unwanted are varied. An estimated 6000–10,000 horses are housed in horse rescues at any given time [2,3]. One U.S. study found that the most common reasons horses were

relinquished to rescue organizations were health (54%), lack of suitability for desired purpose (28%), and behavioral problems of the horses (28%) [2]. Owner-related factors most commonly reported were financial hardship (52%) physical illness or death of the owner (27%), and lack of time for the horse (16%) [2]. Horses who were relinquished were most commonly thoroughbreds (22%) and quarter horses (19%) and 51% were geldings, 7.5% colts/stallions and 42% mares. A wide range of ages were reported with a mean of 12 years old. In another national U.S. study of horses seized in cruelty, neglect or abandonment investigations, the most common reasons leading to the investigation were: owner ignorance, economic hardship, and lack of responsibility [4]. Many unwanted, but otherwise re-homable, horses are among the estimated 82,000 to 150,000 horses that are shipped annually to Mexico or Canada for slaughter [5–8]. Among the horses shipped to slaughter between 2002 and 2005, the demographics were similar to the U.S. horse population, indicating that the option of slaughter was applied across the spectrum of horse ownership [9]. There are also more than 100,000 horses being held long-term on open lands by the Bureau of Land Management (both on and off-range) [10].

A number of options exist for unwanted horses, including relinquishment to rescue organizations, donation to universities or law enforcement agencies, sale to or adoption by new owners (re-homed) or euthanasia [9]. For some of these outcomes, the horses must meet specific criteria; for others, the owner must be aware of the option, there must be space available in the program for the horse, or the owner must be able to afford euthanasia and disposal. Increasing the ability of existing horse owners to re-home their horses to private households is one potential way to reduce the number of unwanted horses and improve their welfare and longevity. Horses typically have multiple owners [11], can live up to 30 years [7,11], and are expensive to keep [12,13] making life-long housing difficult to ensure. In order to determine if re-homing is a viable option, it is important to know if there are enough homes to accommodate the number of unwanted horses. To our knowledge, there is no current evidence to inform this question.

This study used a national survey to gather information about the number of potential homes for these horses in a "horse-interested population" (defined as currently owning a horse, having owned a horse in the past 5 years, or interested in owning a horse in the near future). This survey examined whether people would be willing to adopt unwanted horses, what characteristics were required of horses to be considered "adoptable" in the respondent's opinion, and whether potential adopters thought they had adequate resources to keep a horse. From this survey, an estimate for the number of potential homes for horses in the United States was extrapolated in order to broadly examine the viability of pursuing re-homing policies as an option for the thousands of unwanted horses in the U.S.

2. Materials and Methods

2.1. Survey

A telephone-based survey of the general adult population was conducted by Edge Research using CARAVAN ® ORC International. Telephone calls were made between 24 September 2015 and 11 October 2015. The CARAVAN ® Omnibus telephone survey is a nationally projectable study conducted among a probability sample of U.S. residents, 18 years of age and older. See Appendix A for ORC International's complete methodology. The horse survey questions were included in a larger bank of questions asked during the interview. This study was conducted using two probability samples: randomly selected landline telephone numbers and randomly selected mobile (cellular) telephone numbers. The combined sample consists of 3036 adults (18 years old and older) living in the continental United States. Of the 3036 interviews, 1536 were from the landline sample and 1500 from the cell phone sample. The survey had a response rate of 20% and a completion rate of 86%.

The survey sample size was selected to serve two purposes. First, we wanted to ensure that the estimate of potential adoptive households for horses in the U.S. (the primary outcome) was sufficiently precise (i.e., had a narrow enough confidence interval) to be useful in practice. For hypothetical scenarios where either 0.5%, 1.0%, or 1.5% of households were interested in and capable of adopting

a horse, an overall sample size of 3000 would ensure confidence interval coverage of no more than ±0.5%. In other words, the 95% confidence interval would cover less than 0.5% in either direction from the point estimate for all three scenarios. Secondly, we continued the survey to ensure that at least 500 respondents were *horse-interested*. This ensured that the confidence interval coverage would be no more than ±5% for any proportions calculated from this subgroup.

2.2. Survey Questions

To estimate the number of individuals with available homes, respondents were asked: "Which, if any, types of animals do you personally own?"; "Have you ever owned a horse?"; "How long ago did you last own a horse?"; "How interested are you in obtaining a horse at some point in the future?" with possible responses "very interested", "somewhat interested", and "not interested"; and for three scenarios (1. A horse that no longer has an owner; 2. A horse that has medical or behavioral challenges; 3. A horse that might be abandoned if a new owner is not found): " ... how interested you would be in adopting a horse in those circumstances" with possible responses "very interested", somewhat interested", and "not interested"; and "Do you currently have the space and resources necessary to house and care for a newly-adopted horse on your own property or at a local barn or stabling facility?" with possible responses "yes", "no", or "don't know".

2.3. Final Sample

Among the total sample of individuals reached, we first identified those who were *horse-interested* as defined by reporting currently having or having had a horse (in the last 5 years) and/or being interested in getting a horse in the future. Among these, we further defined a target subgroup of *potential adopters* who have the interest in and perceived resources and capacity to take a re-homed horse based on two additional criteria. To qualify for this subgroup, respondents must first have reported *strong interest* in adoption under all 3 scenarios of interest (a horse facing abandonment, a horse without an owner, and a horse with medical or behavioral problems). We used the criterion of strong interest to ensure that casual or circumstantial interest was not included in the definition. Secondly, the respondent must also have endorsed currently perceiving that they have the space and resources to care for a horse. A further, smaller, subgroup was *experienced potential adopters*, which included only those *potential adopters* who also have previous experience owning a horse in the last 5 years, indicating that they had an understanding of the demands needed to care for a horse.

2.4. Analysis

Characteristics of respondents were described using frequencies and percentages. We used proportions from our sample to make inferences about the corresponding population level proportions using standard statistical methods [14]. For key results, exact 95% confidence intervals were calculated using the standard Cloppe-Pearson method in our software [15]. The confidence intervals generated can be interpreted as a plausible range for the proportion of the U.S. population that would provide the same answers. This method was selected because it provides more conservative estimates (i.e., wider confidence intervals) for small proportions (i.e., accounts for uncertainty in the population level estimates that could be related to relying on a random sample). Numbers of U.S. households and U.S. adults meeting our definitions of *horse-interested* and *potential adopters* were estimated by multiplying proportion estimates and lower and upper confidence intervals with corresponding population totals [16]. Demographics of *potential adopters* were compared to other *horse-interested* respondents using the chi-square test. For adults in the U.S., 2015 total population of 321,418,820 was multiplied by the percentage of adults in the U.S. in 2015 (77.1%, with the percentage of the population <18 = 22.9%) [16]. This equaled ~247,813,910 U.S. adults. For total U.S. households, the estimated number in 2016 was 135,697,926 [16]. Analyses were run using Stata/IC 13.1 (StataCorp LP, College Station, TX, USA).

2.5. Ethical Statement

All respondents were informed that their responses would be kept confidential. The only identifying information collected was their first name; recorded for quality control purposes. Institutional review was not sought because the data were collected as part of a larger, national opinion survey and this type of research is considered to be exempt from review by IRBs.

3. Results

3.1. Demographics

Data describing the characteristics of the national sample and the *horse-interested* sample are in Table 1.

Table 1. The unweighted frequencies and percentages for the nationally representative sample of 3036 respondents and the 500 who were *horse-interested*.

Respondent Characteristics	National Sample, n = 3036		*Horse-Interested* Sample, n = 500	
	Frequency	Percent	Frequency	Percent
Gender				
Male	1529	50.4	262	52.4
Female	1507	49.6	238	47.6
Total	3036	100.0	500	100.0
Age range				
18–29	473	15.5	126	25.2
30–49	678	22.3	148	29.6
50–64	888	29.3	146	29.2
65 or older	961	31.7	77	15.4
Refused/No Response	36	1.2	3	0.6
Total	3036	100.0	500	100.0
Total household income (before tax, 2014)				
Under U.S.$25,000	585	19.3	107	21.4
$25,000 but less than $50,000	735	24.2	144	28.8
$50,000 but less than $100,000	628	20.7	91	18.2
$100,000 or more	519	17.1	80	16.0
Don't know/Refused/NR	569	18.7	78	15.6
Total	3036	100.0	500	100.0
Region				
North East	551	18.2	75	15.0
Midwest	675	22.2	97	19.4
South	1136	37.4	208	41.6
West	674	22.2	120	24.0
Total	3036	100.0	500	100.0

3.2. Sample Breakdown Based on Responses

The breakdown of respondents, in a flow diagram, is shown in Figure 1.

Among the 3036 individuals contacted, seventeen percent (95% CI 15–18%; n = 500) met our criteria for *horse-interested* by reporting that they either currently own a horse, want to own a horse in the near future, or have owned a horse within the past 5 years. These respondents then reported their interest in horse ownership based upon three common scenarios, shown in Figure 2.

Nine percent (45; 95% CI 7–12%) of the *horse-interested* sample reporting being "very interested" in obtaining a horse under all three scenarios. Further, 46% of the *horse-interested* sample (230; 95% CI 42–51%) reported having the resources (which we termed perceived capacity) to house and care for a newly-adopted horse.

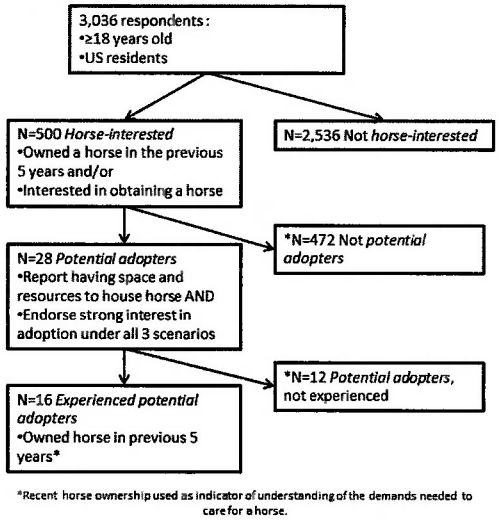


Figure 1. Proportion of respondents in each category.

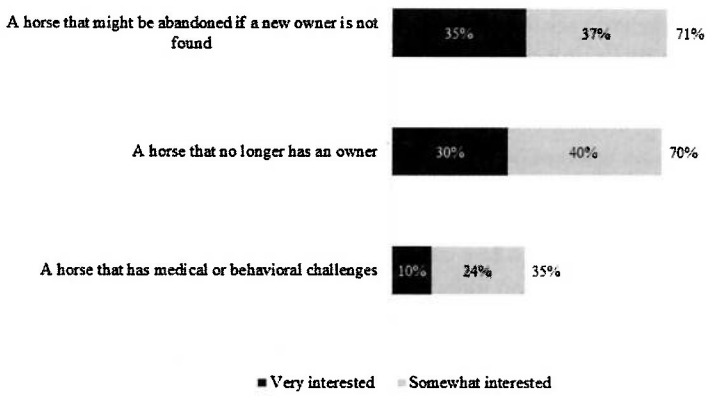


Figure 2. Reported interest by 500 *horse-interested* U.S. residents in adopting unwanted horses under various scenarios.

Among the *horse-interested* sample, 5.6% (28; 95% CI 4–8%) were classified as *potential adopters* based on reporting both strong interest in each of the three adoption scenarios as well as having the perceived capacity to house and care for a horse. These 28 *potential adopter* respondents represent 0.92% (CI = 0.6–1.3%) of the total sample. There were no significant or important differences between *potential adopters* and other horse interested responders (gender $p = 0.5$; age $p = 0.5$; income $p = 0.7$). Among *potential adopters*, 53% were women, 32% were 18–29 years old, 36% 30–49 years old, 25% 50–64 years old and 7% age 65 and up. For income, 30% of *potential adopters'* income was <U.S. $25,000, 26% was $25,000 to <$50,000, 29% from $50,000 to <100,000 and 26% had incomes of $100,000 and above.

3.3. Population Estimates

Applying the percentage of *potential adopters* to the number of U.S. households yielded an estimated 1.25 million households (0.0092 × 135,697,926; CI = 0.83–1.80 million) that had strong interest and perceived they could house a horse. Multiplying 0.92% times the U.S. population of 247,813,901 adults for a less conservative estimate, we estimated that approximately 2.28 million people

(CI = 1.52–3.30 million) in the U.S. would have strong interest in obtaining a horse and perceived they could house a horse.

Twelve respondents who met the criteria through their interest in future horse ownership had not previously owned a horse. Excluding those from the 28, 16 or 0.53% (CI = 0.3–0.9%) *experienced potential adopters* reported strong interest, perceived capacity, and currently or had ever owned a horse. Applying this more conservative criteria, an estimated 0.72 million U.S. households (CI = 0.41–1.22 million), with first-hand knowledge of the challenges of owning a horse, could house a horse.

4. Discussion

There are many reasons why horses may be abandoned and in need of re-homing. One central reason is affordability; however, owners reported a variety of more specific reasons including old age, injuries, horse behavior, factors in the owner's household such as divorce or lack of time and the horse not meeting expectations [2,8]. Regardless of the underlying industry reasons for the numbers of horses needing to be re-homed, finding previously untapped homes is critical. The current study found an estimated 1.25 million households with the interest and self-assessed, perceived capacity to adopt a horse in the United States, including those with medical or behavioral problems. Accounting for the uncertainty that comes with applying a sample proportion to the entire population, the true count could reasonably be expected to lie between 0.83 and 1.80 million households. This estimate was based on only those surveyed who reported strong interest in all three categories of unwanted horses: a horse that might be abandoned; a horse that is homeless; a horse with medical or behavioral issues. Excluding qualified respondents who had never owned a horse, 0.72 million households are estimated to have the perceived capacity and interest in owning a horse. These numbers of interested households who perceive themselves as qualified, suggests that there are more available homes than previously thought to accommodate unwanted horses in the U.S.

The number of respondents in our survey was large and this probability sample was representative of the population of the United States, indicating that our estimates are reflective of national interest in horse ownership. When using a less conservative approach by estimating based on individuals rather than households, 2.28 million individuals reported self-assessed perceived capacity to house horses. We looked at individual estimates because we assumed respondents to be from different households and because each individual with interest might be engaged in horse related support programs. However, we acknowledge that it is more conservative to consider households as the basis for estimating new homes for horses.

What is not clear is how long the number of potential homes would exceed the number of horses that need those homes. It is theorized that as horses move amongst homes, the availability of new homes would likely remain stable. Further, although the lifespan of a horse is not short, each year, homes with horses have horses that die or are euthanized, opening some spaces for new horses. It could be, however, that the number of homes would eventually become saturated. If that were true, this estimate remains crucial for three primary reasons: (1) even just a short time of reducing the prevalence of unwanted horses in the United States would free available resources for expanded access to safety net services and resources in order to reduce the incidence of newly unwanted horses; (2) the estimate provides a rich and substantial target for recently launched innovative industry programs such as Time To Ride [17], which aims to grow the horse industry though engaging new audiences, and The Right Horse [18], which aims to promote horse adoption in innovative ways; and (3) moving even a small number of additional horses into homes would allow for a decreased prevalence of unwanted horses.

In addition to increasing the likelihood of finding more homes for horses, there may be opportunities to keep horses in their current homes with more community support. Given limited capacity and funding of rescue organizations [2,8], safety net and expanded programs can improve the industries' reach. Equine rescue organizations in the U.S. have an estimated capacity of 13,400 horses

per year [2]. Given that 53% of those horses arrived in poor health or body condition and that 23% of owners reported economic or financial hardship as a contributor to relinquishment [2], programs which better support current owners and their horses with food and/or accessible and affordable veterinary care have promise in potentially preventing re-homing. Another survey of horse owners [19] found that 47% noted they believed cost of care was a problem and a contributing factor to unwanted horses. It is possible that providing assistance to horse owners in times of crisis could keep some horses in their current homes, preventing the re-homing in the first place. These shifts, as well as support for end-of-life, including providing affordable, accessible, humane euthanasia [20], would allow resources to focus on moving horses from conditions of neglect and cruelty toward higher welfare living arrangements.

It is possible that some of those people who noted having both strong interest and perceived capacity would not actually adopt when given the opportunity. Further, the present study only considered the respondents perceptions and self-assessment of whether they have adequate resources to care for a horse and not any objective measures of the adequacy of the available resources. It is acknowledged that reported intent could overestimate actual behavior. However, the responders' ability to house and care for a horse may or may not be related to previous horse ownership. Previous owners may know what is needed to appropriately house a horse or may continue to provide care which some might view as less than optimal. New horse owners could spend time becoming well informed or simply dive into horse ownership. We strongly encourage additional information sharing with current and new horse owners as an additional method of improving horse welfare. The data presented, however, suggest preliminarily that there may be many homes for unwanted horses that have not yet been accessed. Surprisingly, people showed interest in adopting horses that needed extra support, as 35% of respondents reported being "very or somewhat interested" in adopting a horse that was medically or behaviorally unsound. It is possible that some responses were due to social desirability bias, where the respondents gave the socially correct or pleasing answer. That would tend to increase the likelihood of respondents saying that would be interested in adopting a horse. In this survey, the presence of multiple other questions and the neutral organization administering the survey, as well as the lack of face to face interaction would partially help to mitigate this bias [21,22].

Because the characteristics of horses likely contribute to their ability to be re-homed [23], research into increasing access to services such as medical, and behavior support would provide important information in expanding the link between unwanted horses and potential adopters. This would also be important to ensure that adopters of horses with medical or behavior issues receive the counseling and support needed to appropriately care for those horses.

The current results that there are currently untapped potential adopters seems to contradict previously published results that shelters and rescues are overwhelmed [2]. In general, this contradiction points to a potential gap in communication or understanding between horse organizations that have horses available for adoption and people interested in adopting. It is possible that horse organizations have not embraced the importance of finding new homes as an important part of allowing them to save more horses. Additionally, finding new and creative ways to connect potential homes with current owners who need to re-home is likely to be critically important [22]. Future research that focuses on the opportunities to increase adoptions from horse organizations would provide valuable information to the body of unwanted horse literature. A study of people who have re-homed their horses is currently being conducted to complement the findings presented here and to update findings in Holcomb et al. [20].

5. Conclusions

This study found an estimated 1.24 million households interested in and potentially able to adopt a horse and 2.26 million potential horse advocates for horses in need. While this estimate may not reflect an immediate, objectively suitable set of adopters, these numbers of people who report their willingness and perceived ability exceed the known estimates of unwanted horses and suggest a

substantial and underutilized resource. This study points to opportunities to increase communication and support between individuals and organizations that have unwanted horses to facilitate re-homing with people in their community willing to adopt them.

Acknowledgments: The authors thank the following for their time and expertise: Carolyn Schnurr, Nancy Perry, Bert Troughton, Justine Dang, Vic Spain, and Maya Gupta. We also thank Edge Research, Inc. (Arlington, VA, USA) for administering the survey and compiling the data.

Author Contributions: Emily Weiss, Heather Mohan-Gibbons, Shannon Gramann and Margaret R. Slater conceived and designed the experiments; Emily D. Dolan and Margaret R. Slater analyzed the data; Emily Weiss, Emily D. Dolan, Heather Mohan-Gibbons, Shannon Gramann and Margaret R. Slater wrote the paper. Edge Research was contracted to conduct the survey and compile the data.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

ORC International's Random Digit Dial (RDD) telephone sample is generated using a list-assisted methodology. The standard GENESYS RDD methodology produces a strict single stage, EPSEM (Equal Opportunity of Selection Method) sample of residential telephone numbers. The cell phone sample, also RDD, has been supplied by SSI, Inc. using their proprietary Cell/WINS technology. The cell phone sample is generated from cell phone 1000 series blocks (a "block" is defined by the first seven digits of the phone number) with all permutations within each block included. The sampling interval is then calculated by dividing the universe of all possible numbers by the number of records desired, thus specifying the size of the frame subdivisions. Within each of the subsets, one number is selected at random giving all numbers an equal probability of selection.

Surveys are collected by trained and supervised U.S. based interviewers using ORC International's computer assisted telephone interviewing (CATI) system. Final data are adjusted to consider the two sample frames and then weighted by age, gender, region, race/ethnicity and education to be proportionally representative of the U.S. adult population. Weighting adjustments are used to reduce the potential for biases that may be present due to incomplete frame coverage and survey nonresponse-both inherent in all telephone surveys. Each respondent is given a score based on their reported information and then either weighted up (if they are underrepresented) or weighted down (if they are overrepresented).

References

1. Deloitte Consulting, LLP. *2005 The Economic Impact of the Horse Industry on the United States*; National Report: Louisville, KY, USA, 2005.
2. Holcomb, K.E.; Stull, C.L.; Kass, P.H. Unwanted horses: The role of nonprofit equine rescue and sanctuary organizations. *J. Anim. Sci.* **2010**, *88*, 4142–4150. [CrossRef] [PubMed]
3. Lenz, T.R. The unwanted horse in the United States: An overview of the issue. *J. Equine Vet. Sci.* **2009**, *29*, 253–258. [CrossRef]
4. Stull, C.L.; Holcomb, K.E. Role of U.S. animal control agencies in equine neglect, cruelty, and abandonment investigations. *J. Anim. Sci.* **2010**, *92*, 2342–2349. [CrossRef] [PubMed]
5. Taylor, M.; Sieverkropp, E. The impacts of U.S. horse slaughter plant closures on a western regional horse market. *J. Agric. Resour. Econ.* **2013**, *38*, 48–63.
6. Stull, C.L. The journey to slaughter for North American horses. *Anim. Front.* **2012**, 2, 68–71. [CrossRef]
7. American Veterinary Medical Association. Unwanted Horses and Horse Slaughter FAQ. Available online: https://www.avma.org/KB/Resources/FAQs/Pages/Frequently-asked-questions-about-unwanted-horses-and-horse-slaughter.aspx (accessed on 28 February 2017).
8. Unwanted Horse Coalition/The American Horse Council. 2009 Unwanted Horses Survey. Available online: http://www.unwantedhorsecoalition.org/wp-content/uploads/2015/09/unwanted-horse-survey.pdf (accessed on 14 July 2017).
9. Lenz, T.R. The unwanted horse—A major welfare issue. In *Equine Welfare*; McIlwraith, C.W., Rollin, B.E., Eds.; Blackwell Publishing Ltd.: West Sussex, UK, 2011; pp. 425–441, ISBN-10: 1405187638.

10. U.S. Department of the Interior, Bureau of Land Management. Wild Horse and Burro Quick Facts. Available online: https://www.blm.gov/programs/wild-horse-and-burro/about-the-program/program-data (accessed on 3 April 2017).
11. Animal Welfare Council. The Life Cycle and Recycle of Horses. Available online: http://animalwelfarecouncil.com/wp-content/uploads/2012/02/UHLessons-3-THREE-Aug-6-2012.pdf (accessed on 28 February 2017).
12. Schueler, K.A. The Perceptions of the Unwanted Horse Population in Illinois. Master's Thesis, Illinois State University, Normal, IL, USA, 2015.
13. North, M.S.; Bailey, D.; Ward, R.A. The potential impact of a proposed ban on the sale of U.S. horses for slaughter and human consumption. *J. Agribus.* **2005**, *23*, 1–17.
14. Ott, R.L.; Longnecker, M.T. Chapter 5: Inferences about population central values. In *An Introduction to Statistical Methods and Data Analysis*, 7th ed.; Cengage Learning: Boston, MA, USA, 2016; pp. 232–299.
15. Clopper, C.J.; Pearson, E.S. The use of confidence or fiducial limits illustrated in the case of the binomial. *Biometrika* **1934**, *26*, 404–413. [CrossRef]
16. U.S. Census. U.S. Census Quick Facts. Available online: https://www.census.gov/quickfacts (accessed on 8 June 2017).
17. American Horse Council. Time to Ride. Available online: https://www.timetoride.com/ (accessed on 28 February 2017).
18. The Right horse Initiative. The Right Horse. Available online: https://www.therighthorse.org/ (accessed on 28 February 2017).
19. Stowe, J.C. Results from 2012 AHP Equine Industry Survey. American Horse Publications, 2012. Available online: http://www.americanhorsepubs.org/equine-survey/2015-equine-survey/ (accessed on 28 February 2017).
20. Holcomb, K.E.; Stull, C.L.; Kass, P.H. Characteristics of relinquishing and adoptive owners of horses associated with U.S. nonprofit equine rescue organizations. *J. Appl. Anim. Welf. Sci.* **2012**, *15*, 21–31. [CrossRef] [PubMed]
21. Chang, L.; Krosnick, J.A. National surveys via RDD telephone interviewing versus the internet: Comparing sample representativeness and response quality. *Public Opin. Quart.* **2009**, *73*, 641–678. [CrossRef]
22. King, J.F.; Bruner, G.C. Social desirability bias: a neglected aspect of validity testing. *Psychol. Mark.* **2000**, *17*, 79–103. [CrossRef]
23. Stowe, C.J.; Kibbler, M.L. Characteristics of adopted thoroughbred racehorses in second careers. *J. Anim. Sci.* **2016**, *19*, 81–89. [CrossRef] [PubMed]

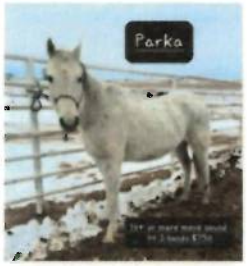
Fabrizius Livestock

We are a kill pen that offer each horse a second chance before shipping to slaughter. Each horse is posted with weekly deadlines. All HORSES ARE SOLD AS IS NO GUARANTEES. Can purchase horses via Venmo to Fabrizius Livestock or by card or cash. Customer is responsible for shipping.

New Arrivals

Add our new arrivals to your weekly line-up.

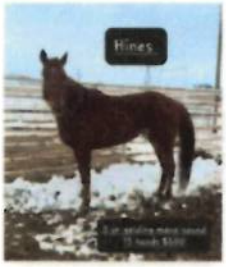
Browse Products



Parka

USD 750.00

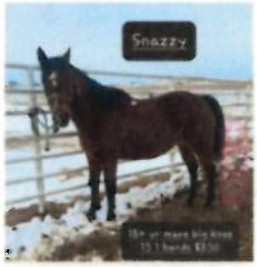
Enquire Now



Hines

USD 800.00

Enquire Now



Snazzy

USD 850.00

Enquire Now

Jazzed

USD 900.00

Enquire Now

Cheeky

USD 900.00

Enquire Now

Fabrizius Livestock - Head Office
12945 Co Rd 80
Eaton
Fort Collins Colorado
United States – 80615
+19706520301
amanda.bubba@yahoo.com

Accessed January 25, 2023 at: https://fabriziuslivestock.com/

Undercover investigations have found many in the horse slaughter industry circumvent laws to maximize profits. This is one such case involving one of Colorado's most notorious kill buyers.

UNITED STATES DEPARTMENT OF AGRICULTURE
BEFORE THE SECRETARY OF AGRICULTURE

In re: Fabrizius Livestock, a Colorado corporation, Respondent.	AHPA/CTESA Docket No. 21-J-0062

OPINION ASSESSING CIVIL PENALTY AGAINST RESPONDENT

Appearances:

Danielle Park, Esq., with the Office of the General Counsel, United States Department of Agriculture, Washington, DC, for the Complainant, Administrator, Animal and Plant Health Inspection Service ("APHIS")

Thomas D. Grant, Esq., of Grant & Hoffman Law Firm, P.C., Greeley, Colorado, for the Respondent, Fabrizius Livestock

Before Tierney M. Carlos, Administrative Law Judge

Summary

2. On or about July 18, 2018, Respondent purchased fourteen horses intended for slaughter in Nebraska and transported them to Colorado without owner/shipper certificates in violation of 9 C.F.R. § 88.4(a)(3).

3. On or about August 20, 2018, Respondent failed to exercise reasonable diligence to ascertain whether a horse was affected with any contagious, infectious, or communicable disease before offering the horses for interstate transportation when he sold and let one horse affected with equine infectious anemia ("EIA") leave his facility in Colorado and be transported to Wyoming in violation of 9 C.F.R. § 71.3(f).

4. From on or about July 2018 through August 2018, Respondent was a responsible party for animals leaving a premises for interstate movement under 9 C.F.R. § 86.5(a) and committed nineteen violations of 9 C.F.R. § 86.5(a) and (f) when on nineteen separate incidents he sold and allowed fifty horses to leave his facility without ensuring the horses were accompanied by an interstate certificate of veterinary inspection ("ICVI").

ORDER

In accordance with section 10414(b) of the Act (7 U.S.C. § 8312(b)), Respondent Fabrizius Livestock, a Colorado corporation, is assessed a civil penalty in the amount of two-hundred-ten thousand dollars ($210,000).

Pacific Standard

THE FUZZY MATH BEING USED TO JUSTIFY HORSE SLAUGHTER IN THE UNITED STATES

Did closing slaughterhouses really lead to an increase in animal abuse?

JAMES MCWILLIAMS

UPDATED: JUN 14, 2017
ORIGINAL: AUG 12, 2013

The animal entry of a slaughterhouse. (PHOTO: GOEKCE NARTTEK/SHUTTERSTOCK)

The vast majority of Americans—over 80 percent—oppose the idea of slaughtering horses in the United States. Not surprisingly, there was minimal public opposition when, in 2007, Congress, citing rampant welfare abuse and safety violations, cut off funding for the USDA inspection of U.S. horse slaughterhouses. This decision effectively ended the business of slaughtering horses domestically.

In November 2011, however, an agriculture appropriations bill signed by Congress reinstated funding for inspection. The legislative path for states to reopen horse slaughterhouses is now clear. Today, with the domestic cattle market in a drought-induced tailspin, New Mexico, Missouri, Wyoming, Tennessee, Iowa, and Oklahoma are on the verge of sending horses it once sent to Canadian and Mexican slaughterhouses into the clutches of domestic abattoirs. Other states, seeking a way to capitalize on horses that have lost their value or can be bought cheaply at meat prices, are eager to follow. A New Mexico meat processing plant has even made arrangements with the Navajo Nation to corral wild horses in anticipation of the impending slaughter fest. All that's holding this off for right now is a lawsuit from the Humane Society of the United States.

THEY'RE BUCKING HORSES THAT WON'T BUCK AND RACEHORSES THAT WON'T WIN AND QUARTER HORSES THAT NOBODY IS BUYING FROM BREEDERS BECAUSE HAY PRICES ARE TOO HIGH.

The pivotal piece of evidence that convinced Congress to change its mind on the matter of domestic horse slaughter was a GAO analysis published in June 2011 (PDF). Senators Herb Kohl (D-Wisconsin) and Roy Blunt (R-Missouri) and Representative Jack Kingston (R-Georgia) commissioned it. Titled, "Actions

Needed to Address Unintended Consequences From Cessation of Domestic Slaughter," the report found "a rise in investigations for horse neglect and more abandoned horses since 2007"—the year the plants were closed. The "unintended consequence" of closing horse slaughterhouses, the report explained, was an increase in the abuse of horses. Reinstating domestic slaughterhouses, it suggested, would diminish this rising problem of neglect among owners who neither wanted to keep their horses nor were willing to send them abroad for slaughter. This argument was one that the slaughter lobby has been making since slaughterhouse closings in 2007. Pro-slaughter advocates were more than pleased to hear the news.

Something about this report, however, seemed suspicious before it was even published. Charlie Stenholm, former Texas Congressman and now policy advisor to the D.C.-based law firm Olsson, Frank, and Weeda (which specializes in helping agribusiness negotiate federal red tape and recently hired an attorney who specializes in agricultural deals with Native Americans), told a conference of pro-slaughter interests in Las Vegas that the GAO report—*which would not come out for another six months*—contained very good news.

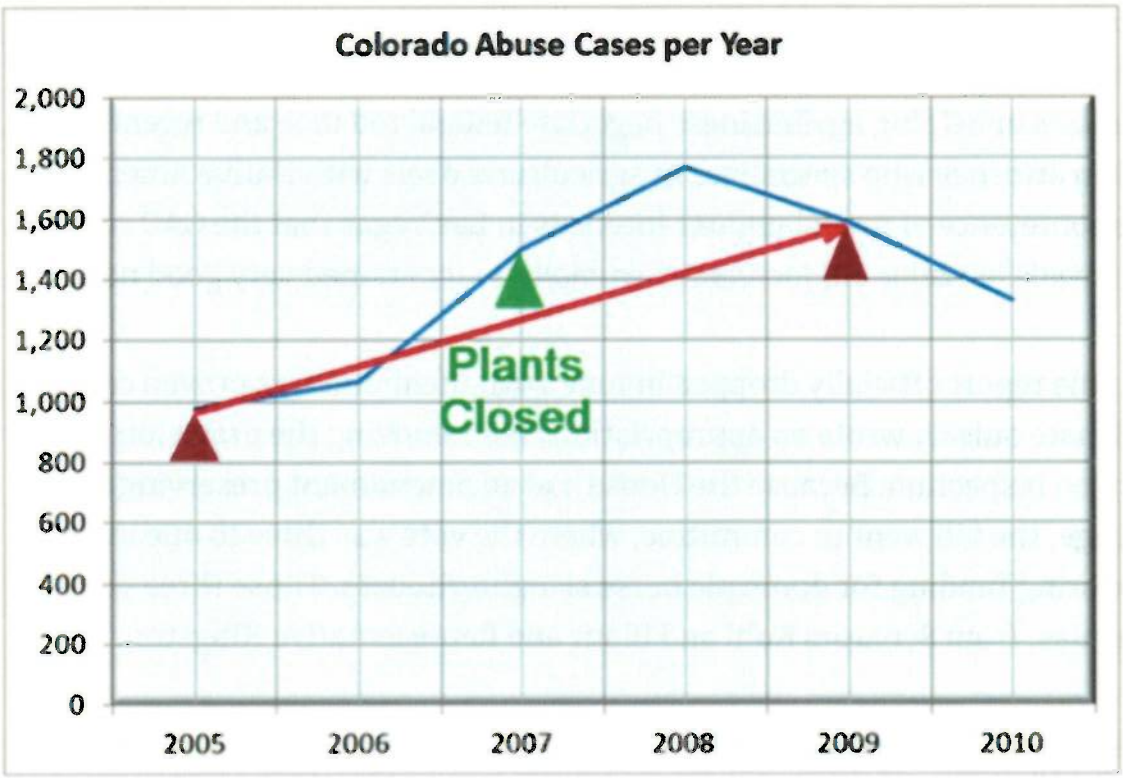
When the report officially dropped in June 2011, Stenholm was proven correct. The Senate quickly wrote an appropriations bill removing the provision that defunded inspection. Because the House had an amendment preserving the language, the bill went to committee, where the vote was three to one in favor of restoring funding for domestic horse slaughterhouses. Those three votes came, alas, from Senators Kohl and Blunt and Representative Kingston.

All very fishy. But what really stinks about the GAO report is the math. Because national data is not available on reported horse abuse, the GAO went to six states and found—in the only case of hard numbers that it provides in the entire report—that "Colorado data showed that investigations for horse neglect and abuse increased more than 60 percent from 975 in 2005 to 1,588 in

2009." Sounds pretty dramatic—until you recall that the slaughter ban passed in 2007. Not 2005.

As it turns out, horse abuse in Colorado did rise rapidly from 2005 through the end of 2007 (before the ban). But, starting in 2008, it declined precipitously through 2010 (a year for which numbers are available but the GAO tellingly admitted). The report thus made it seem as if abuse spiked after the closing of slaughterhouses. In fact, it continued for less than a year after the ban was instated and then declined rapidly.

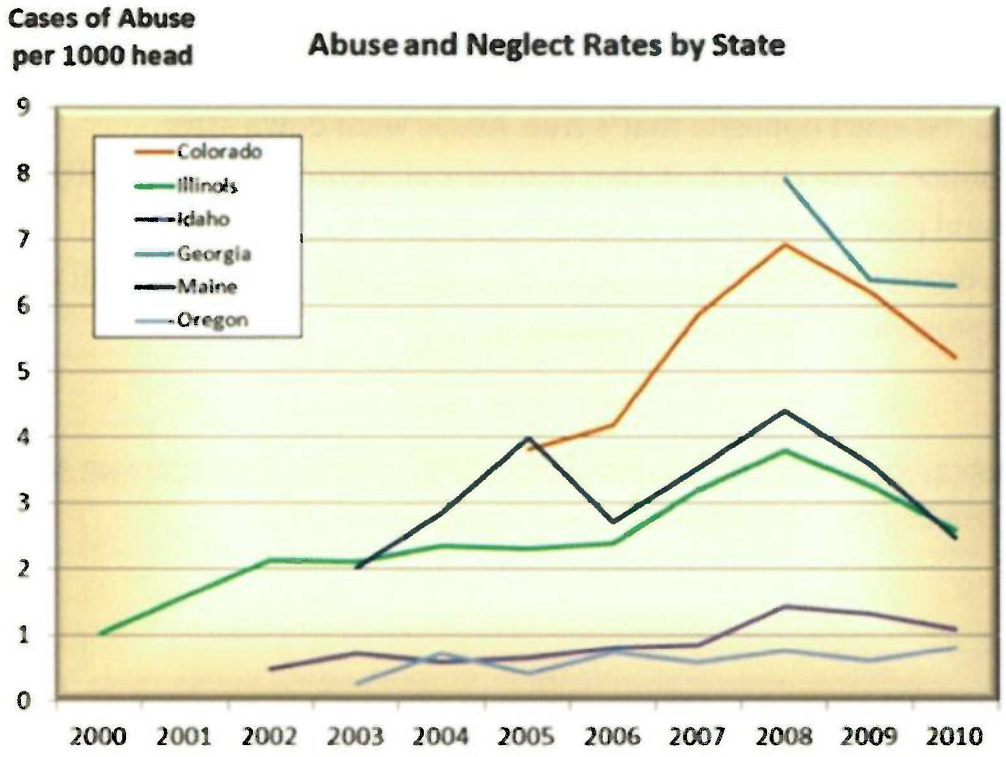
Figure 1: Colorado Department of Agriculture data



It is further worth noting that the GAO had access to similar figures on horse abuse investigations from five other states—Illinois, Idaho, Georgia, Maine, and Oregon. The GAO's decision not to include this information makes little

sense unless it was deliberately trying to skew the picture of horse abuse in favor of pro-slaughter interests. To wit: Four states for which there are data show a dramatic decline in horse abuse after 2007 while one—Idaho—shows no movement one way or the other. Ignoring these figures, the GAO decided instead to focus on Colorado, evidently hoping nobody would notice its creative presentation of the numbers.

Figure 2: Data from the agriculture departments of six states



Despite the report's suggestion that the need for local slaughterhouses is an urgent matter, the GAO fails to note something quite extraordinary about the situation: Only about one percent of existing domestic horses are slaughtered every year. Ninety-two percent of that one percent, according to Temple Grandin, are healthy and devoid of behavioral problems. They're bucking horses that won't buck and racehorses that won't win and quarter horses that nobody is buying from breeders because hay prices are too high. The only thing

that's urgent in this entire scenario is the desire to profit from sending these healthy horses to slaughter.

Horse abuse and neglect is a small problem that got smaller with the closure of slaughterhouses. The GAO—and the slaughter lobby it seems to represent—falsely presents it as a large problem getting larger. It wants us to envision a situation in which a recession and drought are overwhelming horse owners to the point that they're neglecting sick and ailing horses en masse. Give them easy access to a domestic slaughterhouse, so goes the argument, and abuse will decline.

In fact, it is the exact opposite that's true. Abuse went down after slaughterhouses were closed. All that domestic slaughterhouses would provide is an easy and profitable excuse to send many more healthy horses to a premature death for meat that we don't even eat in this country. It's all very sad logic upon which to rebuild an industry.

TAGS

HORSESENVIRONMENTNAVAJO NATIONUSDASLAUGHTERHUMANE SOCIETY OF THE UNITED STATES

BY

JAMES MCWILLIAMS

James McWilliams is a Pacific Standard contributing writer, a professor at Texas State University, and the author of *Just Food: Where Locavores Get It Wrong and How We Can Truly Eat Responsibly* and a *Revolution in Eating.*

https://psmag.com/environment/the-fuzzy-math-behind-horse-slaughter-64336

January 31, 2023

Dear Senate Agriculture & Natural Resource Committee Members,

I write in support of SB23-038, that would prohibit Equine Slaughter For Human Consumption.

As veterinarians, we swear an oath to "benefit society through the protection of animal health and welfare, and the prevention and relief of animal suffering."[1] For this reason, we support all efforts to permanently ban horse slaughter in the U.S. and end the export of American horses for slaughter abroad.

The slaughtering of horses for human consumption is prohibited in the United States. However, the commercial transport of American horses to slaughter across U.S. border continues, and Colorado should act now to stop it.

First, it is far from humane. The "slaughter pipeline" that brings horses to slaughterhouses, or abattoirs, in Canada or Mexico often starts after an auction, where horses come from racetracks, family farms, backyards, lesson programs, horse shows, and so on. They arrive in "kill pens" from all over the country, and then often travel up to 28 hours with no food, water, or rest enroute to the border. Crammed into trailers with unfamiliar animals, horses endure grueling journeys that often result in horrific injuries or death. Peer reviewed studies have documented that it causes significant health and welfare issues.

- In one study, over 40% of horses had poor or very poor welfare indicators on arrival at the slaughter facility (abattoir).[2]
- Another study published in the journal *Meat Science* found "that carcass bruising was a highly prevalent problem (79% of carcasses had bruising)" in American horses slaughtered in Mexico. Furthermore, 20% of all carcasses had a "severe and concentrated damage pattern" related to biting and kicking from unfamiliar horses being loaded together.[3]

There is no such thing as humane horse slaughter. When horse slaughterhouses were operating in the U.S., the USDA documented horses arriving at the slaughterhouse with dislodged eyeballs, detached limbs, and downed horses who had been trampled to death.[4]

The cruelty of this industry continues when they arrive at the slaughterhouse. Humane slaughter, by definition, requires that an animal be rendered unconscious prior to being dismembered. This

---

[1] https://avma.org/resources-tools/avma-policies/veterinarians-oath

[2] Genaro C Miranda-de la Lama, Cesar A Gonzalez Castro, Francisco J Gutierrez-Pina et al. Welfare of horses from Mexico and the United States of America transported for slaughter in Mexico: Fitness profiles for transport and pre-slaughter logistics. Preventative Veterinary Medicine Vol 180 July 2020.

[3] Genaro C. Miranda-de la Lama a,d,*, C´esar A. Gonz´alez-Castro b, Francisco J. Guti´errez-Pi˜na b, Morris Villarroel c, Gustavo A. Maria a, Laura X. Est´evez-Moreno, "Horse welfare at slaughter: A novel approach to analyse bruised carcasses based on severity, damage patterns and their association with pre-slaughter risk factors" Meat Science 10/13/20.

[4] U.S. Department of Agriculture. 2005, FOIA Request #06-108.

standard is virtually impossible to meet with equines, especially in a commercial slaughterhouse. Horses are extremely difficult to immobilize and render insensible to pain, especially when using equipment designed for other species. In the stunning box, horses' heads are unrestrained and may flail and flinch in a manner inconsistent with humane slaughter. Inevitably, the captive bolt will miss its target multiple times, sending the injured equine into a panic, and potentially to dismemberment while alive and conscious. The 2014 audit of EU-approved slaughter plants in Mexico documented persistent and extremely serious welfare concerns during transport and at the slaughter facilities.[5] Inspectors noted that at multiple facilities, handlers did not even bother to confirm that an animal had been effectively stunned before being hoisted for dismemberment.

Second, commercial slaughter is not euthanasia. The ASPCA supports humane euthanasia for horses when quality of life is untenable. The word "euthanasia" literally means a good death. When we think of euthanasia, we imagine old, sick, or injured animals needing a peaceful and dignified end of life in the hands of a professional. The slaughter pipeline from start to finish is the opposite way to end a life. Loading an already-suffering horse into a transport vehicle and shipping the horse for up to 28 hours with no food, rest, or room to move to a slaughterhouse can in no way be characterized as euthanasia.

Slaughterhouses are designed for food production – they are not designed to be sites of humane euthanasia. Dr. Nicholas Dodman, in his 2008 testimony before the House Judiciary Committee on behalf of Veterinarians for Equine Welfare, stated, "No ethical veterinarian, faced with a client who has a horse that is old, sick, or otherwise no longer wanted, would suggest that the horse in question should be put on a truck and hauled thousands of miles to slaughter. Instead, the veterinarian would most likely suggest truly humane euthanasia via chemical injection.[6]

Perhaps more important, the horses being sent to slaughter are most often not in need of euthanasia, and the horses in need of euthanasia are often not the horses sent to slaughter. The USDA's own data showed that when horse slaughter plants were operating in the U.S., 92.3% of horses at those facilities were in good condition.[7] As noted previously, "kill buyers" profit from robust, large animals, which mean they avoid or offload equines with poor body condition.

Third, since American horses are not raised for human consumption, they are routinely given controlled substances that make their meat a threat to human health.

- An article published in the *Food and Chemical Toxicology Journal* estimated that 9,000 pounds of meat taken from horses with known exposure to phenylbutazone were sent abroad for human consumption over the five-year study period – the entire sample they were observing.[8]

---

[5] European Commission Food and Veterinary Office "Final Report of an Audit Carried Out in Mexico from 24 June to 04 July 2014": http://ec.europa.eu/food/fvo/rep_details_2_en.cfm?rep_id=3364.

[6] House Judiciary Committee hearing transcript, 7/31/08, p. 65 – https://www.govinfo.gov/content/pkg/CHRG-110hhrg43830/pdf/CHRG-110hhrg43830.pdf

[7] Grandin, Temple, Survey of Trucking Practices and Injury to Slaughter Horses.

[8] Dodman, Blondeau, & Morini. 2010. "Association of phenylbutazone with horses bought for slaughter: A public health risk" *Food and Chemical Toxicology.* (48)5. https://www.sciencedirect.com/science/article/pii/S0278691510001225;

- Another study looking at the prevalence of comingled horsemeat in beef products in Mexico found that of the approximately 10% of samples that contained equine tissue, a disturbing figure in itself, all of them contained clenbuterol – a drug banned for use on animals meant for human consumption.[9]
- In 2017, in light of an FVO audit of Canadian horse slaughter facilities, the European Commission implemented new regulations requiring that all American horses destined for slaughter in Canada be held for six months prior to slaughter if their meat was destined for EU member countries. While the intent is to control banned substances, many of these substances are banned in *any concentration and for use on food animals at any point in their lives.*

Until SB23-038 becomes law, these horrors will continue for Colorado horses.

Arguments for allowing the slaughter of horses for human consumption are unfounded. The main argument is that absent a market for "unwanted horses" the animals would be neglected or abandoned and left to starve.

For this reason the American Veterinary Medical Association (AVMA) has stated that it does not support ending horse slaughter and agrees with the American Association of Equine Practitioners' (AAEP) policy on the subject. The position statement that is cited by the AVMA is based on a statement made at a board meeting of the AAEP in May 2002.[10] However, on June 27, 2011, Dr. William Moyer, President of the AAEP, updated this policy in the AAEP statement in response to the Government Accountability Office (GAO) Report on Horse Welfare.[11] He stated in part, "**The AAEP believes that horse processing is not the ideal solution for addressing the large number of unwanted horses in the U.S.**" This position is more current than that supported by AVMA and demonstrates the shift in the veterinary position on horse processing that has occurred over the past 20 years.

Approximately 380,000 horses die annually in this country (10 percent of an estimated population of 3.8 million as of 2020[12]) and the vast majority are not slaughtered but euthanized and rendered or buried without any negative environmental impact. Approximately 23,000 horses were transported for slaughter from the U.S. in 2021[13]. If export for slaughter was no longer an option and these horses were rendered or buried instead, this would represent a negligible change in the number of horses being disposed of in this manner – something current U.S. infrastructure is well-equipped to handle. Nevertheless, reopening slaughterhouses in America is not the answer to ending this form of cruelty. In fact, even when horse slaughter facilities operated in the United States, tens of thousands of American horses were still exported to other countries for slaughter[14].

---

[9] Lozano, et al. 2020 "Horse meat sold as beef and consequent clenbuterol residues in the unregulated Mexican marketplace" *Food Control.* 1:10. https://www.sciencedirect.com/science/article/abs/pii/S0956713519306176.

[10] https://bloodhorse.com/horse-racing/articles/178951/groups-that-oppose-slaughter-ban-target-of-letter

[11] https://aaep.org/news/aaep-statement-regarding-gao-report-horse-welfare

[12] https://fda.gov/animal-veterinary/cvm-updates/fda-revises-population-estimates-cats-and-horses-determination-minor-uses-major-species

[13] https://www.aspca.org/improving-laws-animals/public-policy/horse-slaughter

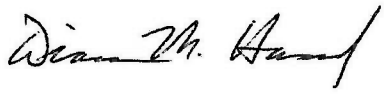
[14] https://www.aspca.org/improving-laws-animals/public-policy/horse-slaughter

These innovations, along with the Unwanted Horse Summit and the creation of the United Horse Coalition, the Unwanted Horse Coalition, the Homes for Horses Coalition, as well as the more than 500 horse rescue organizations across the country[15], and the fact that roughly 2.3 million households want to adopt a horse,[16] we have made giant strides to end the need for international horse transport for slaughter.

These continued efforts to improve the welfare of horses in Colorado is what passing SB23-038 will continue to support.

Thank you for your consideration and important work on this issue.

Sincerely,



Diana Hassel, DVM, PhD
Diplomat American College of Veterinary Surgeons
Diplomat American College of Veterinary Emergency and Critical Care
Professor, Colorado State University

[15] https://horseycounsel.com/horse-rescues-shelters-us/

[16] https://www.aspcapro.org/research/encouraging-research-regarding-homes-horses; actual research report: https://www.mdpi.com/2076-2615/7/7/53

THE WILD ANIMAL Sanctuary

www.WildAnimalSanctuary.org

TO: SENATE AGRICULTURE & NATURAL RESOURCES COMMITTEE

RE: SB23-038 Prohibit Equine Slaughter For Human Consumption

Tuesday, January 31, 2023

Dear Committee Members,

As the Executive Director of The Wild Animal Sanctuary (TWAS), I am writing to you today to submit written testimony on Senate Bill SB23-038 concerning the prohibition of Equine Slaughter For Human Consumption. Although our non-profit organization is known for being the largest carnivore sanctuary in the world, we have also been rescuing both domestic and wild horses for more than 43 years.

As the Founder of this organization, I personally have been involved with hundreds of horse rescues throughout Colorado and around the nation and I can tell you first-hand there are thousands of horses each year that are being sold to slaughter buyers for human consumption processing. Colorado is one of the states that is currently allowing this to take place and our organization is working diligently to help prevent horses from ending up in this terrible pipeline.

With more than 33,000 acres of land and four dedicated facilities, TWAS provides life-long homes to rescued Lions, Tigers, Bears, Wolves and many other species of animals – including Horses. Our organization takes this matter very seriously, and as such, I implore you to consider the magnitude of this problem and ask that you support Senate Bill SB23-038.

I am a native of Colorado and have spent my entire adult life rescuing many species of animals that are caught in illegal or abusive situations. As a result of my dedication, and that of our 85 employees and 160+ volunteers, The Wild Animal Sanctuary has been able to gain more than 500,000 active supporters within Colorado. Quite honestly, I can tell you that our supporters are extremely passionate when it comes to supporting this type of legislation.

Thank you for your time and consideration,

Pat Craig
Executive Director

The Wild Animal Sanctuary
"Saving Captive Wildlife For More Than 43 Years"
1946 County Road 53 * Keenesburg, CO 80643 * 303-536-0118
www.WildAnimalSanctuary.org