INSURANCE AND RISK RELATED EQUINE STUDY IN EASTERN HALIFAX REGIONAL MUNICIPALITY

by

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DALHOUSIE UNIVERSITY

DEPARTMENT OF ECONOMICS

The undersigned hereby certify that they have read and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled " INSURANCE AND RISK RELATED EQUINE STUDY IN EASTERN HALIFAX REGIONAL MUNICIPALITY" by Nathalie Green in partial fulfilment of the requirements for the degree of Master of Development Economics.

Dated: August 1, 2012

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ABSTRACT

On June 13, 2008 a forest fire affected Eastern Halifax Regional Municipality leading to the evacuation of five hundred homes and eighteen horse facilities. At the time of the June 2008 forest fire not all horses in Nova Scotia were insured. I am using the horse facilities affected by the fire as a natural experiment to answer the following question: Did the June 2008 forest fire cause horse facility operators to change their insurance decisions? To answer this question surveys were completed by horse facilities in the affected (treatment) and unaffected (control) areas. Data collected from horse facilities operators suggest they did change insurance decisions. Given the proximity in time and place to the June 2008 forest fire, horse facilities in both the treatment and control groups felt more at risk and were likely motivated to insure coverage for a low probability but high risk hazard.

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CHAPTER 1 INTRODUCTION

On Friday, June 13 2008 a forest fire affected the following communities within Halifax Regional Municipality; Chezzetcook, Lake Echo, Lawrencetown, Mineville and Porter's Lake (CMRAERC, 2009). Between 5pm-10pm an evacuation was ordered for five hundred homes including five thousand people while eighteen horse facilities within the affected communities were required to evacuate, transport and/or receive horses. This was the largest forest fire in Nova Scotia since 1990, burning 1925 hectares of forestland and two homes (Nova Scotia Department Of Natural Resources, 2012). For a history of Nova Scotia forest fires please refer to Table 1 (Appendix A).

Figure 1: June 2008 Forest Fire.

Source: (*Halifax Regional Municipality, 2011*).

At the time of the June 2008 forest fire not all horses in Nova Scotia were insured. I am using the horse facilities affected by the June 2008 forest fire as a natural experiment to help answer the following research question: Did the June 2008 forest fire cause horse facility operators to change their insurance decisions? More specifically did the forest fire lead to an increase in the percentage of insured horses, an increase in the percentage of horse facilities insuring horses, and did the aggregate dollar value of insured horses increase? Data collected on affected and unaffected horse facilities suggest that those operators did change their insurance decisions on these three specific points.

The objective of my thesis is to determine the percentage of insured and non-insured horses in each group, the percentage of horse facility operators choosing to insure horses, and the aggregate dollar value of insured and non-insured horses. I have used the June 2008 forest fire as a natural experiment to answer my question. Comparing the survey results from 2008 to 2011 will reveal if the practice of insuring horses changed after the June 2008 forest fire.

In my equine study I found that the percentage of insured horses increased, the percentage of horse facility operators insuring horses increased and the aggregate dollar value of insured horses increased. I have investigated two possibilities as to why this occurred: First, after the June 2008 forest fire the treatment groups forest condition led horse facility operators to believe that the likelihood of a forest fire was higher. Second the treatment group's experience and the control group's knowledge about the June 2008 forest fire caused an increase in the perceived risk of forest fires.

This research question is important because prior to 2008 it is possible that Nova Scotia horse facility operators may have been under-insuring their horses since they felt the risk of a forest fire was low. Or they may have found the benefits of the insurance policy unattractive relative to the cost of the policy, as individuals may have found the insurance premium too expensive thereby deterring them from purchasing insurance. After the June 2008 forest fire horse facility operators in the treatment and control group expected the risk of a forest fire to be higher, leading one to assume horse facility operators may have increased the number of insured horses they own. More horse facility operators may have chosen to insure their horses, and/or horse facility operators may have increased the insured value of existing insured horses.

The eighteen horse facilities affected by the June 2008 forest fire created awareness for emergency horse rescue within the Maritime Provinces. Five years after the June 2008 forest fire occurred, the Atlantic Veterinary College offered their first ever Emergency Equine Rescue Course between July 5-7, 2012. This is the first course of this kind in Maritime Provinces! This course was designed for emergency responders, animal rescue organizations, and large animal owners and transporters. It included education about animal behavior, important for non-veterinary emergency responders (Horse Canada, 2012).

At present no one can predict when future natural disasters will affect horse facilities in the treatment group or in other parts of Nova Scotia. It is possible that some Nova Scotians maybe lulled into believing the potential for such a disaster is low, however the lack of predictability of more extreme weather conditions connected to the global warming theories is expected to create more vulnerabilities and risk than we have experienced in the past. Should such an event threaten horse facilities in the treatment group, the equine maps and equine directory created in this study will be useful for any persons involved in rescuing the horses. This type of information can be formatted for other parts of the Maritime Provinces and for different livestock groups, which will assist them in dealing with expected and unexpected events.

In this study horse facilities are not referred to as "farms" because Statistics Canada defines a "farm" for census purposes "as an agricultural facility that produces an agricultural product for sale" (Statistics Canada, 2006). This means that during a national census if a particular property met the defined criteria for a "farm" then all the equines on the property were counted regardless of who owned the horses (Statistics Canada, 2006). The horses representing this study's treatment and control groups may not qualify as horses on "census farms", as they are boarded horses, and/ or are used for riding lessons at horse facilities. This study does not determine which horse facilities qualify as "census farms", and it does not consider whether or not the horse facilities are on agricultural producing land or are producing agricultural products for sale. This study attempts to determine specifics about the insured and non-insured equine populations. In this study the term "horse facility operator" refers to an individual who owns property in which horses are kept as pet horses, riding school horses, or offers horse boarding.

The treatment group includes the eighteen operators of horse facilities who were affected by the June 2008 forest fire and who evacuated, received or transported horses. Horse facility operators in the treatment group were faced with three challenges. The first challenge was to find accommodations for their horses and the second was to transport horses from one facility to another. The third challenge was sourcing a food supply for the horses. The control group includes nineteen horse facility operators in Nova Scotia who were not affected by the June 2008 forest fire.

At the time of the ordered evacuation, there was no consolidated equine map and no consolidated directory of contact information for equine facilities in the affected area. Had this directory been available, the evacuations of horses could have been easier and more efficient for owners, emergency response officials, volunteer horse transporters, and those who received the horses. The equine map and directory would have given all persons involved in the evacuation activities a much clearer picture of what had to be done to remove the equines from danger. One benefit of the survey was that I offered horse facility operators an opportunity to become part of an equine map and directory. Horse facility operators who wanted to be part of an equine directory gave me permission to make their address, contact and inventory information public. The equine maps for the treatment and control group can be found in the Figure 1 and Figure 2 (Appendix B). The equine directory for the treatment group can be found in Table 2 and Table 3 (Appendix C) and the control group equine directory can be found in Table 4 and Table 5 (Appendix C).

Annually, Nova Scotia residents do not experience many significant natural disasters. Some common natural disasters include hurricanes, floods, forest fires and wind storms (Government Of Nova Scotia, 2012). Those who have never experienced a significant natural disaster may be lulled into a sense of false security on the intensity that some natural disaster can bring.

To my knowledge horse facility operators in the treatment group were aware they experienced more blow down from Hurricane Juan in 2003 than the control group. Environment Canada (2012) confirmed the largest amount of blow down from Hurricane Juan in Nova Scotia was in Halifax Regional Municipality. Between the passing of Hurricane Juan and the June 2008 forest fire, climate experts expressed concern for the amount of deadwood remaining in Halifax Regional Municipality, which could lead to a forest fire (Department of Natural Resources, 2004). On this note, I believe that most horse facilities in the treatment group were aware that forest fires could occur, but since the treatment group had never experienced a significant forest fire in their area they had no comparison of what to anticipate.

Experiencing a significant natural disaster will prepare an individual of what to expect for a future disaster. On September 11, 1954 Nova Scotia experienced Hurricane

Edna (Kessler, 1954). According to Natural Resources (2012), Edna had stronger winds than Juan and was considered the most damaging Hurricane to Nova Scotia. Anyone who had not experienced Hurricane Edna may have not anticipated how damaging Hurricane Juan would be in September 2003. After Hurricane Juan, the significant blow down was a known risk to Nova Scotia residents. Those who experienced Hurricane Juan would agree that they did not expect the hurricane to create the damage that it did, as many Nova Scotians had never experienced a hurricane of this strength (*Impact of Hurricane Juan on Nova Scotia's Woodlands,* 2003). Similarly, the horse facilities affected by the June 2008 forest fire had never experienced a forest fire, and never anticipated that 1925 hectares of forest land and two homes would burn (Nova Scotia Department Of Natural Resources, 2012).

CHAPTER 2 LITERATURE REVIEW

This section will use previously referenced literature to explain how the forest condition in the treatment group made them more likely to be affected by future fires. To support this idea I will discuss two possibilities; first, that Hurricane Juan left damaged forests surrounding or near the horse facilities in the treatment group, and second, that the early successional forests in the treatment group are more likely to catch fire then later successional forests in the control group (Neily, Quigley, Stewart, & Keys, 2007).

The previously referenced literature from Environment Canada (2012) and the Nova Scotia Department Of Natural Resources (2004) confirms that the amount of blow-down from Hurricane Juan was largest in the Halifax Regional Municipality. The significant amount of deadwood made the forests in the treatment group more likely to be a fire hazard, than the forests in the control group.

Nova Scotia's hurricane season runs from June to November and on September 29, 2003, five years before the June 2008 forest fire, Hurricane Juan struck Nova Scotia. Hurricane Juan's winds ranged from 154 -180 km/hour, and the hurricane zone in Nova Scotia covered four counties: Hants County, Halifax Regional Municipality, Colchester County and Pictou County (Environment Canada, 2012). Hurricane Juan was recorded as the most damaging storm in modern history of Halifax, Nova Scotia, as measured by the tree blow-downs, power outages, and damaged homes. According to Nova Scotia Power, the last of their affected customers had power restored by October 12, 2003 (Environment Canada, 2012). The power outages from Hurricane Juan also affected horse facilities and other livestock facilities in Nova Scotia. During the "additional comments" section of my treatment questionnaire one particular horse facility operator informed me that Hurricane Juan affected the power source in their area: There was no power at their horse facility for two weeks. In fact all horse facilities in the treatment group had either a dug or drilled well, which were dependent on power to draw water. As a result, watering their equine stock became a challenge, so the local fire department would deliver water to any facility containing livestock. After Juan, this particular horse facility operator purchased a generator to help counter future water shortages due to a

power outage. They also advised that Hurricane Juan left them an increased water front view as the hurricane blew down acres of forest on their property. The landowner spent three years cleaning up deadwood.

Figure 2: Hurricane Juan Blow Down In Halifax, Nova Scotia.

Source: (Environment Canada, 2012).

Within one day of Hurricane Juan's passing, the Nova Scotia Division of Forestry completed a preliminary helicopter survey of the affected counties (Hants County, Halifax Regional Municipality, Colchester County and Pictou County) in Nova Scotia. The goal of this survey was to obtain a preliminary estimate of forest blow-down, and to determine if a significant quantity of forest tree volume had been affected (Nova Scotia Department Of Natural Resources, 2004). The area of assessment included 680,400 hectares of forest and non-forested land in the four counties. The volume of trees blown down in the hurricane zone was significant. Survey results identified 2,056,000 cubic meters of blown down trees representing ninety-five percent of the annual harvest within the central counties and thirty-three percent of the total provincial harvest for 2003 (Nova Scotia Department Of Natural Resources, 2004). Due to the significant amount of blown down trees, Environment Canada expressed a concern for potential forest fire in Halifax Regional Municipality. After the hurricane, many private landowners took action and cleaned up the trees blown down on their properties. Only those who could afford to pay

for clean up or had the time to clean up the blow down carried out the task. The Nova Scotia Government and Halifax Regional Municipality failed to clean up all blown down trees on public land, creating a fire hazard (Nova Scotia Department Of Natural Resources, 2004). The significant amount of blown down trees from Hurricane Juan in Halifax Regional Municipality left a significant amount of deadwood laying around, increasing the forest fuel load making these forests more likely to burn.

The second reason that the treatment farms were vulnerable to forest fires is the prevalence of early successional tree species found within the forested areas of the treatment group. The previously referenced literature from the Nova Scotia Department of Natural Resources supports the idea that the likelihood of deadwood in the early successional forests of the treatment group placed them at a greater risk of experiencing a forest fire than the later successional forests in control group (Natural Resources, 2012).

According to the Nova Scotia Department Of Natural Resources the Eastern Shore of Nova Scotia is home to early successional tree species including white spruce, fir, grey birch and poplar trees. Early successional tree species grow along the Eastern Shore due to marginal climate and acidic soil conditions. The early successional tree species place the treatment group at a greater risk of experiencing a forest fire because these trees have a short life span (approximately one hundred years or less), and shallow roots allowing them to be at a greater risk of blowing down, particularly during strong winds. Blow down creates deadwood, and deadwood contributes to "fuel load" as it is sitting and not growing; consequently deadwood is highly burnable (Natural Resources, 2012). In some protected areas along the eastern shore, where climate and soil conditions to permit, some black spruce trees do grow, and have a life span up to two hundred and eighty years (Raven, Evert, & Curtis, 1976).

In contrast the horse facilities in the control group are home to later successional tree species including oak, pine, sugar maple, Eastern hemlock and yellow birch. These tree species have a longer life span (more than one hundred years), have deeper roots and are more difficult to blow down during high winds (Natural Resources, 2012).

The first possibility in this study is that after the June 2008 forest fire the treatment groups forest condition led horse facility operators to believe that the likelihood of a forest fire was higher. I will use the previously referenced literature to support this

possibility. Kunreuther and Slovic (1978) completed a study to determine the critical factors influencing the voluntary purchase of insurance against the consequences of low-probability disasters including floods and earthquakes. Their research methods included both a field survey and laboratory experiments. The field survey enabled Kunreuther and Slovic to determine the differences between insured and uninsured homeowners in hazard prone areas. The laboratory experiments enabled them to identify causal relationships through controlled manipulation of presenting homeowners "with a series of gambles of which involved a specified probability of losing a given amount of money" (Kunreither and Slovic, 1978 p.67). Losses and probabilities varied across gambles.

Kunreuther and Slovics' sampling plan for the field survey involved face-to face interviews with 2,055 homeowners living in flood prone areas within the United States and 1,066 homeowners in eighteen earthquake prone areas of California. Similar to the Kunreuther and Slovic (1978) study this Nova Scotian equine study completed face-to-face interviews with thirty-five horse facility operators who owned insured and non-insured horses.

The results from Kunreuther and Slovic (1978) showed that people prefer to insure against high probability low-loss hazards and tend to reject insurance in a situation with low probability and high-loss hazards (Kunreuther & Slovic, 1978 p.67). My equine study is similar to the work of Kunreuther and Slovic (1978) in the context in the following way. When the June 2008 forest fire occurred it was a low probability high-risk hazard since this was the first time in Nova Scotia that eighteen horse facility operators were required to evacuate, transport or receive horses. My survey results from this equine study found that in 2011 (after the fire) the percentage of insured horses and the percentage of horse facility operators insuring horses was higher than in 2008 (at the time of the fire). In other words, after the June 2008 forest fire, horse facility operators in the treatment and control groups may have believed the likelihood of a forest fire or other disasters (flood) occurring was higher. Thus both groups insured more horses, and more horse facility operators purchased horse insurance.

Data analyzed by Kunreuther and Slovic (1978) "reveal that most individuals do not engage in a detailed analysis of the costs and benefits associated with the purchase of insurance. Rather, they rely on their past experience as a guide for action, choosing to

protect themselves with insurance if they feel the hazard is a serious problem" (Kunreuther & Slovic, 1978 p.212). Similarly Tversky and Kahneman (1973) state, "the probability of an event is judged by the ease with which such instances are retrieved from memory" (Tversky & Kahneman, 1974 p.163). Past experience may be necessary to raise the probability of an event to a level where a person feels that it is a problem worthy of attention.

The second possibility in this study is that the treatment group's experience and the control group's knowledge about the June 2008 forest fire caused an increase in the perceived risk of forest fires. Later in 1984 Kunreuther wrote a paper explaining the reasons for underinsurance against natural disasters. According to Kunreuther (1984) people may underestimate the probability of natural disasters and its consequential losses so the benefits of the insurance policy appear unattractive to the cost of an insurance policy. Or alternatively, people may find the insurance premium too expensive thereby deterring them from purchasing insurance.

Prior to the June 2008 forest fire it is possible that horse facility operators in Nova Scotia may have been under-insuring their horses because they felt losing a horse's life to a natural disaster such as a forest fire was low. Or in contrast, they may have overestimated the actual insurance premium or found the cost too high on an equine insurance policy which may have discouraged them purchasing insurance. The result of my equine supports the findings of Kunreuther (1984) relative to how the insurance decisions of horse facility operators in Nova Scotia were affected after the June 2008 forest fire: The data show that in both the treatment and control groups in 2011 (after the June 2008 fire) the percentage of insured horses increased, the percentage of horse facility operators choosing to insure horses increased and that the aggregate dollar value of insured horses increased. The data give credence to the idea that in 2008 horse facility operators in both the treatment and control groups felt the risk of a disaster was low, and therefore there was little reason to insure all of their horses. In fact survey results show that in the treatment and control group, no horse facility operator chose to insure every horse they own.

According to Kunreuther (1997) an insurance company will examine the nature of a risk, versus what is being insured, and then determine how much coverage it will offer

at different premiums. This is to increase the likelihood the insurance company will profit from insuring this risk, and that its likelihood of becoming insolvent from a risk is below some acceptable probability threshold (Kunreuther, 1997). After reading the fine print on various equine insurance polices it became apparent to me that Equine insurance companies factor in a horses age, medical history and use. Horses are used in many different disciplines with varying degrees of risk including hunter, jumper, eventing, barrel racing, gymkhana, pleasure, endurance or breeding. Thus an insurance company will quote a price of an insurance premium, which increases the likelihood the insurance company will profit from insuring a particular horse.

According to Brainard (2008) home insurers among others have an incentive to control losses. When purchasing house insurance the insurer may offer discounts for alarm systems, smoke detectors or other measures that reduce the likelihood of losses, thereby lowering their claim costs in the process of reducing injuries and saving lives. Such discounted rates for horse insurance are not available as they are for home insurance. Horses are at high risk for injury as they are relatively unpredictable and there are no known approved and uniform safety devices such as alarm systems or smoke detectors.

Equine insurance companies have an incentive to control claims and losses for insured horses. For instance some companies will offer extra benefits to encourage a horse owner to buy full mortality insurance. These extras may include but are not limited to covering the stabling costs of a horse following a natural disaster and covering a horse's transportation to a veterinary hospital (Intercity Insurance, 2007). For an equine insurance company this may help to lower their actual claim costs in the process of protecting a horse owner's investment in their horse, but does not reflect a discounted insurance premium to the horse owner.

CHAPTER 3 METHODOLOGY

I have been involved in the equine industry for twenty years. My involvement includes; training and coaching horse/rider combinations for competitions, owning horses, selling horses, training horses, and organizing horse shows. During the June 2008 forest fire I helped evacuate twenty horses whose lives were threatened by the fire. Within my twenty years of involvement in the equine industry, I have owned horses that have died unexpectedly. Some of these horses were insured while others were not insured. Of the deaths of my insured horses, I was able to collect mortality insurance. For the horses that were not insured I lost the purchase price of the horse plus the value added amount of the animal, for example, a horse's value added amount includes the initial investment an individual(s) provides for that particular horse, with hopes of a profitable return. A horse's value added amount applies to horses raised for profitable returns, including racehorses, performance horses and/or breeding horses.

Insurance is the payment of a predictable amount of money (called a premium) to protect against a larger unpredictable expense (a loss or claim). When a horse owner pays an annual premium, the financial risk of losing a horse is transferred from the owner to the insurance company (Wanamaker, 2012). Owning a non-insured horse that dies unexpectedly can set back years of development and value added investment in that particular horse.

The treatment and control groups' horse population may be classified as performance and breeding horses. In the treatment and control group the replacement value of the horse does not reflect the value to the owner that animal would generate in its lifetime. For instance a well-bred yearling from either the treatment or control group may cost $8,000 and its entire life this horse may produce $50,000 in show-jumping earnings. If this horse were insured for its purchase price of $8,000 losing this value-added amount of $42,000 would be a loss expense to any horse owner and/or investor (Heath, 1999).

When an insured horse dies unexpectedly, the owner must report the death as soon as possible to their equine insurer. Failure to do so may compromise or delay in the owner's receipt of the insurance settlement. A horse that dies unexpectedly and is insured for ten thousand dollars or more must be sent for an autopsy to verify the cause of death

(Intercity Insurance, 2012). I will share two personal experiences of horses that died unexpectedly, one was not insured and the other was insured. The non-insured horse at the time of death was eight years old and one with whom I had a five-year long partnership; therefore a very strong emotional attachment. This horse was purchased as a three year old for less than ten thousand dollars and after his last season competing, and the market valuation of the horse equaled forty thousands dollars. Had this horse been insured for only its purchase price, I would have recovered the purchase price of the horse. If it had been insured for its market value I would have recovered the purchase price of the horse plus the value added amount. As I did not insure the horse I lost initial investment in the horse, the value added amount and had the additional expense of the burial costs, but most importantly I lost my best horse and partner. Why did I not have this horse insured to begin with? This horse did not cost a lot of money, and I did not believe the probability of the horse dropping dead was high. After the horse died made sure I would purchase insurance for all future horses.

Two months after the death of my non-insured horse I purchased a four year-old mare that was insured for its purchase price. This young horse lacked in training and horse show experience. Our partnership was just starting compared to the non-insured horse. Our emotional dependence on one another was only beginning to grow. After four months of owning the horse, it jumped a six-foot gate out of its field and broke it's pelvis, and within an hour the horse died. Autopsy results showed the pelvis fractured causing femoral artery to rupture and the horse internally bled, causing a quick death. After prompt and timely notice to the insurer that company paid the full purchase price of the horse, plus the additional incurred expenses after the horse's death, including transporting to autopsy and cremation.

The benefit of purchasing horse insurance is to protect the owners' investment in their horse. Most horse owners have a strong emotional attachment to their animal(s). As previously noted horses in the treatment and control group may be classified as breeding and performance horses. To their owners and riders these animals seem more valuable than some other kinds of livestock. This personal attachment reflects a value, which is harder to quantify when compared to the market value of a commercially viable herd of livestock, which is used to produce food or product supply for human consumption.

In mid September 2011 I obtained approval from the Dalhousie Research Ethics Board to complete this equine study. I then contacted all thirty-seven potential participants (eighteen treatment and nineteen control) by telephone to set up appointments to conduct an in-person interview, either at the participant's horse facility or at an agreed upon location. I visited the horse facility operators in both groups to complete survey questionnaires in late September and throughout October. To view the treatment and control questionnaire please refer to Appendix D and Appendix E respectively. For this equine study, no screening measure was required to identify horse facility operators for the treatment and control group. In order to complete the questionnaires horse facility operators for the treatment and control group were selected as known or previously identified horse facility operators. The eighteen-horse facility operators affected by the June 2008 forest fire were identified and invited to complete the treatment questionnaire. The fire required them to evacuate, transport and/or receive horses. Nineteen horse facilities were identified in the control group. They were located, within a 150 km distance outside the perimeter of the affected area. I did not survey every horse facility within this range, as I wanted to complete no more surveys than I did in the treatment group. I picked the largest horse facilities in the control group to survey, and completed as many surveys as I could within the month; those horse facility operators who I made immediate contact with were the ones I surveyed right away. Cultural, and/or safety considerations were not required for this study and no recruitment instruments were required. This study did not have any exclusion criteria. The only criteria for inclusion were being the operator of a horse facility in the areas of study, and/or involvement of horse transportation and custodianship of evacuated horses.

The difference between the treatment and control questionnaires is that the control questionnaire omits the questions specifically relating to the June 2008 forest fire evacuation. For instance the control questionnaire does not ask questions whether an operator's horse facility was the destination for evacuated horses and if a horse facility was required to evacuate its horses.

At the time of the June 2008 forest fire not all horses in Nova Scotia were insured. I am using the horse facilities affected by the June 2008 forest fire as a natural

experiment to help answer the following research question: Did the June 2008 forest fire cause horse facility operators to change their insurance decisions?

Figure 3: June 2008 Forest Fire Near A Horse Facility In Lawrencetown, N.S.

Source: (*Halifax Regional Municipality, 2011*.).

To answer these specific questions, horse facility operators reported the number of insured and non-insured horses they owned in 2008 (at the time of the fire) and 2011 (after the fire). They were also asked to estimate the total monetary value of their insured and non-insured horses in 2008 and 2011. This question determined the aggregate monetary value of insured and non-insured equines in each group. When an insured horse dies the owner will likely recover the insured value of their horse. If the horse is not insured the owner risks losing what would be fair market value of the horse, including the added value they have contributed to the horse. If they would like to replace the value of the dead horse they will incur the expense of purchasing a replacement depending upon their budget. Payment from any insurance policy may depend on the circumstances of the loss and the condition of the policy.

Figure 4: A Horse In The Treatment Group On Course In Competition.

Source: (Horsepower Photography, 2010).

Horse mortality insurance is available in two basic configurations: "Specified Perils" and "Full Mortality". In "Specified Perils" the horse's life will be insured for death arising from a list of causes, also referred to as perils. Some examples include but are not limited too, theft, transportation and shooting. The disadvantage to purchasing a "Specified Perils" policy is that these policies do not provide coverage if a horse were to die from sickness (Intercity Insurance, 2007). "Full Mortality" insurance provides the owner with an economical way for horse owners to protect the investment in the horse itself (Wanamaker, 2012). "Full Mortality" insurance is more comprehensive than "Specified Perils", as it will cover losses due to an accident, a natural disaster, sickness or euthanasia by a veterinarian (Intercity Insurance, 2007). Economically speaking, Full Mortality insurance is more expensive than Specified Perils. In addition to insure a horse for Full Mortality coverage, the owner will need a Veterinarian Certificate to confirm the health of the horse before coverage can be placed. The disadvantage of this type of insurance is that it can discriminate on age, medical history and even the use of the horse, as identified on page 12 (Wanamaker, 2012).

In this equine study, the treatment and control questionnaires did not ask horse facility operators specific questions about their insurance policies they purchased for their horses(s). The survey focused on comparing the percentage of insured horses in each

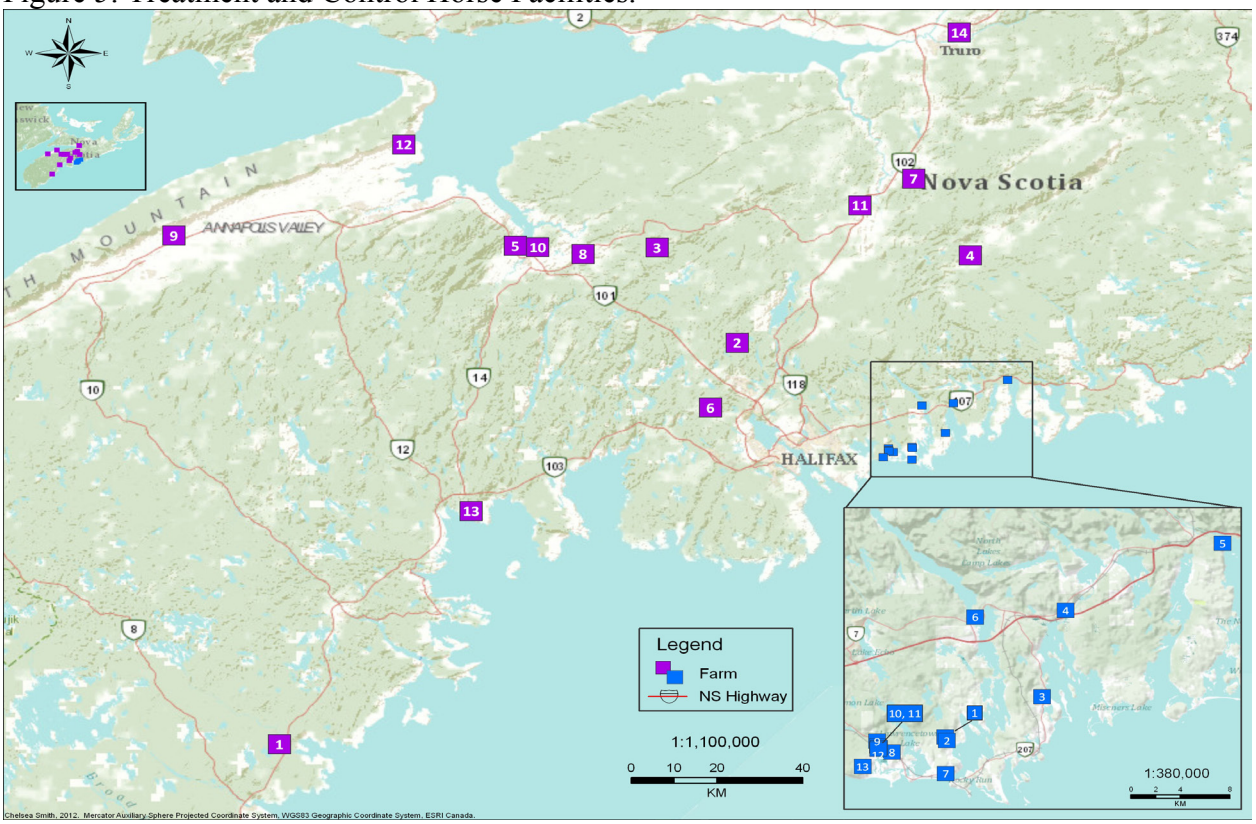
area, the percentage of horse facilities purchasing horse insurance, the aggregate monetary value of insured and non- insured horses in each group. The purchase price of the horse, its' pedigree and age may influence a person's decision to insure an animal. However an owner's decision to insure their animal also depends on the level of risk they are willing to take: are they willing to insure their horse to recover the insured value of the horse if the horse were to die, or would they prefer to not insure their horse and save the amount of annual insurance premium.

The response rate for the questionnaires was ninety-four percent for the treatment group and ninety five percent for the control group. This survey also offered horse facility operators an opportunity to be part of a consolidated equine map and consolidated equine directory. The response rate for the equine map and directory was seventy-two percent for the treatment group and seventy-four percent for the control group. Mapping software, ArcGIS 9.3.1 was used to create three scaled maps of horse facilities in Nova Scotia. The first map is Figure 5, which shows where the horse facility operators in the treatment and control groups are located within Nova Scotia. In Figure 5, horse facilities in the treatment group are identified by a blue square and horse facilities in the control group can be identified by a purple square.

Horse facilities in the treatment group were located within Halifax Regional Municipality in areas including; Chezzetcook, Lake Echo, Lawrencetown, Mineville and Porter's Lake. The horse facilities in the control group were located outside of Halifax Regional Municipality in Hants, Kings, Annapolis and Lunenburg counties. Localities within those counties include Blomidon, Brooklyn, Canning, Chester, Falmouth, Mount Uniacke, Rawdon, Port Williams, and Windsor.

Horse facilities in the treatment group were located within Halifax Regional Municipality in areas including; Chezzetcook, Lake Echo, Lawrencetown, Mineville and Porter's Lake. The horse facilities in the control group were located outside of Halifax Regional Municipality in Hants, Kings, Annapolis and Lunenburg counties. Localities within those counties include Blomidon, Brooklyn, Canning, Chester, Falmouth, Mount Uniacke, Rawdon, Port Williams, and Windsor.

Figure 5: Treatment and Control Horse Facilities.



The second and third maps can be found in the Figure 1 and Figure 2 (Appendix B) and are separate maps for the horse facilities in each of the treatment and control group. Each map has a corresponding equine directory for the respective group. The maps identify each horse facility with an identification number. The identification number is used in the directory and the directory shows the address of each horse facility. The property inventory includes the number of useable trucks, gooseneck trailers, bumper pull trailers, the number of horses that can fit on the trailers, the length of each trailer, and whether any of the trailers when carrying a full load of horses has room for hay and grain storage. The directory also includes livestock other than horses at a facility. Horse facility operators who wanted to be part of an equine directory gave me permission to make their address, contact and inventory information public. This information is important to have before an evacuation as it can make an evacuation more efficient for horse facility operators, emergency response officials, and horse transporters.

CHAPTER 4 MAIN RESULTS

The treatment and control results show that after the June 2008 forest fire, the percentage of insured horse increased, the percentage of horse facilities insuring horses increased, and the aggregate dollar value of insured horses increased. I have investigated two possibilities as to why this occurred: First, after the June 2008 forest fire the treatment groups forest condition led them to believe that the likelihood of a forest fire was higher. Second the treatment group's experience and the control group's knowledge about the June 2008 forest fire caused an increase in the perceived risk of forest fires. To investigate the two possibilities I will begin by listing the time invariant and variant characteristics that are relevant in this survey. These characteristics were identified once the survey results were tabulated for the treatment and control groups**.** One time invariant variable and nine variant variables were identified. Acreage was identified as the only time invariant variable, as it did not change in either group between 2008 and 2011. The nine time variant variables include; the number of horses in facility, number of boarders in facility, number of horses belonging to an operator, number of non-insured horses, aggregate dollar value of non- insured horses, number of insured horses, aggregate dollar value of insured horses, number of livestock (donkeys, goats, hounds sheep, poultry, lamas), and square footage of horse facility.

The characteristics I have chosen are relevant as they were likely to have been affected after the June 2008 forest fire. Prior to the June 2008 forest fire it was probable that horse facility operators in Nova Scotia may have been under-insuring their horses because they felt losing a horse's life to a natural disaster, such as a forest fire was low. In the treatment and control surveys direct questions were asked about the owners pre and post fire insurance decisions. After the 2008 forest fire, horse facility operators in both groups felt the risk of a forest fire may be higher, leading me to assume the June 2008 forest fire caused more horses to be insured, for more horse facility operators to purchase horse insurance and for the aggregate dollar of insured horses to increase.

The first possibility is that after the June 2008 forest fire the treatment group's forest condition may have led horse facility operators to believe that the likelihood of a forest fire was higher. My personal observation from visiting the horse facilities in both

groups will be used to argue that the forest condition after the June 2008 forest fire may have led horse facility operators to believe that the likelihood of a forest fire was higher.

Upon completing the surveys at the participating horse facilities it is clear that the treatment group was coastally situated, upon clay soil with an abundance of rock, on hilly terrain with bountiful amounts of scrub brush and forest. Unfortunately, immediately after the forest fire the treatment group was left with copious amounts of scorched dead forest, which in itself has became a fire hazard, particularly in areas where it was left to rot. Horse facilities in the control group were located inland, flatter terrain with sandier soil and were exposed to minimal scrub brush and forest. This placed the treatment group at a higher risk of experiencing a forest fire.

Table 1 presents the time invariant variable acreage. The noticeable difference in Table 1 is that, the average acreage for the control group (inland) is 53.50, which is slightly more than double that of the treatment groups (coastal) average acreage of 23.50, giving horse facility operators in the control group more land to stable and feed horses.

Table 1: Time invariant Acreage in 2008 And 2011.

Variable	**Control**	**Treatment**	**Difference**
Acreage	53.50 (41.70)	22.53 (23.02)	31.00 (8.83)

Source: (Green, 2012)

To test the statistical significance of acreage, a paired t-test was completed to compare the acreage of horse facilities affected by the fire (treatment group), to the acreage of horse facilities not affected by the fire (control group). A statistically significant result at the 1%, 5% or 10% would imply that the forest fire directly influenced acreage. Table 1 confirms that acreage was not different at a statistically significant level between the treatment group (M=22.53, SD 23.02) and control group (M= 53.50, SD 41.70), as the standard error from the paired t-test was 8.83 and the p-value was 1.00. In Table 1, the standard error is reported under the difference in parentheses. These results suggest there was no statistical difference in the size of the farms. Since acreage did not change in 2011 (after the fire) it was not affected by the June 2008 forest fire. From an insurance policy perspective, the acreage of horse facilities in the treatment and control group did not have any influence on the horse owner to insure their horse(s).

The second possibility is that the treatment group's experience and the control group's knowledge about the June 2008 forest fire caused an increase in the perceived risk of forest fires. To show this is true, Table 2 and Table 3 show the percentage of the equine population in the treatment and control group that is insured and not insured in 2011 (after the fire) and in 2008 (at the time of the fire). This is important as it reflects the percentage of the horse population in each that is insured and non-insured. This is followed by showing the change over time (after the fire, and at the time of the fire) for the percentage of insured and non-insured horses between the treatment and control group. This is important as it shows how much more the treatment group was affected after the June 2008 forest fire, leading them to insure a larger percentage of their equine population. Lastly a summarization table (Table 5) is used to display the equine population for each group in 2011 (after the fire) and 2008 (at the time of the fire) along with the calculated percent change of insured and non-insured horses.

In the treatment group, the equine population grew from fifty horses, in 2008 to seventy-eight by 2011. Table 2 shows that between 2008 and 2011 the percentage of insured equines increased from 34.00% in 2008 to 51.28% in 2011, and the percentage of non-insured equines decreased from 66.00% in 2008 to 48.72% in 2011. This is evidence that the experience of the June 2008 forest fire led to an increase of the percentage of insured horses in the treatment group. Interestingly enough, survey results from the treatment group showed that one non-insured horse died in the treatment group however there is no evidence to indicate the fire was the cause of death.

Table 2. Treatment Group Equine Population.

Year	Population	# Insured	# Non-Insured	% Insured	% Not-Insured
2011	78.00	40.00	38.00	51.28	48.72
2008	50.00	17.00	33.00	34.00	66.00

Source: (Green, 2012).

In the control group the equine population in 2008 was one hundred sixty-two and it increased to one hundred eighty-five by 2011. Table 3 shows the percentage of the equine population for insured and non-insured equines. Between 2008 and 2011 the percentage of insured equines increased from 16.04% in 2008 to 18.38% in 2011, while the percentage of non-insured equines decreased from 83.95% in 2008 to 81.62% in

2011. Comparing my survey results presented in Table 2 (treatment group) and Table 3 (control group), show that in 2011there was not a substantial increase in the percentage of insured horses in the control group as in the treatment group. Based on this fact, this may be evidence that knowing about the June 2008 forest fire may have led to an increase in the percent of insured horses in the control group.

Table 3. Control Group Equine Population.

Year	Population	# Insured	# Non-Insured	% Insured	% Not-Insured
2011	185.00	34.00	151.00	18.38	81.62
2008	162.00	26.00	136.00	16.04	83.95

Source: Green (2012).

To determine the effect of the June 2008 forest fire, I have calculated the change over time for the percentage of insured and non-insured horses in the treatment and control group (Table 4). This method is commonly called a difference-in-difference analysis. This analysis is calculated by taking the change over time for the treatment group minus the change over time in the control group. Table 4 shows the calculated change over time for the percentage of insured and non-insured horses. This analysis is relevant to this study as it shows that relative to the control group, the treatment group increased their percentage of insured horses by an extra fifteen percentage points. This may be evidence that the effect of the treatment, the June 2008 forest fire caused horse facility operators affected by the fire to insure more horses.

Table 4: Change Over Time: Percent Insured And Non-insured.

%	Change over time in the treatment group- the change over time in the control group	% Change
Insured	(51.28 - 34.00) - (18.38 - 16.04)	+14.95
Non-insured	(48.72 - 66.00) - (81.62 - 83.95)	-14.95

Source: (Green, 2012).

Table 5 summarizes the equine population statistics for both groups and displays the calculated percentage change for the number of insured and non-insured equines. This table is important for two reasons. First it shows that as the population of equines in each group is growing, so are the number of insured and non-insured horses. Second, this table shows there was a percentage increase for both insured and non-insured equines in the treatment and control group. In the treatment group, between 2008 and 2011 the total number of equines increased by 56.00%. This can be broken down into a 135.59%

increase for insured equines and a 15.15% increase for non-insured equines. While in the control group, between 2008 and 2011 the total number of equines increased by 14.20%. This accounts for a 30.76% increase for insured equines and a 11.02 % increase for non-insured horses.

Table 5. Equine Population Summary.

Year	**Treatment Group**			**Control Group**		
	Population	Treatment Number of insured	Treatment number of non-insured	Population	Number of insured	Number of non-insured
2011	78.00	40.00	38.00	185.00	34.00	151.00
2008	50.00	17.00	33.00	162.00	26.00	136.00
% Change	56.00	135.29	15.15	14.20	30.76	11.02

Source: (Green, 2012).
% Change= {(y2-y1)/y1}*100%, where y1 is 2008 and y2 is 2011.

Since the survey results discussed in Table 2 and Table 3 show that the percentage of insured horses in each group increased after the June 2008 forest fire I wanted to determine whether the percentage of horse facilities insuring horses increased. Survey results showed that in both groups more horse facilities chose to insure horses after the June 2008 forest fire or in other words, fewer horse facilities chose to not insure their horses after the June 2008 forest fire. Table 6 supports this conclusion by showing that the percentage of horse facilities in the treatment group not insuring horses decreased from 52.94% in 2008 to 41.18% in 2011, and the control group experienced a decrease from 50.00% in 2008 to 38.89% in 2011 (Table 5). This confirms that in 2011 (after the fire) more horse facilities in the treatment and control group chose to insure their horses.

Table 6: Horse Facilities Not Insuring Horses.

Year	**Treatment Group**			**Control Group**		
	Number of horse facilities	Number of horse facilities that do not insure horses	Percent of horse facilities that do not insure horses	Number of horse facilities	Number of horse facilities that do not insure horses	Percent of horse facilities that do not insure horses
2011	17	7	41.18	18	7	38.89
2008	17	9	52.94	18	9	50.00

Source: Green (2012).

Table 7 shows the change over time (after the fire and at the time of the fire) for the treatment and control groups of the percent of horse facilities insuring and not-insuring horses. Table 7 shows that more horse facilities in the treatment group were affected after the June 2008 forest fire, causing more horse facilities to insure horses than in the control group. Table 6 shows that relative to the control group, the percentage of horse facilities insuring horses increased by twenty-eight percentage points. This may be evidence that the effect of the treatment, the June 2008 forest fire caused more horse facilities to insure horses.

Table 7: Change Over Time: Percent Of Horse Facility Operators Insuring And Not-Insuring Horses.

%	Change over time in the treatment group- the change over time in the control group	% Change
Horse facility operators who insure horses	(61.11 - 44.44) - (61.11 - 50.00)	+27.78
Horse facility operators who do not-insure horses	(38.89 - 55.56) - (38.89 - 50.00)	-27.78

Source: (Green, 2012).

Since the survey results showed that more horse facilities insured their horses after the June 2008 forest fire I used the survey results to calculate the aggregate dollar value of insured horses in both groups in order to compare the amount of insurance purchased in 2011 (after the fire) to 2008 (at the time of the fire). Comparing the change in the aggregate dollar value of insured horses in the treatment and control groups would reveal if the horse facilities decision to insure horses were experienced differently. That is whether the change in the aggregate dollar value of insured horses is different between the groups this implies their decision to insure was influenced differently. I also used the survey results to calculate the aggregate dollar value of non-insured horses in both groups to determine if this non-insured population was appraised at a higher value than the insured population.

Table 8 shows that the treatment group experienced an increase in the aggregate value of insured horses from $106,000.00 in 2008 to $219,000.00 in 2011, and an increase in the aggregate value of non-insured horses from $67,500.00 in 2008 to

$222,000.00 in 2011. Between 2008 and 2011, the aggregate dollar change for non-insured horses ($154,500.00) is larger than the aggregate dollar change of insured horses ($113,000.00). Interestingly enough the aggregate value of non-insured horses in 2011 ($222,000.00) exceeds that of 2008 ($67,500.00) as well as the aggregate value of insured horses in 2011 ($219,000.00) and 2008 ($106,000.00). This led me to ask why the 2011 non-insured horse population was estimated to be worth so much?

It is quite possible that the horse facility operators in the treatment group appraised their horses at a higher market value than their true market value, because their personal appraisal was not a true insurance evaluation. If an owner wants to insure a horse for more than its purchase price, equine insurance industry practice requires the horse owner to provide the insurer with three evaluations from certified coaches, confirmation of performance results and a veterinarians health certificate. This practice also applies to insuring a horse for more than $10,000.00 that was bred and raised by the owner or given to the owner.

Table 8. Treatment Group Aggregate Monetary Value Of Equines.

Year	Aggregate value of insured horses ($)	Aggregate value of non-insured horses ($)
2011	219,000	222,000
2008	106,000	67,500
Dollar change (2011-2008)	113,000	154,500

Source: (Green, 2012).

Table 9 shows that the control group experienced an increase in the aggregate value for insured horses from $360,000.00 in 2008 to $492,000.00 in 2011, and an increasing aggregate value for non-insured horses from $1,078,000.00 in 2008 to $1,232,750.00 in 2011. Between 2008 and 2011 the dollar change in the aggregate value of non-insured horse ($154,750.00) is larger than the aggregate value of insured horses ($132,000.00). Similar to the treatment group, this is likely because the non-insured population was appraised on a personal level rather than an equine insurance appraisal.

Survey results showed that the aggregate dollar value of insured horses in the treatment group increased by $113,000.00 and the control group increased by $132,000,00. Since the aggregate dollar value of insured horses in both groups increased it appears the affect of the June 2008 forest fire was not to deter horse ownership but

caused an increased in the percentage of insured horses. Since the groups did not increase the amount of insurance by the same amount it is evident that the horse facilities operators decision to insure horses was rationalized differently.

Table 9. Control Group Aggregate Monetary Value Of Equines.

Year	Aggregate value of insured equines ($)	Aggregate value of non-insured equines ($)
2011	492,000	1,232,750
2008	360,000	1,078,000
Dollar Change (2011-2008)	132,000	154,750

Source: (Green, 2012).

Next I will show the statistical tables for the variant characteristics in the treatment and control group that are applicable for this study. The statistical tables were created to show the differences in the variant variables between the years 2011 and 2008 for the treatment and control group. Paired t-tests were completed for each variables of interest to determine whether the characteristics were statistically significant. A statistically significant result at the 1%, 5% or 10% would imply that the forest fire directly influenced the variable of interest. I will first show the variant characteristics for the treatment group that will be will be followed by the variant characteristics for the control group.

The nine time variant variables include the number of horses in facility, the number of boarders in facility, the number of horses belonging to operator, the number of non-insured horses, the aggregate dollar value of non- insured horses, the number of insured horses, the aggregate dollar value of insured horses, the number of livestock (donkeys, goats, hounds, sheep, poultry, lamas), and the square footage of horse facility (building structures only). Table 9 lists these variables and shows the mean for each year along with the standard deviation, which is recorded below the mean in parentheses for the respective year. The mean for 2011 (after the fire) minus the mean for 2008 (at the time of the fire) gives the difference for each variant variable, and the standard error is recorded below the difference in parentheses.

Figure 6: A Herd Of Horses In The Control Group

Source: (Green, 2011).

Table 10 shows there was a significant difference between the aggregate dollar value for insured horses for 2011 (M=21900.00, SD 8875.06) and 2008 (M=15142.86, SD= 8571.83). The standard error from the t-test was 3867.68 and since the p-value was 0.09 (smaller than 0.10), confirms it is statistically significant at the 10% level. This may be evidence that the experience from the June 2008 forest fire caused horse facility operators to increase the aggregate insurance value of their insured horses from an average of $15,482.86 in 2008 to $21,900.00 in 2011. Insurance companies offering equine coverage would have experienced an increase in demand for horse insurance from horse facilities in the treatment group.

Table 10: Treatment Time Varying Variables.

Variable	2011	2008	Difference
Number of horses in facility	4.88 (6.26)	4.76 (4.29)	0.12 (1.81)
Number of boarders in facility	1.29 (2.28)	1.88 (3.04)	-0.59 (0.92)
Number of horses belonging to operator	3.94 (4.22)	2.71 (2.11)	1.23 (1.14)

Variable	2011	2008	Difference
Number of non-insured horses	2.53 (4.07)	2.06 (2.79)	0.47 (1.16)
Aggregate $ value of non-insured horses	20181.81 (2737.95)	7500.00 (5279.68)	12681.81 (8136.02)
Number of insured horses	2.35 (3.16)	2.43 (0.98)	-0.08 (0.84)
Aggregate $ value of insured horses	21900.00 (8875.06)	15142.86 (8571.83)	6757.14* (3867.68)
Number of livestock	0.50 (1.32)	0.47 (1.28)	0.03 (0.58)
Square footage of horse facility	2529.06 (2253.11)	1956.67 (2349.55)	572.39 (773.40)

(Source: Green, 2012).
*= 10, **= 5%, ***= 1%

The t-test for the number of horses in facility, number of boarders in facility, number of horses belonging to operator, number of non-insured horses, aggregate dollar value of non- insured horses, number of insured horses, number of livestock (donkeys, goats, hounds sheep, poultry, lamas), and square footage of horse facility did not yield any statistically significant differences between 2011 and 2008. This indicates that the June 2008 forest fire did not affect these variables within the treatment group.

The nine time variant variables for the control group are the same as in the treatment group and include. A paired t-test was completed to compare the control group's variant characteristics for 2011 and 2008. The standard error from the t-test is reported in parentheses below the difference. Table 11 shows the mean, standard error and difference between the years 2011 and 2008. None of the nine variables are statistically significant at the 1%, 5% or 10% levels signifying the fire did not directly affect any of these variant characteristics between 2011 and 2008. However the control groups survey results show that on average the number of insured horses increased from 1.44 in 2008 to 1.88 in 2011 and the average aggregate dollar value of insured horses increased from $37,222.22 in 2008 to $42,900.00 in 2011. This supports the likelihood there is a correlation between knowing about the June 2008 forest fire and increasing

insurance. This may explain why horse facility operators in the control group insured more horses and increased the pre-existing value of some of their insured horses.

Table 11: Control Time Varying Variables.

Variable	2011	2008	Difference
Number of horses in facility	15.67 (13.53)	13.50 (10.69)	2.17 (4.07)
Number of boarders in facility	5.94 (7.47)	4.39 (6.38)	1.55 (2.31)
Number of horses belonging to operator	10.61 (9.77)	9.06 (7.06)	1.55 (2.84)
Number of non-insured horses	8.39 (10.22)	7.56 (6.78)	0.83 (2.89)
Aggregate $ value of non-insured horses	77046.88 (101852.52)	77000.00 (71805.29)	46.88 (28298.48)
Number of insured horses	1.88 (2.05)	1.44 (2.25)	0.44 (0.72)
Aggregate $ value of insured horses	49200.00 (27543.10)	37222.22 (29059.33)	11977.78 (10127.62)
Number of livestock	3.50 (7.12)	3.44 (7.63)	0.06 (2.46)
Square footage of horse facility	4719.56 (4169.56)	6844.00 (7459.30)	-2124.44 (2032.75)

Source: (Green, 2012).

Based on the results from the variant characteristics tables for the treatment (Table 10) and control (Table 11) groups, this study illustrates that on average the following eight time varying variables are larger in the control than the treatment group in 2011 and 2008: number of horses in facility, number of boarders in facility, number of horses belonging to operator, number of non-insured horses, aggregate dollar value of non- insured horses, aggregate dollar value of insured horses, number of livestock (donkeys, goats, hounds sheep, poultry, lamas), and square footage of horse facility. These variables may be larger because operators in the control group reside on average larger acreage (53.50) than in the treatment group (22.53), so they have more room to

stable and feed horses. On average more horses were insured in the treatment group than the control group in 2011 (after the fire) and in 2008 (at the time of the fire).

To actually measure the difference between the treatment and control group in 2008 (at the time of the fire) and 2011 (after the fire), a difference in difference technique was used to measure the effect of the treatment; horse facilities affected by the fire, in the two years 2008 and 2011. The premise of using a difference in difference technique was to examine the affect of horse facilities affected by the fire (treatment) by comparing the treatment group after treatment to both the treatment group before treatment and to the control group. To do this I used a linear regression to test for any statistically significant difference between the nine variant characteristics of interest between the treatment and control group. The linear regression used was: Y= treatment + post + post*treatment. Y is the variable of interest, as it was one of the nine time variant variables. Dummy variables were created for treatment and post; 1 for being in the treatment group, 0 for being in the control group, 1 for data from 2011 and 0 for data from 2008. Post*treatment was the interaction term between treatment and post. The p-value for the post*treatment coefficient determined whether there was a statistically significant difference between the differences. Table 12 shows the difference in difference for the nine time varying variables between the treatment and control group. The results for the regression in Table 12 show that none of the nine variant variables are statistically significant between the two groups.

Table 12: Difference In Difference.

Variable	Treatment (2011-2008)	Control (2011-2008)	Difference
Number of horses in facility	0.12	2.17	-2.05 (4.61)
Number of boarders in facility	-0.59	1.55	-2.44 (2.59)
Number of horses belonging to operator	1.23	1.55	-0.32 (3.18)
Number of non-insured horses	0.47	0.83	-0.36 (3.22)

Variable	Treatment (2011-2008)	Control (2011-2008)	Difference
Aggregate $ value of non-insured horses	12681.81	46.88	12634.93 (30660.77)
Number of insured horses	-0.08	0.44	-0.52 (1.11)
Aggregate $ value of insured horses	6757.14	11977.78	-5220.64 (11253.26)
Number of livestock	0.03	0.06	-0.03 (2.64)
Square footage of horse facility	572.39	-2124.44	2696.83 (2257.90)

Source: (Green, 2012).

CHAPTER 5 CONCLUSION

My study has contributed to the Nova Scotia equine community and emergency response organizations as it has created an inventory of equine livestock and resources to move them, as well as three maps and two equine directories for horse facilities in Nova Scotia. The map and directory can be adjusted to all types of livestock in Nova Scotia and can also be used future emergencies to guide emergency response officials in dealing with horse facilities located within Nova Scotia.

When the June 2008 forest fire occurred it was considered a low probability high-risk hazard by the province's equine industry, as this was the first time in Nova Scotia that eighteen horse facility operators were required to evacuate and transport or receive horses. Kunreuther & Slovic (1978) found that individuals tend to purchase insurance when a disaster is considered a high probability low risk hazard. After the June 2008 forest fire, horse facility operators in the treatment and control groups may have believed the likelihood of a forest fire or other disasters occurring was higher. Thus both groups insured more horses, and more horse facility operators purchased horse insurance. What does this mean for equine insurance companies? More horse insurance was purchased once the probability of a repeat forest fire was considered more likely to occur.

My equine study has contributed to the wider literature on natural disaster by showing that experiencing a natural disaster may influence an individual's decision to insure livestock assets. Survey results from my equine study show that horse facility operators who experienced the June 2008 forest fire were more likely to insure their horses than those who did not experience the event. My equine study has contributed to the work of Tversky and Kahneman (1974) who point out that experience of an event will increase the probability of an event occurring again. After the forest fire, the treatment group may have believed the probability of the event occurring again was higher than before the fire. This may explain why, after the June 2008 forest fire the percentage of insured horse increased more in the treatment group than the control group. Insurance companies may experience an increase in the purchase of horse insurance after natural disasters. Marketing insurance for horses or livestock may be an opportunity for insurance companies to increase revenues and profits.

Kunreuther (1984) stated that individuals may either underestimate the probability of a natural disaster and its consequential losses so the benefits of the insurance policy appear unattractive relative to the cost of the policy, as individuals may find the insurance premium too expensive thereby deterring them from purchasing insurance. My equine study determined how the insurance decisions of horse facility operators in Nova Scotia were affected after the June 2008 forest fire. Survey results showed that in the treatment and control groups in 2011 (after the June 2008 fire) the percentage of insured horses increased, the percentage of horse facility operators choosing to insure horses increased and that the aggregate dollar value of insured horses increased. Conversely, this suggests that in 2008 horse facility operators in the treatment and control groups either felt the risk of a disaster was low, or they found the insurance premium too expensive therefore there was little reason to insure horses. In fact survey results show that in the treatment and control group, no facility operator chose to insure every horse they own either before or after the fire.

The demand for insurance appears to increase after natural disasters because the event may be prominent in people's minds (Kunreuther, 1997). Insurance companies are concerned with the magnitude of losses from catastrophic events because it is perceived that major disasters could cause them to become insolvent (Kunreuther, 1997). Equine insurance companies are concerned with the number of potential claims for dead horses; therefore they must focus on determining the types of coverage they can sell to be profitable. Within the last two years, equine insurance companies have been marketing natural disaster coverage to equine owners, as a benefit under Full Mortality Insurance (Personal communication, Mike King Intercity Insurance, 2012).

Equine insurance companies do not offer discounted insurance rates for horse owners since horses are at high risk for injuries and they are relatively unpredictable. After the June 2008 forest fire the treatment and control groups perceived an increase in the risk of loss from forest fires. This may have prompted more horse facility operators to purchase more horse insurance. Horse owners like many others will buy insurance if they feel their investment is at risk.

Most insurance polices in our society are mandated by law, including automobile insurance and building insurance which are required by mortgage lenders. Horses and

insurance per item are discretionary expenditures and insurance is not normally mandated. Given the proximity in time and place to the June 2008 forest fire, horse facilities in both the treatment and control groups felt more at risk and were likely motivated to insure coverage for a low probability but high risk hazard.

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APPENDIX A FOREST FIRES

Table 1: Large Forest Fires In Nova Scotia 1990-2011

Date	Area	Burned Hectares (ha)
June 12, 1992	Goff's	595
April 28, 1999	Woods Harbour	810
May 20, 2003	Wallace Lake	795
June 13, 2008	Porter's Lake/Mineville/Lake Echo/Lawrencetown	1925
April 29, 2009	Spryfiled	681

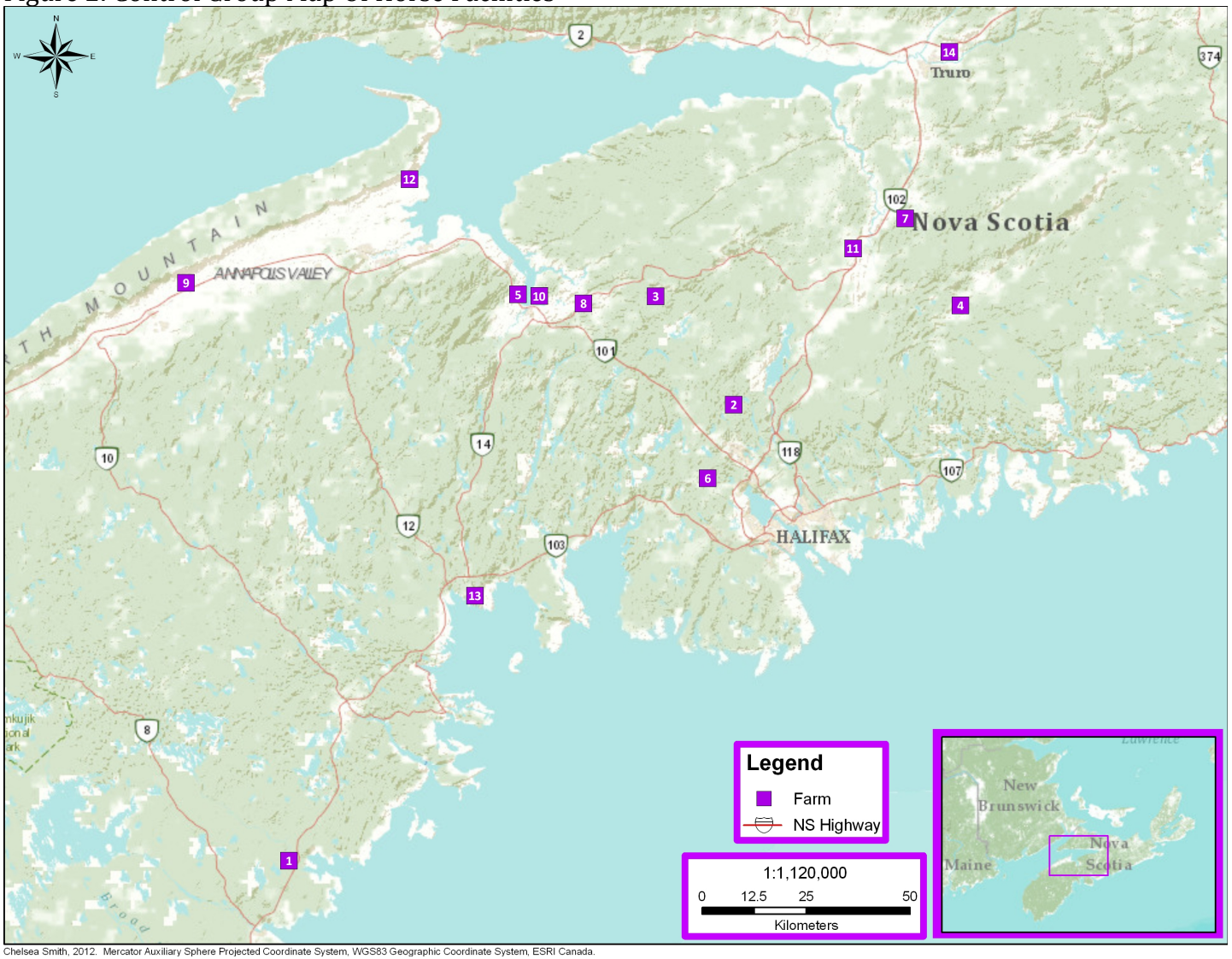
Source: (Nova Scotia Department Of Natural Resources, 2012).

APPENDIX B MAPS

Figure 1: Treatment Group Map Of Horse Facilities

Chelsea Smith, 2012. Mercator Auxiliary Sphere Projected Coordinate System, WGS83 Geographic Coordinate System, ESRI Canada.

Figure 2: Control Group Map Of Horse Facilities



Chelsea Smith, 2012. Mercator Auxiliary Sphere Projected Coordinate System, WGS83 Geographic Coordinate System, ESRI Canada.

APPENDIX C EQUINE DIRECTORIES

Table 2: Treatment Group Horse Facility Contact Information

Horse Facility ID	Horse Facility Name	Street Address	City	Contact Person
1	Merson Hill Sport Horses	241 Nelson Drive	East Lawrencetown	Ruth Hannigan Neil Hannigan
2	Larcae Stables	122 Nelson Drive	East Lawrencetown	Suzanne Killen
3	Owl's Ridge Farm	47 Conrod Road	Grand Desert	Heather Smith Oz Smith
4	Dream Haven	9 Daigle Lane	Head Of Chezzetcook	Lisa Hamm
5	No Name	241 Anderson Road	Musquidobit Harbour	Andrea Montgomery
6	No Name	27 Old Coach Road	Porters Lake	Kim Pearce
7	No Name	10 Winward Lane	Lawrencetown	Nicole Moreash
8	Sambea Farm	79 Conrad Road	Lawrencetown	Julie Weste Nathalie Green
9	C & M Stables	171 West Lawrencetown Road	Lawrnecetown	Brain Veniot Kim Veniot
10	No Name	215 West Lawrencetown Road	Lawrnecetown	Elaine MacLean
11	Robertson Stables	220 West Lawrencetown Road	Lawrencetown	Lindsay Hilchie
12	O'Leary's	257 West Lawrencetown Road	Lawrencetown	Beth O'Leary
13	No Name	513 West Lawrencetown Road	Lawrenctown	Frank Euler Michelle Kius

Source: (Green, 2012).

Table 3: Treatment Group Inventory Of Each Horse Facility

Horse Facility ID	Gooseneck Trailers				Bumper Pull Trailers				Other Livestock	
	Number	Capacity	Length (Feet)	Number Of Hay	Number	Capacity	Length (Feet)	Number Of Hay	Yes/No	Quantity
1	1	4	30	5	0	0	0	0	No	0
2	0	0	0	0	0	0	0	0	No	0
3	1	4	36	20	0	0	0	0	No	0
4	1	4	30	30	1	2	12	0	Poultry	5
5	0	0	0	0	0	0	0	0	No	0
6	0	0	0	0	1	2	12	2	No	0
7	0	0	0	0	0	0	0	0	No	0
8	1	4	39	10	0	0	0	0	No	0
9	1	4	29	30	1	2	0	0	No	0
10	1	3	35	5	0	0	0	0	No	0
11	1	4	38	6	0	0	0	0	No	0
12	1	2	20	0	0	0	0	0	Donkey	1
13	0	0	0	0	0	0	0	0	Poultry	2

Source: (Green, 2012).

Table 4: Control Group Horse Facility Contact Information.

Horse Facility ID	Horse Facility Name	Street Address	City	Contact Person	Cell Phone
1	Medway River Stables	205 Medway River Road	Mill Village	Livia Meuri Marcus Meuri	298-9725 677-2843 212-0809
2	Atlantic Equestrian Center	181 Rosley Road	Beaver Bank	Anne Myhr Whylie Roberts	
3	Happy Hoofer	1609 Ashdale Road	South Rawdon	Daniel White Shari Pictou	
4	No Name	6424 Highway 357	Middle Musquidobit	Holly Erith Keith Elwood	
5	Albro Creek Farm	1414 Highway 1	Falmouth	Norma White	791-2292
6	Restless Pines Farm	1418 Lucaseville Road	Hammonds Plains	Heidi MacInnes	209-3755 835-7433
7	No Name	152 Kitchener Street	Stewiacke	Pascal Cruz Connor Cruz	639-2283 639-2283
8	Old Bull Farm	7625 Highway 14	Newport	Paul Johnson Jeannine Deluca	757-2526 790-7978
9	Rohan Wood Farm	382 Morden Road	Aylesford	Alissa Cue	692-1614 847-0176
10	No Name	290 Avondale Road	Avondale	Nancy Morash Greg Morash	791-7681 798-6116

Horse Facility ID	Horse Facility Name	Street Address	City	Contact Person	Cell Phone
11	Vinland Farms	3444 Indian Road	Shubenacaide	Gordon Russell Joan Russell	229-4410 229-4409
12	Randslands Farms Inc.	1050 Pereau Road	Canning	Bruce Rand	670-3139 582-7705
13	Coveside Stable	275 Haddon Hill	Chester	Jackie Rusaw Brad Rusaw	275-4055 275-7587 275-4657
14	Bayfield Farm	409 Pictou Road	Truro	Dara Pelkey-Field Mike Field	957-0829 220-6439

Source: (Green, 2012).

Table 5: Control Group Inventory Of Each Horse Facility.

Horse Facility ID	Gooseneck Trailers				Bumper Pull Trailers				Other Livestock	
	Number	Capacity	Yes/No	Quantity	Number	Capacity	Length (Feet)	Number Of Hay	Yes/No	Quantity
1	1	4	36	15	0	0	0	0	No	0
2	0	0	0	0	2	2,2	11,11	35	No	0
3	0	0	0	0	1	2	21	0	Hounds	20
4	0	0	0	0	1	3	16	40	Chickens	6
5	1	7	39	0	1	2	15	0	Mule	1
6	1	7	34	30	1	2	12	10	Goat	1
7	0	0	0	0	0	0	0	0	Sheep	2
8	0	0	0	0	2	2,2	20	30	No	0
9	1	4	35	40	1	2	14	40	No	0
10	0	0	0	0	0	0	0	0	No	0
11	0	0	0	0	1	2	32	60	Poultry	6
12	2	4,4	30	6	0	0	00	0	No	0
13	2	7,2	35,18	20	4	2,2,2,2	10,12,8,6	15	Donkey	1
14	1	2	21	15	0	0	0	0	No	0

Source: (Green, 2012).

APPENDIX D

TREATMENT GROUP QUESTIONNAIRE

1. How many horses were in your horse facility?

2. Of the total number of horses in your horse facility, how many were boarders?

3. Of the total number of horses in your horse facility, how many belonged to you (and/or your family)?

4. Were you required to:

   a) Evacuate horses?
   (1) Yes (0) No

   b) Transport horses?
   (1) Yes (0) No

   c) Receive horses?
   (1) Yes (0) No

5. Did you believe your horses were adequately insured against the risk of a disaster or emergency (through your equine insurance provider)?
   (1) Yes

   (0) No

   (2) Not sure

   (3) I did not own any insured horses

6. a) Did any of your horses injure themselves during the evacuation/forest fire?
   (1) No horses were injured
   (2) Only insured horses were injured
   (3) Only uninsured horses were injured
   (4) Some insured and some uninsured horses were injured
   (5) I did not own any horses

b) Did any of your horses injure themselves between the time of the evacuation and the time you were permitted to return with your horses to your horse facility?
(1) Yes
(0) No
(2) I did not own any horses
(3) I was not required to evacuate my horses

c) Did any of your horses die during the evacuation/forest fire?

(1) Yes

(0) No

(2) I did not own any horses

d) If any of your horses died during the evacuation/forest fire, please check the following that apply:

(1) Only insured horse(s)

(2) Only uninsured horse(s)

(3) Some insured and some uninsured horses

(4) I did not own any horses that died during the evacuation/forest fire

(5) I did not own any horses

e) If your horse was insured and became injured during the evacuation/forest fire, were you able to file a claim?
(1) Yes
(0) No
(2) I did not own any insured horses

(3) I did not own any horses

(4) None of my insured horses injured themselves

f) If your horse was insured and died during the evacuation, were you able to file a claim?
(1) Yes
(5) No

(2) I did not own any insured horses

(3) I did not own any horses

(0) My horse(s) was insured but did not die, I did not file a mortality claim

7. Of your own horses (and/or your families) how many were not insured?
(*) I did not own any horses

8. What was your total estimated value of your (and/or your families) non-insured horses? If you prefer not to estimate this value, please check one of the following ranges:
(0) I did not own any horses

(1) I did not own any horses that were not insured

9. Of your own horses (and/or your families) how many were insured?
(*) I did not own any horses

10. What was the total insured value of your (and/or your families) insured horses? If you prefer not to estimate this value, please check one of the following ranges:
(0) I did not own any horses

(1) I did not own any insured horses

11. Of your insured horses (and/or your families) were they insured privately or publicly?
(1) Yes privately

(2) Yes publicly

(3) Some privately and some publicly

(4) I did not own any insured horses

12. Did you believe your horse facility was adequately insured against the risk of a disaster or an emergency?
(1) Yes (0) No (2) Not sure

13. Was your farm insured?
(1) Yes (0) No

14. Did your facility have a fire extinguisher?
(1) Yes (0) No

15. How many fire extinguishers did your horse facility have?

16. Did your horse facility have a smoke detector?
(1) Yes (0) No

17. How many smoke detectors were in your horse facility?

18. Did your horse facility have a sprinkler system?
(1) Yes (0) No

19. How many sprinklers were in your horse facility?

20. Approximately how many square feet was your horse facility?

21. Was there a hayloft in your horse facility?
(1) Yes (0) No

22. Was there hay in your hayloft at the time of the forest fire?
(1) Yes (0) No

23. Where did you store your hay?
(1) Hay is stored in hayloft

(2) Neighbor

(3) Adjacent building

(4) Shipping container

(5) Out building

(6) Indoor arena

(7) Hayloft and arena

(8) Stall in barn

(9) Room in barn

(10) Addition on barn

(11) Separate shed

24. a) Do you have a means to evacuate:
(1) Yes (0) No

b) Useable truck(s)?

(1) Yes (0) No

c) Useable trailer(s)?

(1) Yes (0) No

25. How many working useable truck(s) did you have access to at your horse facility?

26. How many useable gooseneck trailer(s) were at your facility?

27. How many horses could each useable gooseneck haul?

28. How many useable tag-along trailer(s) were at your facility?

29. How many horses could each useable tag-along haul?

30. Did your gooseneck or tag-along trailer(s) have room for hay storage?
(1) Yes (0) No

31. Approximately how many bales of hay could you have transported with a trailer(s) full of horses?

32. How many bales of hay did you transport during the evacuation?

33. What was the length (in feet) of your longest horse trailer?

34. As an evacuee, was the driveway of the temporary evacuation horse facility wide enough for you to pull into and unload the evacuated horses?
(1) Yes (0) No (2) I was not evacuated

35. a) Did you have any other types of livestock (cattle, donkeys, goats, mules, pig, sheep and poultry) at your facility?
(1) Yes (0) No

b) Specify type of livestock

(0) I have no livestock

(1) Hounds

(2) Poultry

(3) Sheep

(4) Mule

(5) Goats

(6) Donkey

(7) Llama

c) Specify the number of livestock

(0) I have no livestock

36. a) In 2008, assuming your horse facility was safe during a disaster or emergency how many evacuee horses could you have assumed care for?

b) Under what cost ($/day)?

37. Approximately how many acres was your horse facility?

38. Did you have a list of names and phone numbers of Nova Scotian horse facilities?
(1) Yes (0) No

39. How many evacuated horses stayed at your horse facility until they were able to return home?
(0) My horse facility was not a destination for evacuated horses

40. Did the evacuees arrive with halters and lead ropes?
(1) Yes all

(2) Yes some

(3) None

(0) I did not house any evacuee horses

41. Where did the evacuated horses reside for most of their stay on your property?
(1) Field(s)

(2) Paddock(s)

(3) Horse facility

(4) Both field(s) and paddock(s)

(5) Field(s), paddock(s) and barn

(6) Both barn and paddock(s)

(7) Both barn and field(s)

(8) Other (please specify)

(0) My horse facility was not a destination for evacuated horses

42. Did the evacuated horses staying at your horse facility or properties have the following feed supply:
(0) My horse facility was not a destination for evacuated horses
(1) Both hay and grain were supplied for the entire time
(2) Yes, hay for the entire time
(3) No hay and grain were supplied for the entire time
(4) Yes , hay for part of the time
(5) No hay for the entire time
(6) No grain for the entire time
(7) Yes grain for the entire time
(8) Yes grain for part of the time

43. a) Approximately how far away was the local fee store (km)?
(0) My horse facility was not a destination for evacuated horses

b) Could you drive there during the fire?

(1) Yes

(0) No

(2) My horse facility was not a destination for evacuated horses

c) Could a delivery truck(s) from the feed store deliver to your location during the forest fire?

(1) Yes

(0) No

(2) My horse facility was not a destination for evacuated horses

d) Did you have an adequate supply of hay at your horse facility or property to feed all the regular resident horses at your facility or property plus the entire temporary evacuated residents?

(1) Yes

(2) No evacuees provided hay & grain

(0) My horse facility was not a destination for evacuated horses

e) At the time of the forest fire, could hay have been delivered to your horse facility or property?

1) Yes

(0) No

(2) My horse facility was not a destination for evacuated horses

44. Since your horse facility and/or property was a destination for evacuated horses, were you monetarily compensated?
(1) Yes

(0) No

(2) My horse facility was not a destination for evacuated horses

45. If you were monetarily compensated for your horse facility and/or property as a destination for evacuated horses, under what cost (estimated $/day)?
(0) My horse facility was not a destination for evacuated horses

(1) I was not monetarily compensated

46. If your horse facility was evacuated did you transport any horses yourself?
(1) Yes

(0) No

(2) My horse facility was not required to evacuate horses

47. If your horse facility was required to evacuate, did other volunteer horse transporters arrive to assist in the evacuation?
(1) Yes

(0) No

(2) My horse facility was not required to evacuate horses

48. Did you evacuate your horse(s) in the order of their monetary value to you (highest monetary value to lowest monetary value?
(1) Yes

(0) No

(2) My horse facility was not required to evacuate horses

49. Of your horses, did you evacuate your insured horses before your non-insured horses?
(1) Yes

(0) No

(2) My horse facility was not required to evacuate horses

(3) I did not own any insured horses

(4) All my horses were insured

50. Did you have an evacuation destination before the fire?
(1) Yes

(0) No

(2) My horse facility was not required to evacuate horses

51. Approximately how many kilometers did you have to travel to reach a destination that would temporarily house your horse(s)?
(0) My horse facility was not required to evacuate horses

52. Could you supply horse grain for your evacuation destination?
(1) Yes

(0) No

(2) My horse facility was not required to evacuate horses

53. Could you supply hay for evacuation destination?
(1) Yes

(0) No

(2) My horse facility was not required to evacuate horses

54. Had you heard of disaster financial assistance?
(1) Yes (0) No

55. Do you know what disaster financial assistance is?
(1) Yes (0) No

56. Who would you call in your community to assist you with evacuating your horses (if you needed an extra hand)?
(1) Neighbors
(2) Boarders
(3) Family
(4) Friends
(5) Fire Department
(6) Specific person(s)

57. Do you have list of names and phone numbers for the horse facilities in Nova Scotia?
(1) Yes (0) No (2) Some

58. Do you have evacuation drills in your horse facility?
(1) Yes (0) No

59. How many evacuation drills does your facility have in 1 year?

60. If you have boarders do you provide them with an evacuation plan?
(1) Yes (0) No (2) I do not have boarders

61. Do you require your boarders to sign a waiver agreeing that they are aware of an evacuation plan?
(1) Yes (0) No (2) I do not have boarders

62. How many horses are in your facility?

63. Of the total number of horses in your horse facility, how many are boarders?

64. Of the total number of horses in your horse facility how many belong to you (and/or your family)?
(0) I do not own any horses

65. Do you believe your horses are adequately insured against the risk of a disaster or emergency (through your equine insurance provider)?
(1) Yes (0) No (2) Not sure

66. Of your own horses, how many are not insured?
(*) I do not own any horses

67. What is your total estimated value of your (and/or your families) non-insured horses? If you prefer not to estimate this value, please check one of the following ranges:
(0) I do not own any horses

(1) All of my horses are insured

68. Of your own horses how many are insured?

(5) I have no insured horses

(6) I do not own any horses

69. What is the total insured value of your (and/or families) insured horses? If you prefer not to estimate this value please check one of the following ranges:
(1) I do not own any horses
(2) I own no insured horses

70. Of your insured horses are they insured privately or privately or publicly?
(1) I do not own any horses
(2) I own no insured horses
(3) Yes privately
(4) Yes publicly
(5) Some privately and publicly

71. Do you believe your horse facility is adequately insured against the risk of a disaster or an emergency?
(1) Yes (0) No (2) Not sure

72. Do you have farm insurance?
(1) Yes (0) No

73. If you do not have a hayloft in your horse facility, where do you store your hay?
(0) My horse facility was not required to evacuate

(1) Hay is stored in my hayloft

(2) Neighbor

(3) Adjacent building

(4) Shipping container

(5) Out building

(6) Indoor arena

(7) Hayloft and arena

(8) Spare stall in barn

(9) Room in barn

(10) Addition on barn

(11) Separate shed

74. Does your horse facility have a fire extinguisher?
(1) Yes (0) No

75. How many fire extinguishers does your horse facility have?

76. Does your horse facility have a smoke detector?
(1) Yes (0) No

77. How many smoke detectors does your facility have?

78. Does your horse facility have a sprinkler system?
(1) Yes (0) No

79. How many sprinklers are in your horse facility?

80. Approximately how many square feet is your horse facility (including the hayloft)?

81. Is there a hayloft in your horse facility?
(1) Yes (0) No

82. Approximately how many square feet is your hayloft?
(0) My facility does not have a hayloft

83. a) Do you have means to evacuate?
(1) Yes (0) No

b) Useable truck(s)?

(1) Yes (0) No

c) Useable trailer(s)?

(1) Yes (0) No

84. How many working useable truck(s) do you have access to at your facility?

85. How many useable gooseneck trailer(s) are at your facility?

86. How many horses can each useable gooseneck haul?

87. How many useable tag-along trailer(s) are at your facility?

88. How many horses can each useable tag-along trailer haul?

89. Does your gooseneck trailer have room for hay storage?

(1) Yes (0) No

90. Approximately how many bales of hay could you transport with a trailer(s) full of horses?

91. How many feet long is your longest horse trailer(s)?

92. At your facility do you have any other types of livestock (cattle, donkeys, goats, mules, pigs, sheep or poultry)?
a) (1) Yes (0) No

b) Specify the types of livestock

(0) I have no livestock

(1) Hounds

(2) Poultry

(3) Sheep

(4) Mule

(5) Goats

(6) Donkey

(7) Llama

c) The number of types of livestock?

(0) I do not have any livestock

93. a) Assuming your horse facility was safe during a disaster or emergency, how many evacuee horses could you assume to care for?

b) Under what cost ($/day)?

APPENDIX E

CONTROL GROUP QUESTIONNAIRE

1. How many horses were in your horse facility?

2. Of the total number of horses in your horse facility, how many were boarders?

3. Of the total number of horses in your horse facility, how many belonged to you (and/or your family)?

4. Did you believe your horses were adequately insured against the risk of a disaster or an emergency (through your equine insurance provider)?
(1) Yes (0) No (2) Not sure

5. Of your own horses (and/or your families) how many were not insured?
(*) I did not own any horses

6. What was your total estimated value of your (and/or your families) non-insured horses? If you prefer not to estimate this value please check one of the following ranges:
(0) I did not own any horses

(1) I did not own any horses that were not insured

7. How many of your horses were insured?
(*) I did not own any horses

8. What was the total insured value of your (and/or your families) insured horses? If you prefer not to estimate this value please check one of the following ranges:
(0) I did not own any horses

(1) I did not own any horses that were not insured

9. Of your insured horses (and/or your families) were they insured privately or publicly?
(1) Yes privately

(2) Yes publicly
(3) Some privately and some publicly
(4) I did not own any insured horses

10. Did you believe your horse facility was adequately insured against the risk of a disaster or emergency?
(1) Yes (0) No (2) Not sure

11. Was your farm insured?
(1) Yes (0) No

12. Did your facility have a fire extinguisher?
(1) Yes (0) No

13. How many fire extinguishers did your horse facility have?

14. Did your horse facility have a smoke detector?
(1) Yes (0) No

15. How many smoke detectors were in your horse facility?

16. Did your horse facility have a sprinkler system?
(1) Yes (0) No

17. How many sprinklers were in your horse facility?

18. Approximately how many square feet was your horse facility (including the hayloft?
(0) Unknown

19. Was there a hayloft in your horse facility?
(1) Yes (0) No

20. If you did not have a hayloft in your horse facility, where did you store your hay?
(0) My horse facility was not required to evacuate

(1) Hay is stored in my hayloft

(2) Neighbor

(3) Adjacent building

(4) Shipping container

(5) Out building

(6) Indoor arena

(7) Hayloft and arena

(8) Spare stall in barn

(9) Room in

(10) Addition on barn

(11) Shed

21. a) Do you have a means to evacuate:
(1) Yes (0) No

b) Useable truck(s)?

(1) Yes (0) No

c) Useable trailer(s)?

(1) Yes (0) No

22. How many working useable truck(s) did you have access to at your horse facility?

23. How many useable gooseneck trailer(s) were at your facility?

24. How many horses could each useable gooseneck haul?

25. How many useable tag-along trailer(s) were at your facility?

26. How many horses could each useable tag-along haul?

27. Did your gooseneck or tag-along trailer(s) have room for hay storage?
(1) Yes (0) No

28. Approximately how many bales of hay could you have transported with a trailer(s) full of horses?

29. What was the length (in feet) of your longest horse trailer?

30. a) Did you have any other types of livestock (cattle, donkeys, goats, mules, pig, sheep or poultry) at your facility?
(1) Yes (0) No

b) Specify type of livestock

(0) I have no livestock

(1) Hounds

(2) Poultry

(3) Sheep

(4) Mule

(5) Goats

(6) Donkey

(7) Llama

c) Specify the number of livestock

(0) I have no livestock

31. Approximately how many acres was your horse facility?

32. Who would you call in your community to assist you with evacuating your horses (if you need an extra hand)?
(7) Neighbors
(8) Boarders
(9) Family
(10) Friends
(11) Fire Department
(12) Specific person(s)

33. Do you have list of names and phone numbers for the horse facilities in Nova Scotia?
(1) Yes (0) No (2) Some

34. Do you have evacuation drills in your horse facility?
(1) Yes (0) No

35. How many evacuation drills does your facility have in 1 year?

36. If you have boarders do you provide them with an evacuation plan?
(1) Yes (0) No (2) I do not have boarders

37. Do you require your boarders to sign a waiver agreeing that they are aware of an evacuation plan?
(1) Yes (0) No (2) I do not have boarders

38. How many horses are in your facility?

39. Of the total number of horses in your horse facility, how many are boarders?

40. Of the total number of horses in your horse facility how many belong to you (and/or your family)?
(0) I do not own any horses

41. Do you believe your horses are adequately insured against the risk of a disaster or emergency (through your equine insurance provider)?
(1) Yes (0) No (2) Not sure

42. Of your own horses, how many are not insured?
(*) I do not own any horses

43. What is your total estimated value of your (and/or your families) non-insured horses?
(0) I do not own any horses

(1) All of my horses are insured

44. Of your own horses how many are insured?
(*) I do not own any horses

45. What is the total insured value of your (and/or families) insured horses?
(3) I do not own any horses
(4) I own no insured horses

46. Of your insured horses are they insured privately or privately or publicly?
(6) I do not own any horses
(7) I own no insured horses
(8) Yes privately
(9) Yes publicly
(10) Some privately and publicly

47. Do you believe your horse facility is adequately insured against the risk of a disaster or an emergency?
(1) Yes (0) No (2) Not sure

48. Do you have farm insurance?
(1) Yes (0) No

49. If you do not have a hayloft in your horse facility, where do you store your hay?
(0) My horse facility was not required to evacuate

(1) Hay is stored in my hayloft

(2) Neighbor

(3) Adjacent building

(4) Shipping container

(5) Out building

(6) Indoor arena

(7) Hayloft and arena

(8) Spare stall in barn

(9) Room in barn

(10) Addition on barn

(11) Separate shed

50. Does your horse facility have a fire extinguisher?
(1) Yes (0) No

51. How many fire extinguishers does your horse facility have?

52. Does your horse facility have a smoke detector?
(1) Yes (0) No

53. How many smoke detectors does your facility have?

54. Does your horse facility have a sprinkler system?
(1) Yes (0) No

55. How many sprinklers are in your horse facility?

56. Approximately how many square feet is your horse facility (including the hayloft)?

57. Is there a hayloft in your horse facility?
(1) Yes (0) No

58. Approximately how many square feet is your hayloft?

(0) My facility does not have a hayloft

59. a) Do you have means to evacuate?
(1) Yes (0) No

b) Useable truck(s)?

(1) Yes (0) No

c) Useable trailer(s)?

(1) Yes (0) No

60. How many working useable truck(s) do you have access to at your facility?

61. How many useable gooseneck trailer(s) are at your facility?

62. How many horses can each useable gooseneck haul?

63. How many useable tag-along trailer(s) are at your facility?

64. How many horses can each useable tag-along trailer haul?

65. Does your gooseneck trailer have room for hay storage?
(1) Yes (0) No

66. Approximately how many bales of hay could you transport with a trailer(s) full of horses?

67. How many feet long is your longest horse trailer(s)?
(0) I do not have a horse trailer

68. a) At your facility do you have any other types of livestock (cattle, donkeys, goats, mules, pigs, sheep or poultry)?

(1) Yes (0) No

b) Specify the types of livestock

(0) I have no livestock

(1) Hounds

(2) Poultry

(3) Sheep

(4) Mule

(5) Goats

(6) Donkey

(7) Llama

c) The number of types of livestock?

(0) I do not have any livestock

69. Approximately how many acres is your horse facility?

70. a) Assuming your horse facility was safe during a disaster or emergency, how many evacuee horses could you assume to care for?

b) Under what cost ($/day)?