Alpaca Assisted Activities in the New England Alpaca Industry: A Possible Solution to Farm Profitability and Participant Mental Health

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Honors Thesis

Spring 2024

Alpaca Assisted Activities in the New England Alpaca Industry: A Possible Solution to Farm Profitability and Participant Mental Health

Ashley Masse

University of New Hampshire
Alpaca Assisted Activities in the New England Alpaca Industry: A Possible Solution to Farm Profitability and Participant Mental Health

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Sustainable Agriculture and Food Systems

Faculty Mentor: Dr. Andrew Conroy

Agriculture, Nutrition, and Food Systems
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Abstract

The high operating costs of the New England alpaca industry were putting the majority of alpaca farmers in this region in a state of financial loss. On a separate note, American communities were experiencing a prevalence of anxiety and depression. What if a single solution could help improve the outcome of both these challenges that seem to have little to do with each other? Alpaca Animal Assisted Activities (alpaca AAAs) was a possible solution. This study explored New England alpaca farm profitability and alpaca AAAs in a way no other research study has done before. A Farmer Survey was mailed to 183 alpaca farmers across New England asking questions about demographics, profitability, and alpaca AAA use. A Therapeutic Survey was handed out to participants of an alpaca AAA to take account of anxiety and depression levels after the visit. It was found that there wasn’t a single path to profitability, however, paid alpaca AAAs generated money that farmers could utilize in their farm businesses. At the same time, alpaca AAAs had the ability to reduce anxiety and depression and in no cases increased these emotional states. If you are an alpaca farmer looking to add an additional source of revenue to your farm business while also improving the emotional welfare of your community, this thesis is worth a read!

Introduction

The sustainability and success of any farm depends on the generation of a profit. While this concept is straightforward, the path to achieve profit is wide-ranging. There are many directions that farmers can take to sell direct products and services in a way that is customizable to their businesses. Metaphorically, if farming was a mountain, many combinations of trails could be hiked towards profit at the peak. There is not a single trail up the mountainside that represents a correct way of farming, but many paths that interconnect and wind through the
Many people may overlook the intricacies involved in farming ventures and associate the business with singular goals. Their thought process may be as follows: Dairy cows are raised solely for milk; Bees are kept solely for honey; Alpacas are used solely for fiber. The reality is that farming is naturally more complex and cannot be abridged into such a simplistic view. It would be risky for a small-scale farm to rely on only one direct product in the modern economy. Property taxes are too high, equipment is too expensive, regulations are too strict…the list of financial challenges goes on. As a response, farmers began to examine what their projects generated and looked at these items as additional ways to earn money. They became creative.

Farmers blaze new trails by leaning into creativity, which has been defined as the “development of a novel product, idea, or problem solution that is of value to the individual and/or the larger social group” (Hennessey & Amabile, 2010). Dairy farmers still produced milk, but they also leased their cows out for grazing purposes. Beekeepers still collected honey, but they also sold hives to florists looking to increase pollination of their flowers. Finally, alpaca farmers still sheared for fiber. But what did creative marketing look like in alpaca farming? Alpaca farming in particular was a risky enterprise. The animals existed in a livestock industry where they were overvalued due to expensive purchase prices. They also competed in a niche fiber market that could not provide a satisfactory profit. The solution was, once again, creativity.

A creative solution implemented by one New England alpaca farm, the Harvard Alpaca Ranch in Harvard, MA was the use of an alpaca for therapeutic visits. Owners Matt and Amy Varrell were well aware of the relaxing effects alpacas have on humans, and this inspired the Varrell family to start an alpaca farm in 2016 to share with others the heartening response a person could feel around alpacas. They did this predominately through their program called
Alpaca Assisted Therapeutic Activities. For this program, Amy registered as a handler through Pet Partners, which was an nonprofit organization focused on training animal and handler teams (“Pet Partners,” 2024). She completed the curriculum with her alpaca, Sir Erik, who was also registered. Together, Amy and Sir Erik visited hospitals, schools, retirement homes, and community events. These visits were set up so that Amy and Sir Erik walked up to people, the person being visited could pet Erik, and Amy shared facts about alpacas while answering questions.

I first joined Amy on a therapeutic visit to a retirement home. Most of the residents were excitedly talking about the alpaca, however, there was one man among the crowd who sat quietly with a frown on his face. While I was slightly intimidated to approach him, Sir Erik walked up to him with no reservations. Immediately any emotional distance was closed, and a smile broke out on the man’s face as he petted Erik. I understood what Amy meant when she talked about moments of connection that happen on alpaca visits. This was one of them. Questions started piling up in my mind. Why can’t this kind of experience happen more often for more people? What if this program was made into a class of services that could be used on
other alpaca farms? How much would people pay to have an alpaca brighten their day? Could alpacas even help ease anxiety and depression? This thesis answered all of these questions and more as it explored the use of alpacas for both philanthropic and financial success.

For this thesis, I defined Harvard Alpaca Ranch’s program as a type of Animal Assisted Activity (AAA). AAAs have been led by trained handler/animal teams who provided “motivation, education, or recreation to enhance quality of life” (“American Veterinary Medical Association,” 2024). AAAs were considered a paid service because handlers could charge clients a fee to cover their travel and labor expenses. While there was a lot of flexibility in the definition of these activities, handlers commonly made visits to schools, hospitals, companies, and other public organizations. They could also host activities from their own home and charge for attendance.

I defined the use of alpacas in AAAs as alpaca AAAs. Alpaca farmers used alpaca AAAs for two goals. The first was to share with the community cheerful experiences with alpacas. The second has been to create another revenue stream for farms that could make all the difference in an unrewarding industry. The research for this thesis explored the use of alpaca AAAs in New England, profitability data, and alpaca AAA impact on anxiety and depression levels in Harvard Alpaca Ranch clients.
Review of the literature

Alpaca Industry

The United States of America (U.S.) alpaca industry was relatively new, beginning in 1984 when the first alpacas were imported from South America (Saitone & Sexton, 2005). This acquisition of alpacas created hopes that a successful alpaca textile industry would develop in the U.S. However, the initial status of the U.S. alpaca industry was strenuous. Dr. Tina L. Saitone and Dr. Richard J. Sexton of the University of California released a publication, *Alpaca Lies*, showing that extraordinarily high purchase prices in the U.S. for alpacas and low fiber profits from these alpacas were both unreasonable and unsustainable. They called this economic situation a “speculative bubble”, which was when an animal was priced much higher than its intrinsic value. To come to this conclusion, Saitone and Sexton reviewed 2004 alpaca prices, 2007 production costs, and 2005 market fiber prices dictated by niche cottage markets and the Alpaca Fiber Cooperative of North America (AFCNA) to put together an estimation of what a farmer’s profit would look like for raising a single alpaca in the U.S. during the 2000’s (Saitone & Sexton, 2005).

In 2004 the average auction price for a quality-fiber female in America was $12,000-$25,000, and the price for a quality-fiber herd sire was $20,000-$50,000. This was in contrast to purchase prices in Peru, a country that housed over 3 million alpacas and managed the only viable alpaca textile industry in the world, where a quality alpaca could be bought for less than $100 (Saitone & Sexton, 2005). The American purchase price was an incredible initial investment for farmers to make, and many people were barred from entering the industry simply because they could not satisfy the acquisition cost.
In addition to the initial cost of quality alpacas, money was spent maintaining them. Saitone and Sexton (2005) estimated that it cost $308 a year to give proper nutrition and veterinary care to an alpaca. This combined a feeding regimen of hay and grain that cost $208 annually and a scheduled set of dewormers and vaccinations that cost $100 annually. With thousands of dollars spent on acquisition costs and hundreds more spent on production, farmers were placed in debt, and they eagerly entered the fiber market looking to make their money back. However, they were greatly disappointed.

In 2005, the most profitable and highest quality fiber a farmer could sell was royal baby fiber, another name for a cria’s coat. Fiber quality was determined by micron count, a unit of length taken from the diameter of a strand of fiber. Higher micron counts resulted in coarser yarn which, when made into a textile product, made a lower quality commodity. Fiber processing plants paid premium prices for fiber with low micron counts. Since the fiber of a cria had the lowest micron count of the animal’s life, it fetched a high price: $44/lb or $286 for a 6.5lbs coat. Looking at a simple income and expense analysis illustrated how unprofitable selling even the most expensive type of fiber in 2005 could be. If the farmer earned $286 per cria coat, he/she still had to pay the shearer an average of $25 per animal. Each alpaca was also estimated to cost $308 a year to feed and care for. When the expenses were paid, a farmer lost $47 per cria in the independent market. Farmers selling their fiber to the AFCNA earned much less, with cria fiber priced at $5/lb, high quality Suri fiber at $2.50/lb, and coarse fiber at $0.50/lb. AFCNA earnings were not given in cash either, but instead were given in credits to a cooperative store that was profitless and slow to pay patronage dividends to members (Saitone & Sexton, 2005).

With acquisition costs in the thousands, production costs in the hundreds, and negative profits from fiber sales, American alpaca farmers lost money while stuck in this speculative
bubble. When Saitone and Sexton revisited the economics of the alpaca industry in 2011, the speculative bubble had mostly burst. At most, farmers in 2011 could sell their cria fiber in a cottage market for $78/lb. For the average 6.5lb of fiber per alpaca, this amounts to $507 in earnings. Subtract the 2005 alpaca production cost of $308 and $25 for the shearer, and farmers could experience a profit of $174 per alpaca. Additionally, the average auction cost for an American male alpaca in 2011 dropped to $10,000, and the average cost for a female alpaca was $15,000. Alpacas were being priced closer to their fiber value (Saitone & Sexton, 2012). Even though the U.S. alpaca industry was repairing itself, farmers could not be financially satisfied by earning hundreds of dollars per alpaca annually.

As a response, American alpaca farmers expanded their direct products and paid services to make the most of their resources. Besides fiber, other direct products included processed yarn, finished alpaca products (socks, hats, stuffed animals), breeding stock, alpaca sales, raw manure, finished compost, meat, pelt, and hides. Paid services included hosting farm educational tours, weddings, corporate outings, birthday parties, leasing, boarding, and more. While alpaca farms took advantage of these sales, there was another radical opportunity proven to be beneficial by recent research. It was Animal Assisted Activities (AAAs).

Animal Assisted Activities

AAAs were a type of paid service where a trained handler would take his/her certified animal on visits to retirement homes, schools, businesses, public events, and other community venues. There was a market for AAAs filled with people looking to improve their mental and physical health. It has been concluded that the use of dog/pet AAAs fostered empathy (Ascione & Weber, 1996), lowered blood pressure (Allen, 2002; Friedmann et al., 2007; Wells, 2007),
lowered anxiety levels (Wilson, 1991), and alleviated depression (Miller et al., 2009; Morrison, 2007). In particular, the mental health interventions in the areas of anxiety and depression were of specific interest.

**Anxiety and Depression**

The Anxiety and Depression Association of America (ADAA) provided 2024 mental health disorder statistics. The ADAA labeled anxiety disorders as the most prevalent mental illness in America and estimated that 18.1% of U.S. adults (40 million people) had an anxiety disorder. Within this category, 3.1% of U.S. adults (6.8 million people) had Generalized Anxiety Disorder, 6.8% of U.S. adults (15 million people) had Social Anxiety Disorder, and 2.7% of U.S. adults (6 million people) had Panic Disorder (“Anxiety and Depression Association of America,” 2024a). Additionally, the ADAA attributed Major Depressive Disorder as the leading cause of disability in the U.S. for adolescents over 15 and adults. 6.7% of U.S. adults (16.1 million people) had Major Depressive Disorder. 1.5% of U.S. adults (3.3 million people) had Persistent Depressive Disorder where their depression continued for over two years (“Anxiety and Depression Association of America,” 2024b). AAAs could have the potential to offer millions of people with anxiety and depression symptoms a way to improve their mental health in complement to traditional therapies provided by the American healthcare system (doctors’ visits, therapy, prescriptions, and hospitalizations).

**Alpaca Animal Assisted Activities**

Alpaca farmers realized they could improve human quality of life through alpaca AAAs. These are AAAs where the farmer receives a handler certification and the animal used is a trained alpaca. In 2024, the only national organization that offered AAA certification to pets
other than dogs was Pet Partners. While certification is not required by the national or state governments, there were compelling reasons to go through the process (Arkow, 2021). It would teach people how to train their animals, perform AAAs, and manage risk in visiting scenarios. Pet Partners would also provide commercial general liability insurance (CGLI) to its registered therapy teams, but only if they performed volunteer AAAs, meaning they did not charge for their services (Pet Partners Handler Guide, 2022).

Some examples of paid alpaca AAAs include therapeutic visits to schools/ healthcare venues, alpaca yoga, alpaca hikes, reading to alpacas, relaxed listening to alpaca vocalizations, pasture meditation/mindfulness, and alpaca grooming. While there is no research on alpaca AAAs, the use of alpacas stands to be just as effective in improving human quality of life as other animals for the following reasons:

➢ Some alpacas have the perfect extroverted temperament which makes them curious about interacting with people (Learning 4 Life, 2020).

➢ Alpacas have only been in the U.S. since the 80’s, so many people have never seen them before and are drawn to their unfamiliarity. Their appearances are so rare in public places, that it snaps people out of their own lives and worries to focus on the alpaca (Idaho News 6, 2017).

➢ As prey animals, their attention is always on their surroundings. They bring a gentle quietness to a room, vocalizing only in soft hums (Caters Clips, 2019).

➢ With halter training, they are easy to maneuver and walk, even for people who have never had large animal handling experience before (Evans, 2020).
➢ Their fiber is very fluffy and soft, which makes them tactiley rewarding to pat (Become the CEO of your Health, 2021).

➢ Their height is not intimidating and is accessible for hugs (60 Second Docs, 2020).

➢ They have large dark eyes, and our own psychology primes us to interpret larger eyes as also being cuter. This opens ourselves up to being more attentive to them (Yao et al., 2022).

➢ Their lips turn upwards almost into a smile, and upon seeing a smile we instinctively want to smile back (Spector, 2018).

Once my surveys were completed, two farms from Massachusetts agreed to in-depth interviews and recognition in this publication. I interviewed the owners of Harvard Alpaca Ranch in Harvard, MA and Friendly Ass Farm in Spencer, MA about their alpaca AAAs. The alpaca assisted programs these two farms provided were compelling, and the owners answered questions about alpaca AAA type, pricing, and frequency which I did not ask about in my Farmer Survey. The interviews also showed a passion for wanting to help emotional wellbeing in local communities and sustainable mindset that their programs depended on income.

Harvard Alpaca Ranch offered visits to retirement homes, hospitals, schools, community spaces, businesses, and other locations/events and provided alpaca yoga at the farm. Charging consumers for visits and yoga sessions created an additional revenue stream for Harvard Alpaca Ranch and was an important contributor to the therapeutic program’s growth. The owners, Matt and Amy Varrell, charged between $100 and $350 for off-farm visits depending on the travel and number of alpacas involved. In 2023, they visited 38 nursing homes, 13 public libraries, 13 schools and universities, and 3 housing facilities/shelters with an average of 1-2 visits per week.
While this income justified the labor and time spent on visits, the Varrells explain that the goal of the program is to share alpacas with the public, especially with people that can benefit from in-person visits. They have a policy that they will not refuse visits for those that are unable to pay (A. Varrell & M. Varrell, personal communication, February 17, 2024).

Friendly Ass Farm offered tours, alpaca walks, alpaca yoga, as well as meditation and sound healing. The owner, Allison, educated herself on alpaca AAAs by attending Harcum College for animal assisted therapy. She started doing alpaca AAAs on a volunteer basis, but she found that it was more sustainable to charge money for the time and effort she was putting into the activities. She also carried her own insurance for the activities and needed a way to offset that expense. She suggested donations of $10 for a tour, $20 for a yoga session, and $30 for an alpaca walk. While she preferred to do alpaca AAAs on the farm so that customers could have an enveloping farm experience, she also provided off-site visits. These visits were priced at $50 per animal (Allison usually brought two alpacas to reduce the animals’ stress) with the addition of $50 per hour. She hosted alpaca AAAs multiple times a week and had internship programs with a high school and vocational programs that happened 2-3 times per week. Allison recognized that the benefits of animal assisted activities were anecdotal, but she said, “most people who experience animal assisted activities know that it works”. She described the human/animal bond as a bridge to motivate people to do healthy things and said it was a “privilege” to use alpacas in this modality (A. Smith, personal communication, April 9, 2024).
Methods

This thesis explored the perceived profitability and therapeutic aspects of Alpaca Assisted Activities. There were two surveys in this study: The Farmer Survey and the Therapeutic Visit Survey.

Farmer Survey

The Farmer Survey was an anonymous survey with questions about farm demographics (farm acreage, herd size, years in operation, etc.), markets (direct products and paid services), and farmer familiarity/opinions on Alpaca Assisted Activities as a paid service. Survey questions had numerical scaling, yes or no answers, and multiple choice with an open response “other” option (see appendix for survey). The sample set included New England alpaca farmers who owned farms meeting the inclusion criteria of being located in New England and having an address visible online. The exclusion criteria eliminated data from farms that were non-operational or had fewer than three alpacas (this number served as a minimum herd size where one alpaca was allowed to be the alpha and the two remaining were the supporting herd). The survey was available to be completed in a printed or online version hosted by Qualtrics in order to eliminate survey accessibility barriers. If farmers didn’t consent to the survey, they could discard it. There was no incentive or compensation for participation in this study.

An inventory of 183 New England alpaca farms with farm names, addresses, phone numbers, emails, and website links was made and utilized to create a mailing list for the Farmer Survey. This inventory was informed by public online sources, including the Alpaca Owners Association, New England Alpaca Owners and Breeders Association, Facebook, Google search, and Openherd. To create the mail packages, the 183 addresses were printed out onto address labels and stuck onto individual envelopes. Inside each envelope was a recruitment flyer, a
printed version of the Farmer Survey, two printed consent forms (one to be returned with the print survey and one for the farmer to keep as record), and a return envelope. The recruitment flier provided an introduction to myself and the thesis. It gave instructions on how to complete the online version of the survey by following a web link or QR code. It also explained how a farmer could fill out the printed version of the survey and mail the completed survey and consent form to my address using the return envelope. Sealed envelopes were mailed to farmers on July 4th, 2022, and the survey was open for 8 weeks beyond that date.

Out of the 183 alpaca farms that were contacted, 8 farms did not receive their envelope packages because the envelopes were labeled by the post office as undeliverable. The final sample set included 38 farmers who mailed completed print surveys and 16 farmers who completed the online survey. Out of the 175 farmers that received the survey, 54 farmers responded giving the survey a 31% response rate. The responses from both print/online surveys were reviewed and manually entered into tables in Excel for analysis using graphs and tables.

**Therapeutic Visit Survey**

The Therapeutic Visit Survey took place in conjunction with Harvard Alpaca Ranch’s Alpaca Assisted Therapeutic Visits. The therapeutic visit schedule included sessions at the Seven Hills Family Picnic in Groton, MA on 6/26/22, Nashoba Park Assisted Living in Ayer, MA on 6/28/22, and Providence House Assisted Living in Brighton, MA on 8/2/22. The Therapeutic Visit Survey was a printed, anonymous survey that posed questions about changes in anxiety, changes in depression, therapeutic visit satisfaction, and future interest in Alpaca Assisted Activities with Harvard Alpaca Ranch or other providers. The survey questions had multiple choice answers that ranged from extremely negative to extremely positive responses (see appendix for survey). To administer the survey, I handed the papers to visitors and stood with
them as they filled out the survey so that I could answer any questions they might have had. Then, I collected the completed surveys and placed them in a dedicated folder. The inclusion criteria were that the subject must participate in the therapeutic visit and be 18 or older. At the visits, there was a range of ages from younger parents at the family picnic to older residents at the retirement home. There were no exclusion criteria and no incentive or compensation for participation in the study. If someone didn’t consent to the survey, they could refuse it when offered. The final sample set included 35 people who completed the survey. Their responses were manually entered into Excel and analyzed using graphs and tables.
Results

Farmer Survey

I. Demographics

The demographics portion of the farmer survey was made up of five questions asking about herd size, years of operation, farm acreage, whether the farm exclusively had alpacas, and the need for supplemental income. Each question had 54 responses with the exception of the question about alpaca exclusivity, which had 53 responses.

Table 1. Alpaca Farm Demographics

<table>
<thead>
<tr>
<th>Number of Alpaca (n=54)</th>
<th>Years of Operation (n=54)</th>
<th>Acreage (n=54)</th>
<th>Exclusively Alpacas (n=53)</th>
<th>Supplemental Income (n=54)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>% of Farms</td>
<td>Amount</td>
<td>% of Farms</td>
<td>Amount</td>
</tr>
<tr>
<td>10 to 20</td>
<td>41%</td>
<td>15 to 20</td>
<td>30%</td>
<td>&gt;15</td>
</tr>
<tr>
<td>3 to 10</td>
<td>24%</td>
<td>5 to 10</td>
<td>28%</td>
<td>5 to 10</td>
</tr>
<tr>
<td>&gt;30</td>
<td>22%</td>
<td>10 to 15</td>
<td>22%</td>
<td>3 to 5</td>
</tr>
<tr>
<td>&lt;3</td>
<td>0%</td>
<td>&lt;5</td>
<td>5%</td>
<td>10 to 15</td>
</tr>
</tbody>
</table>

*The highlighted line draws attention to the majority percentage. For example, in the "Number of Alpaca Category" the majority (41%) of farms have 10 to 20 alpacas.

The categories, years of operation, acreage, and exclusively alpacas, were relatively evenly distributed in percentages. Close to half of the alpaca farms (41%) had 10 to 20 alpacas. The most significant finding was that 87% of the alpaca farms used supplemental income from off-farm sources (Table 1).
II. Profitability

New England alpaca farm profitability was explored through 52 survey responses to the question: What profit margin did your farm fall into based on direct product sales and paid services? I defined profit as positive amounts of money acquired from farm business ventures.

![New England Alpaca Farm Profitability Based on Direct Product Sales and Paid Services](image)

**Figure 3. Profitability of Alpaca Farms**

Figure 3 showed that 11 farms were profitable, 10 farms broke even, and 31 farms were in financial loss. It was noteworthy that less than a quarter of the farms were profitable (21%) and over half were in financial loss (60%) (Figure 3).
III. Profitability Corresponding to Demographics

Table 2. Profitable Alpaca Farm Demographics

<table>
<thead>
<tr>
<th>Number of Alpacas</th>
<th>% of Farms</th>
<th>Years of Operation</th>
<th>% of Farms</th>
<th>Acreage</th>
<th>% of Farms</th>
<th>Exclusively Alpacas</th>
<th>Supplemental Income</th>
<th>% of Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 to 20</td>
<td>37%</td>
<td>15 to 20</td>
<td>37%</td>
<td>&gt;15</td>
<td>37%</td>
<td>Yes</td>
<td>Yes</td>
<td>55%</td>
</tr>
<tr>
<td>3 to 10</td>
<td>27%</td>
<td>5 to 10</td>
<td>36%</td>
<td>&lt;3</td>
<td>36%</td>
<td>No</td>
<td>No</td>
<td>45%</td>
</tr>
<tr>
<td>&gt;30</td>
<td>27%</td>
<td>&gt;20</td>
<td>36%</td>
<td>5 to 10</td>
<td>27%</td>
<td>N/A</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>20 to 30</td>
<td>9%</td>
<td>10 to 15</td>
<td>9%</td>
<td>3 to 5</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;3</td>
<td>0%</td>
<td>&lt;5</td>
<td>0%</td>
<td>10 to 15</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Demographics for the 11 profitable farms were displayed as percentages. The highlighted areas of the table represent the majority percentage. For example, the majority (37%) of profitable farms had 10 to 20 alpacas.

All of the profitable farms have been operating for at least 5 years with more than 3 alpacas. Profitable farms had an almost even distribution between 5 to 10 (36%) and 15 to 20 (37%) years of operation. Although herd size favored 10 to 20 alpacas (37%), this percentage was not notably higher than the two closest groupings: 3 to 10 alpacas (27%) and >30 (27%). Small (<3 acres), medium (5 to 10 acres), and large (>15 acres) farms were similar in percentage. Profitable alpaca farms were evenly split between operating exclusively on alpacas and not doing so. Fifty-five percent of profitable alpaca farms used supplemental income (Table 2).

Table 3. Break Even Alpaca Farm Demographics

<table>
<thead>
<tr>
<th>Number of Alpacas</th>
<th>% of Farms</th>
<th>Years of Operation</th>
<th>% of Farms</th>
<th>Acreage</th>
<th>% of Farms</th>
<th>Exclusively Alpacas</th>
<th>Supplemental Income</th>
<th>% of Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;30</td>
<td>40%</td>
<td>5 to 10</td>
<td>40%</td>
<td>&gt;15</td>
<td>50%</td>
<td>No</td>
<td>Yes</td>
<td>90%</td>
</tr>
<tr>
<td>3 to 10</td>
<td>30%</td>
<td>10 to 15</td>
<td>20%</td>
<td>5 to 10</td>
<td>20%</td>
<td>Yes</td>
<td>40%</td>
<td>No</td>
</tr>
<tr>
<td>10 to 20</td>
<td>20%</td>
<td>15 to 20</td>
<td>20%</td>
<td>3 to 5</td>
<td>20%</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 to 30</td>
<td>10%</td>
<td>&gt;20</td>
<td>10%</td>
<td>10 to 15</td>
<td>10%</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;3</td>
<td>0%</td>
<td>&lt;5</td>
<td>0%</td>
<td>&lt;3</td>
<td>0%</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Demographics for the 10 break even farms were displayed as percentages. The highlighted areas of the table represent the majority percentage. For example, the majority (40%) of break even farms had >30 alpacas.

Break even farms tended to have a greater number of alpacas (>30) (40%) and a smaller number of alpacas (3 to 10) (30%). Most break even farms have been in operation for 5 to 10 years.
years (40%). Half of the break even farms had more than 15 acres (50%). 60% of break even farms did not operate exclusively on alpacas while 40% kept alpacas exclusively. Almost all of break even farms reported using supplemental income (90%) (Table 3).

*Table 4. Financial Loss Alpaca Farm Demographics*

<p>| Demographics of Financial Loss New England Alpaca Farms Organized by Descending Percentage of Farms [n=31] |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Number of Alpacas | Years of Operation | Acreage | Exclusively Alpacas | Supplemental Income |</p>
<table>
<thead>
<tr>
<th>Amount</th>
<th>% of Farms</th>
<th>Amount</th>
<th>% of Farms</th>
<th>Amount</th>
<th>% of Farms</th>
<th>Answer</th>
<th>% of Farms</th>
<th>Answer</th>
<th>% of Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 to 20</td>
<td>52%</td>
<td>15 to 20</td>
<td>32%</td>
<td>3 to 5</td>
<td>36%</td>
<td>Yes</td>
<td>61%</td>
<td>Yes</td>
<td>97%</td>
</tr>
<tr>
<td>3 to 10</td>
<td>22%</td>
<td>10 to 15</td>
<td>26%</td>
<td>5 to 10</td>
<td>32%</td>
<td>No</td>
<td>39%</td>
<td>No</td>
<td>3%</td>
</tr>
<tr>
<td>20 to 30</td>
<td>16%</td>
<td>5 to 10</td>
<td>19%</td>
<td>&gt;15</td>
<td>19%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;30</td>
<td>10%</td>
<td>&gt;20</td>
<td>16%</td>
<td>10 to 15</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;3</td>
<td>0%</td>
<td>&lt;5</td>
<td>7%</td>
<td>&lt;3</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Demographics for the 31 financial loss farms were displayed as percentages. The highlighted areas of the table represent the majority percentage. For example, the majority (52%) of financial loss farms had 10 to 20 alpacas.

Fifty-two percent of the farms that reported financial loss had 10 to 20 alpacas. The categories, years of operation and acreage, did not seem to differ widely between percentages of the most common responses. In contrast, approximately two-thirds of financial loss farms kept alpacas exclusively (61%). It is notable that 97% of the 31 financial loss farms reported using supplemental income and they were still losing money (Table 4).
Out of the 54 alpaca farms that reported their direct products, almost all of the alpaca farms offered raw fiber and processed yarn for sale (85%). Alpaca sales were also common with 63% of farms having reported these sales. Approximately half of the alpaca farms sold raw manure (52%) and breeding stock (44%). Finished manure compost, meat, and hide were other direct products that were sold (Figure 4).

Figure 4 shows examples of direct products that New England alpaca farms were selling. Alpaca farms across all three profitability categories most commonly sold 5 or fewer direct products. It stands out that break even and financial loss farms rarely sold more than five products, while comparatively, the profitable farm category had a larger percentage of farms selling more than five products (36%) (Table 5).
Table 5. Association Between Alpaca Farm Profitability and Number of Direct Products

<table>
<thead>
<tr>
<th># of Direct Products</th>
<th># of Farms</th>
<th>%</th>
<th># of Farms</th>
<th>%</th>
<th># of Farms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 5</td>
<td>7</td>
<td>64%</td>
<td>9</td>
<td>90%</td>
<td>29</td>
<td>94%</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>4</td>
<td>36%</td>
<td>1</td>
<td>10%</td>
<td>2</td>
<td>6%</td>
</tr>
</tbody>
</table>

* The highlighted areas of the table represent the majority percentage.

V. Profitability Corresponding to Markets

![Bar Chart: Markets Used by New England Alpaca Farms](image)

*Figure 5. Alpaca Farm Markets*

Among the 54 respondents, farm stores were the most popular market for New England alpaca farms with 67% of farms having offered a farm store. Private transactions were also common with 57% of farms having participated in this market. Many farms also took part in farmers markets and sold their direct products in online stores (Figure 5). Survey responses reported using additional markets including local stores, co-ops, fiber/craft shows, and fairs.
Figure 5 defined some of the alpaca markets available in New England. All three profitability categories most commonly participated in 3 or fewer of these markets. A difference that stands out between profitable farms and the other categories was the participation in more than 3 markets (45%) which was almost evenly split with the participation of 3 or fewer markets (55%). In the >3 market category, more profitable farms (45%) were participating in this market amount than break even (10%) or financial loss farms (16%) (Table 6).

Table 6. Association Between Alpaca Farm Profitability and Number of Markets

<table>
<thead>
<tr>
<th>New England Alpaca Farm Profitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitable (n=11)</td>
</tr>
<tr>
<td># of Markets</td>
</tr>
<tr>
<td>≤ 3</td>
</tr>
<tr>
<td>&gt; 3</td>
</tr>
</tbody>
</table>

*The highlighted areas of the table represent the majority percentage.*
VI. Profitability Corresponding to Paid Services

![Paid Services Used by New England Alpaca Farms](image)

*Figure 6. Paid Services Used by Alpaca Farms*

<table>
<thead>
<tr>
<th>Paid Services Used by New England Alpaca Farms</th>
</tr>
</thead>
</table>

**Table 7. Association Between Alpaca Farm Profitability and Number of Paid Services**

<table>
<thead>
<tr>
<th># of Paid Services</th>
<th>Profitable (n=7)</th>
<th>Break Even (n=10)</th>
<th>Financial Loss (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of farms</td>
<td>%</td>
<td># of farms</td>
</tr>
<tr>
<td>≤ 5</td>
<td>4</td>
<td>57%</td>
<td>8</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>3</td>
<td>43%</td>
<td>2</td>
</tr>
</tbody>
</table>

*The highlighted areas of the table represent the majority percentage.*

Thirty-seven alpaca farmers responded with information about their paid services (Figure 6). It was common for all three profitability categories to offer 5 or fewer paid services. Although, nearly half (43%) of profitable farms offered more than 5 paid services. Offering more than 5 services was not a common practice for break even and financial loss farms as only 20% of farms were doing it (Table 7).
VII. Profitability Corresponding to Advertising

*Table 8. Association Between Alpaca Farm Profitability and Advertising Method*

<table>
<thead>
<tr>
<th>Advertising Method</th>
<th>New England Alpaca Farm Profitability</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Profitable (n=11)</td>
<td>Break Even (n=10)</td>
<td>Financial Loss (n=31)</td>
<td></td>
</tr>
<tr>
<td>Social Media</td>
<td># of farms</td>
<td>%</td>
<td># of farms</td>
<td>%</td>
</tr>
<tr>
<td>Website</td>
<td>9</td>
<td>82%</td>
<td>9</td>
<td>90%</td>
</tr>
<tr>
<td>Community Events</td>
<td>6</td>
<td>55%</td>
<td>8</td>
<td>80%</td>
</tr>
<tr>
<td>Printed Ads</td>
<td>3</td>
<td>27%</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Word-of-Mouth</td>
<td>11</td>
<td>100%</td>
<td>9</td>
<td>90%</td>
</tr>
</tbody>
</table>

*The highlighted areas of the table represent the majority percentage.*

The most common form of advertising for profitable and breakeven farms was word-of-mouth and this was reported by 100% of profitable farms and 90% of breakeven farms. Farms in financial loss depended more heavily on social media to advertise (87%). A smaller percentage of profitable farms used social media, with only 73% participating in the advertising method. Website use was similar among the three profitability categories with 82% of profitable farms, 90% of break even farms, and 84% of financial loss farms having a website. Community events were used by 55% of profitable farms, 80% of break even farms, and 48% of financial loss farms. All three profitability categories reported using printed ads. Although, in all cases it was the least used form of advertising (Table 8).

Table 8 outlined some examples of advertising methods used by New England alpaca farmers. Table 9 shows a trend for breakeven and financial loss farms to have utilized 5 or fewer advertising methods with 100% of farms having used this amount. Profitable farms commonly used 5 or fewer advertising methods (82%) but also had farms that used more than 5 advertising methods (18%) (Table 9).
Table 9. Association Between Alpaca Farms and Number of Advertising Methods

<table>
<thead>
<tr>
<th># of Advertising Methods</th>
<th># of farms</th>
<th>%</th>
<th># of farms</th>
<th>%</th>
<th># of farms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 5</td>
<td>9</td>
<td>82%</td>
<td>10</td>
<td>100%</td>
<td>31</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>2</td>
<td>18%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

*The highlighted areas of the table represent the majority percentage.

VIII. Profitability Corresponding to Alpaca AAA Use

Table 10. Association Between Alpaca Farm Profitability and Use of Alpaca AAAs

<table>
<thead>
<tr>
<th>Alpaca AAA Use</th>
<th># of farms</th>
<th>%</th>
<th># of farms</th>
<th>%</th>
<th># of farms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>8</td>
<td>73%</td>
<td>8</td>
<td>80%</td>
<td>29</td>
<td>94%</td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>27%</td>
<td>2</td>
<td>20%</td>
<td>2</td>
<td>6%</td>
</tr>
</tbody>
</table>

*The highlighted areas of the table represent the majority percentage.

The alpaca farms surveyed did not commonly utilize alpaca AAAs. Only 27% of profitable farms used alpaca AAAs. Since there were farms using alpaca AAAs that were in financial loss, it could be said that alpaca AAAs did not ensure an overall business profitability. There was, however, a higher percentage of alpaca AAAs use in financially profitable farms (27%) compared to the use in financial loss farms (6%) (Table 10).
Table 11. Association Between Alpaca Farm Profitability and Alpaca AAAs Annual Profit

<table>
<thead>
<tr>
<th>Annual Profit from Alpaca AAAs</th>
<th>New England Alpaca Farm Profitability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Profitable (n=3)</td>
</tr>
<tr>
<td></td>
<td># of farms</td>
</tr>
<tr>
<td>&lt;$1,000</td>
<td>1</td>
</tr>
<tr>
<td>$1,000-$5,000</td>
<td>1</td>
</tr>
<tr>
<td>&gt;$20,000</td>
<td>1</td>
</tr>
</tbody>
</table>

*The highlighted areas of the table represent the majority percentage.

All of the farms that used paid alpaca AAAs reported making profit from the service. Four farms reported making <$1,000 annually. These included 1 profitable farm, 1 break even farm, and 2 farms in financial loss. Two farms reported making $1,000-$5,000 annually. These included a profitable farm and break even farm. One profitable farm made over $20,000 annually from alpaca AAAs (Table 11).

IX. New England Alpaca Farms and Alpaca AAAs

The use of alpaca AAAs in New England alpaca farms was analyzed through 54 responses to survey questions asking about farmer use, awareness of, and familiarity with alpaca AAAs as well as reasons for farmer disinterest and alpaca AAA challenges.
1. Farmer Use, Awareness of, and Familiarity with Alpaca AAAs

Seven alpaca farms in New England used alpaca AAAs, which made up 13% of the 54 respondents. Forty-seven (87%) alpaca farms did not use alpaca AAAs. Over half of alpaca farmers were aware that alpaca AAAs existed as a type of paid service (59%). A similar percentage (41%) of farmers were not aware that alpaca AAAs existed.

![Pie chart showing farmer familiarity with alpaca AAAs.]

Figure 7. Farmer Familiarity with Alpaca AAAs

Farmer familiarity with alpaca AAAs beyond acknowledging their existence ranged from not familiar (39%), slightly familiar (22%), moderately familiar (24%), very familiar (11%), and extremely familiar (4%) (Figure 7). The two farmers who were extremely familiar with alpaca AAAs used this paid service as part of their farm business. Farmer familiarity with alpaca AAAs did not mean using the paid service, as 50% of farmers who were very familiar with alpaca AAAs did not offer this service.
2. Alpaca AAA Challenges and Reasons for Farmer Disinterest

Five alpaca farmers who use alpaca AAAs reported that the biggest challenge to providing paid alpaca AAAs was the amount of time that needed to be dedicated to the service. Three alpaca farmers who use alpaca AAAs said that scheduling and advertising were the second most difficult part of the service. Certification obstacles, travel, increased use of social skills, and pricing were named as challenges to providing alpaca AAAs as well (Figure 8).

Figure 8. Challenges of Alpaca AAAs Reported by Alpaca Farmers
Figure 9. Reason for Disinterest in Alpaca AAAs Among Alpaca Farmers

Of the alpaca farmers not using alpaca AAAs, 14 expressed not having enough time as the main reason for their disinterest. Twelve alpaca farmers reported not having enough staff as the second most popular reason for their disinterest. Not having enough money to spend on service expenses, not having enough experience, general disinterest, and unwillingness to charge for alpaca AAAs were listed as other reasons for not wanting to use paid AAAs (Figure 9).
Therapeutic Survey

Through a survey conducted among alpaca AAA participants, four questions regarding participant depression levels, anxiety levels, satisfaction rate, and interest in another alpaca AAA were explored through 35 responses.

I. Anxiety Levels After Alpaca AAA

![Anxiety Levels After Alpaca AAA](image)

*Figure 10. Self-Reported Anxiety Levels After Harvard Alpaca Ranch's Therapeutic Visit*

The majority of respondents (21) reported that the alpaca AAA had a positive impact on their anxiety. Thirteen respondents felt less anxiety after the alpaca AAA. Eight respondents felt significantly less anxiety after the alpaca AAA. Fourteen reported not feeling any change in anxiety levels after the alpaca AAA. There were no instances of the alpaca AAA causing more anxiety in respondents (Figure 10).
II. Depression Levels After Alpaca AAA

The majority of respondents (20) felt no change in depression levels after the alpaca AAA. Ten respondents felt less depression after the alpaca AAA. Five respondents reported having significantly less depression after the alpaca AAA visit. There were no instances of the alpaca AAA causing more depression in respondents (Figure 11).

*Figure 11. Self-Reported Depression Levels After Harvard Alpaca Ranch’s Therapeutic Visit*
III. Satisfaction in Alpaca AAA

An overwhelming majority of respondents (31) were extremely satisfied with the alpaca AAA. Three respondents were extremely dissatisfied, and one was somewhat dissatisfied after the alpaca AAA.

IV. Interest in Participating in Another Alpaca AAA

The majority of respondents (21) reported being extremely interested in participating in another alpaca AAA. Seven respondents were somewhat interested, 3 were neither interested or disinterested, and 4 were extremely disinterested in participating in another alpaca AAA (Figure 12). Three of the 4 extremely disinterested respondents also reported being extremely dissatisfied with the alpaca AAA, showing a connection between dissatisfaction and disinterest.
Discussion

Farm demographics were distributed across survey responses in similar percentages so there wasn’t a piece of data that stood out as a significant trend. Farms were profitable or in financial loss at any herd size, years of operation, or acreage. Farm profitability did not seem to be affected by exclusively raising alpacas or diversifying. The demographics did not indicate a farm’s likelihood to be profitable (Tables 2,3,4). It is notable that 87% of alpaca farms used supplemental income to finance their farm businesses (Table 1). Fifty-five percent of profitable alpaca farms used supplemental income compared to the 90% of breakeven farms and 97% of the financial loss farms that used it (Table 2,3,4). When farms were producing a profit, they didn’t necessarily have to use another source of income. The profit generated supported the farm. This is reflected in the lower percentage of profitable farms using supplemental income. But, when a farm demanded more money than it was able to earn, a supplemental revenue source was needed to pay costs. This may be why nearly all farms in financial loss used supplemental income.

Sixty percent of alpaca farms stated financial loss (Figure 3). This could be due to the high cost of purchasing alpacas that Saitone and Sexton investigated in 2011. The estimated net profit for cria fiber in 2011 was $174 per alpaca, and for a small herd this amount of profit could easily be used up by a farm expense that Saitone and Sexton did not include in their estimated yearly cost of $308 per alpaca. For example, in 2011 a farm with a herd size of 20 alpacas would earn less than $3,480 a year in fiber sales. The farmers could invest that amount of money into purchasing another alpaca. In 2011, the average auction cost for an American male alpaca was $10,000 and $15,000 for an American female alpaca. In this scenario, the hypothetical farm would have to declare financial loss because all their profit went into the alpaca purchase. There
were plenty of other examples of farm expenses that could make a small fiber profit disappear: a large vet bill, a tractor maintenance, or a barn repair. The list goes on. Since there were so many expenses that could be very costly, it is likely that a farm depending mostly on fiber profit would fall into financial loss.

A higher percentage of profitable alpaca farms had more offerings when it came to direct products and services. Thirty-six percent of profitable farms offered more than 5 direct products compared to 10% of breakeven farms and 6% of financial loss farms (Table 5). Forty-three percent of profitable farms offered more than 5 paid services in contrast to 20% of breakeven farms and 20% of financial loss farms (Table 7). Profitable farms could have this ability more commonly because they have more money to spend on the labor involved in producing more direct products and hosting more services.

This trend also applies to the marketing by alpaca farms. A higher percentage of profitable farms participated in greater amounts of markets and advertising methods. Forty-five percent of profitable farms used more than 3 markets to sell their direct products compared to the 10% of breakeven farms and 16% of financial loss farms that did this (Table 6). A stark contrast is seen as 18% of profitable farms used more than 5 advertising methods while none of the breakeven or financial farms used this many advertising methods (Table 9). The extra money that profitable farms made could have been put towards hiring extra labor to participate in more markets. Alternatively, the money could also have been used to cover different advertising costs. Financial loss and breakeven farms may have lower percentages in these marketing areas because they cannot afford the extra costs that come with labor and advertising.

Seven farms used alpaca AAAs in New England (Table 10). This small number could be attributed to the fact that 41% of farmers were not even aware alpaca AAAs existed. Or, it could
be connected to the challenges that come along with alpaca AAAs listed in Figure 8. Farmer disinterest was more clearly outlined in Figure 9 where “not enough time” and “not enough staff” were listed as the top two reasons why farmers were not using alpaca AAAs.

It was important to highlight that a higher percentage of profitable farms (27%) used alpaca AAAs compared to the 20% of breakeven farms and 6% of financial loss farms that used alpaca AAAs (Table 10). It was not clear if the use of alpaca AAAs is contributing to the topline of profitable farms, and if that was why they were showing up as a higher percentage in this profitability category. Alpaca AAAs generated < $1,000 in 4 farms, $1,000 to $5,000 in 2 farms, and over $20,000 for one farm (Table 11). It could also be that a higher percentage of profitable farms were using alpaca AAAs because they have the revenue to support the extra time and labor required to provide this type of service.

In the Therapeutic Survey, taken by participants of Harvard Alpaca Ranch’s Therapeutic Activities program, most people experienced no change in anxiety (40%) or depression (57%) (Figure 10, 11). This could be an honest reflection of the state of their anxiety/depression or people may have given these answers because they didn’t have anxiety or depression in the first place. However, 37% of participants said they experienced less anxiety and 23% said they experienced significantly less anxiety after the alpaca AAA. Added together, 60% of participants reported the alpaca having a positive impact on their anxiety (Figure 10). Twenty-nine percent of participants reported feeling less depression and 14% reported feeling significantly less depression after the alpaca visit. Together, this adds to 43% of participants reporting the alpaca had a positive impact on their depression levels (Figure 11). The alpaca had a greater ability to reduce anxiety levels than depression levels. This could be because anxiety is a fight or flight response to perceived danger (Griffin, 1990). Once the alpaca, a prey animal, showed its own
comfort in a situation, it could have provided a sense of safety which lowered the participant’s anxiety reaction. Depression is not a reaction, but rather a chronic state of being which is entangled with negative core beliefs and criticizing thought patterns (Disner et al., 2011). Alpacas may be limited in their ability to improve depression symptoms because of their inability to talk a person through these core beliefs and thoughts like a therapist would.

**Conclusion**

I chose this topic because I was so inspired by the reactions that participants in Harvard Alpaca Ranch’s therapeutic activities had around the alpaca. There were smiles, laughs, and plenty of pictures taken with the alpaca. My questions about alpaca farm profitability and demographics were answered with my Farmer Survey and I explored the impact of Harvard Alpaca Ranch’s visits on anxiety and depression through my Therapeutic Survey. What I learned is that there is no single recipe for financial success as an alpaca farm. This was good news! My research suggested that regardless of farm size, number of animals, years of operations, and more demographics you could have a profitable operation. Although there was not a single approach, there were key characteristics that a high percentage of profitable farms embodied, such as selling more direct products and services, participating in more markets, and using more advertising methods. While using alpaca AAAs did not guarantee a profitable farm business, the use of this paid service generated money for farmers. Another important impact of alpaca AAAs was not monetary, but was instead the ability to reduce anxiety and depression. What I observed is that running an alpaca farm comes down to loving what you do because the work is hard and the financial return is not always proportionate with the investment. Alpaca AAAs can be a way to share that love of alpacas for extra income and personal satisfaction from helping others.
Acknowledgements

I would like to thank my honors thesis advisor, Dr. Andrew Conroy, who guided me every step of the way through this study and also Dr. Analena Bruce for reviewing my thesis. I would also like to thank Harvard Alpaca Ranch for instilling in me a love for alpacas and being the inspiration for this thesis. Finally, I would like to thank all the farmers who answered my Farmer Survey and all the respondents who answered my Therapeutic Survey. Without your input, this thesis would not have been possible. You have all greatly assisted my learning process, and now I can share with you a thesis that may help you learn something new as well.
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Appendix

**Farmer Survey**

This section asks for farm information for the purpose of collecting 2022 New England alpaca farm demographics. *Reminder: This survey is anonymous and responses will not be correlated with your name or your farm’s name.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is your alpaca farm currently operational?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>How many alpacas are on your farm?</td>
<td>&lt; 3, 3-10, 10-20, 20-30, &gt; 30</td>
</tr>
<tr>
<td>How many years has your farm had alpacas?</td>
<td>&lt; 5, 5-10, 10-15, 15-20, &gt; 20</td>
</tr>
<tr>
<td>How many acres is your farm?</td>
<td>&lt; 3, 3-5, 5-10, 10-15, &gt; 15</td>
</tr>
<tr>
<td>Are alpacas the only venture your farm operates on?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>In order to operate, does your farm need to be supplemented by an off-farm source of income (ex. income from a second job or income from a spouse/family member)?</td>
<td>Yes, No</td>
</tr>
</tbody>
</table>
This section asks about your farm’s direct products and paid services for the purpose of collecting New England alpaca farm marketplace data.

**Direct Products** are defined as items that are harvested from your alpacas and include the sales of alpacas themselves. Which of these direct products does your farm sell?

*Select all that apply.*

- Raw fiber
- Processed yarn
- Breeding stock
- Alpaca sales
- Raw manure
- Finished manure compost
- Meat
- Hide
- Pelt
- Other

How do your direct products get to the marketplace?

*Select all that apply.*

- Farmers market
- CSA shares
- Online store
- Farm store
- Private transactions
- Sale contract with larger company
- Other

Would you be interested in adding another direct product to increase farm profits?

- Yes
- Maybe
- No
Services are defined as structured ways your farm provides work/assistance/spaces to consumers. Does your farm host any of these paid services related to viewing or interacting with alpacas?

Select all that apply.

- Weddings
- Corporate outings
- Birthday Parties
- Family reunions
- Baby showers
- Alpaca therapeutic visitations
- Alpaca hikes/walks
- Alpaca yoga
- Alpaca grooming
- Alpaca relaxation activities (pasture meditation/mindfulness, reading to alpacas, relaxed listening to alpaca vocalizations)
- Fiber crafts
- Physical therapy activities (reaching for alpaca, standing for alpaca, walking for alpaca)
- Farm educational tours
- Farm mentoring
- Alpaca financing consultation
- Alpaca boarding
- Alpaca leasing
- Alpaca behavioral training
- Shearing work
- Other

Would you be interested in adding another paid service to increase farm profits?

- Yes
- Maybe
- No
How does your farm advertise its direct products and paid services? *Select all that apply.*

- Social media (Facebook, Instagram, etc.)
- Website
- Participation in community events (farmers markets)
- Printed advertisements
- Word-of-mouth
- Other

What profit margin does your farm fall into based on direct product sales and paid services? *Clarification: Don’t factor in gift shop sales of pre-made products sourced from other companies (ex. clothing, stuffed animals, jewelry, etc.)*

- Financial loss
- Break even
- Financial profit
This section asks about farmer familiarity of Alpaca Assisted Activities as a type of paid service.

Animal Assisted Activities (AAA) involve handlers and their animals interacting with the public with the goal of improving human quality of life (ex. fostering empathy, alleviating anxiety/depression, lowering blood pressure, etc.). These activities can take place on or off the farm and can be delivered by certified professionals, paraprofessionals, or otherwise qualified handlers.

Alpaca Assisted Activities are AAAs where the animal in question is an alpaca. Some examples of Alpaca Assisted Activates include therapeutic visits, alpaca yoga, alpaca hikes/walking, reading to alpacas, relaxed listening to alpaca vocalizations, pasture meditation/mindfulness, and alpaca grooming.

*Clarification: Farm tours are not AAAs and are categorized instead as Animal Assisted Education (AAE) since the animals are used for the goal of imparting knowledge.*

### How familiar are you with paid Alpaca Assisted Activities?

- Not familiar
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

### Are you aware that paid Alpaca Assisted Activities are another type of paid service that alpaca farms can utilize?

- Yes
- No

### How familiar are you with sources of information on paid Alpaca Assisted Activities?

- Not familiar
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

### Does your farm participate in paid Alpaca Assisted Activities?

- Yes
- No
Fill out this page ONLY if your farm PARTICIPATES in paid Alpaca Assisted Activities. This section asks about your opinions of Alpaca Assisted Activities and income analysis.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do paid Alpaca Assisted Activities increase your farm’s profits?</td>
<td>• Yes</td>
</tr>
<tr>
<td></td>
<td>• No</td>
</tr>
<tr>
<td>How much profit does your farm make from paid Alpaca Assisted Activities annually?</td>
<td>• &lt; $1,000</td>
</tr>
<tr>
<td></td>
<td>• $1,000-$5,000</td>
</tr>
<tr>
<td></td>
<td>• $5,000-$10,000</td>
</tr>
<tr>
<td></td>
<td>• $10,000-$20,000</td>
</tr>
<tr>
<td></td>
<td>• &gt; $20,000</td>
</tr>
<tr>
<td>How does the income of paid Alpaca Assisted Activities compare to your direct product sales (ex. fiber, alpaca sales, meat, etc.)?</td>
<td>• Less than direct products</td>
</tr>
<tr>
<td></td>
<td>• Same as direct products</td>
</tr>
<tr>
<td></td>
<td>• More than direct products</td>
</tr>
<tr>
<td>How does the income of paid Alpaca Assisted Activities compare to your other paid services (ex. events, alpaca boarding, farm mentoring, etc.)?</td>
<td>• Less than other paid services</td>
</tr>
<tr>
<td></td>
<td>• Same as other paid services</td>
</tr>
<tr>
<td></td>
<td>• More than other paid services</td>
</tr>
<tr>
<td></td>
<td>• My farm does not offer other paid services to compare profits to</td>
</tr>
<tr>
<td>What are the biggest challenges to providing paid Alpaca Assisted Activities?</td>
<td>Select all that apply.</td>
</tr>
<tr>
<td></td>
<td>• Time</td>
</tr>
<tr>
<td></td>
<td>• Certification obstacles</td>
</tr>
<tr>
<td></td>
<td>• Travel</td>
</tr>
<tr>
<td></td>
<td>• Increased use of social skills</td>
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<td></td>
<td>• Scheduling</td>
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<td></td>
<td>• Advertising</td>
</tr>
<tr>
<td></td>
<td>• Pricing</td>
</tr>
<tr>
<td></td>
<td>• Other</td>
</tr>
</tbody>
</table>
Fill out this page ONLY if your farm DOES NOT PARTICIPATE in paid Alpaca Assisted Activities. This section asks about your opinions of Alpaca Assisted Activities.

<table>
<thead>
<tr>
<th>How interested are you in learning more about paid Alpaca Assisted Activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Not interested</td>
</tr>
<tr>
<td>o Slightly interested</td>
</tr>
<tr>
<td>o Moderately interested</td>
</tr>
<tr>
<td>o Very interested</td>
</tr>
<tr>
<td>o Extremely interested</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you think paid Alpaca Assisted Activities could increase your farm’s profits?</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Yes</td>
</tr>
<tr>
<td>o Maybe</td>
</tr>
<tr>
<td>o No</td>
</tr>
</tbody>
</table>

If you are not interested in using paid Alpaca Assisted Activities, what is the reason? Select all that apply.

| o Not enough staff                             |
| o Not enough time                              |
| o Not enough money                             |
| o Not enough experience                        |
| o Does not fit with farm branding              |
| o Just not interested                          |
| o Unwilling to charge money for Alpaca Assisted Activities |
| o Other                                        |


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1. After participating in Harvard Alpaca Ranch's Alpaca Assisted Therapeutic Visit, have you experienced any changes in anxiety levels?
   - Significantly less anxiety
   - Less anxiety
   - No change
   - More anxiety
   - Significantly more anxiety

2. After participating in Harvard Alpaca Ranch's Alpaca Assisted Therapeutic Visit, have you experienced any changes in depression levels?
   - Significantly less depression
   - Less depression
   - No change
   - More depression
   - Significantly more depression

3. How satisfied are you with Harvard Alpaca Ranch’s Alpaca Assisted Therapeutic Visit?
   - Extremely dissatisfied
   - Somewhat dissatisfied
   - Neither satisfied nor dissatisfied
   - Somewhat satisfied
   - Extremely satisfied

4. How interested are you in participating in more Alpaca Assisted Activities either with Harvard Alpaca Ranch or other providers in the future?
   - Extremely disinterested
   - Somewhat disinterested
   - Neither interested nor disinterested
   - Somewhat interested
   - Extremely interested
Jul 5, 2022 12:04:11 PM EDT

Ahmou Makoo
Agriculture, Nutrition & Food Systems (UBANS)

Study Title: Algae-Assisted Activities in the New England Algae Industry: A Solution to Farm Profitability and Human Quality of Life.
HR #: HR-2022-166
Modification: Minor Revisions to Informed Consent and Recruitment
Modification Approval Date: July 5, 2022

The Institutional Review Board for the Protection of Human Subjects (IRB) has reviewed and approved your modification to this study, as indicated above. Further changes to your study must be submitted to the IRB via Create IRB Human Trials for review and approval prior to implementation.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the document, Responsibilities of Investigators of Research Studies Involving Human Subjects.

Note: IRB approval is separate from UNH Purchasing approval of any proposed methods of paying study participants. Before making any payments to study participants, researchers should review the Payment of Incentives/Compensation to Research Participants guideline to ensure they are complying with institutional requirements. If such institutional requirements are not consistent with the confidentiality or anonymity assurances in the IRB-approved protocol and consent documents, you may need to request a modification from the IRB.

If you have questions or concerns about your study or this approval, please feel free to contact Melissa McGee at 603-862-5005 or melissa.mcgee@unh.edu. Please refer to the IRB it above in all correspondence related to this study.

For the IRB,

Julie F. Simpson
Director

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