

**DIFFUSION OF THE TEXAS COOPERATIVE EXTENSION'S HORSE THEFT
AWARENESS AND PREVENTION INITIATIVE**

A Record of Study

by

PATTRICK LEE SWAIM JR.

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
DOCTOR OF EDUCATION

December 2005

Major Subject: Agricultural Education

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Approved by:

Co-Chairs of Committee,	Tim Murphy Steve Frazee
Committee Members,	Pete Gibbs Cindy Akers Gary Briers
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ABSTRACT

Diffusion of Texas Cooperative Extension's Horse Theft Awareness and
Prevention Initiative. (December 2005)

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The primary purpose of this study was to identify the Horse Theft Awareness and Prevention Initiative (HTAPI) participants and the theft prevention practices used in Texas. The secondary purpose was to evaluate the educational effectiveness of the HTAPI on the first three of Kirkpatrick's levels, namely learner satisfaction, knowledge acquired, and change in behavior. The third purpose was to examine relationships between the rate of adoption of HTAPI recommended practices and the following demographic variables: gender, age, equine discipline, number of horses owned, and size of investment in the equine business.

Survey instruments were used to gather data. Due to sampling constraints, the Solomon four step research design method was modified by removing one group following Seger's (1998). The sample groups consisted of a pre/only test group, pre/post test group, post/only test group minus the control pre/post test group. The pre/only sample group data was collected in Denton and Montgomery Counties and yielded 56 usable instruments. Using Dillman's (2000) procedures, data from participants of the

HTAPI programs were collected using two mailed survey instruments. One hundred ninety two participants of the 2004 Mare Foal, Basic Horse Management 101, and the Performance Horse workshops were mailed a post/only instrument; 96 were returned for a 49% response rate. Thirty two pre-test instruments were administered in Hopkins and Polk County and thirty days later these participants were mailed a post/only instrument. A response rate of 66% and 63% in the respective sample groups.

The sample population can be described as mainly women (68.3%) 43 years of age who owned 7.3 horses each. The average investment in horses totaled \$31,658. The most frequently owned breed was the Quarter Horse ($f=133$), and the most frequently listed discipline was for breeding purposes ($f=121$).

There were no relationships detected between gender or age and theft prevention practices or innovativeness. Positive relationships were found between the breeds of horses owned and the type of permanent identification of horses and the theft prevention practices used. Additionally, positive relationships were detected between breeding and riding discipline of horses, the types of permanent identification, the theft prevention practices used, and owner innovativeness.

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I would like to thank my graduate committee Dr. Tim Murphy, Dr. Gary Briers, Dr. Pete Gibbs, Dr. Cindy Akers, and Dr. Steve Frazee for their guidance through this program of study.

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TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	vii
LIST OF TABLES.....	ix
CHAPTER	
I INTRODUCTION.....	1
Introduction and Background.....	1
Present Status of the Question.....	3
Purpose of the Study.....	3
Review of Literature.....	4
Delimitations.....	9
Limitations.....	9
Basic Assumptions.....	10
Definitions of Terms.....	10
Summary.....	11
II REVIEW OF LITERATURE.....	12
Literature Review of Program Evaluation.....	12
Evolution of Formal Evaluation in Education.....	12
Program Evaluation: 1800-1940.....	12
Program Evaluation: 1940-1965.....	13
Emergence of Modern Program Evaluation.....	13
Methods of Evaluation.....	14
Kirkpatrick's Model.....	15
Literature Review of Adult Education.....	21
Evolution of Adult Learning Theory.....	21
Pedagogical Model and Andragogical Model.....	23
Literature Review of Diffusion and Adoption Theory.....	27

CHAPTER	Page
The Diffusion Process.....	31
The Innovation.....	31
Communication.....	34
Time.....	34
Social System.....	35
Summary.....	37
III METHODOLOGY AND PROCEDURES.....	38
Purpose of the Study.....	38
Population.....	39
Instrumentation.....	40
Procedures.....	43
Experimental Design.....	43
Pre-Only Data Collection.....	44
Post-Only Data Collection.....	45
Pre/Post Data Collection.....	46
Data Analysis.....	48
Summary.....	49
IV RESEARCH FINDINGS AND DISCUSSION.....	50
Descriptive Statistics.....	50
Correlations Using Demographic Variables.....	55
Correlations with Other Theft Prevention Practices.....	57
Program Satisfaction.....	59
Adoption of 15 Theft Prevention Practices and Permanent Identification.....	59
Correlation of Innovativeness with Demographic Variables.....	63
Summary.....	63
V CONCLUSIONS AND RECOMMENDATIONS.....	65
Conclusions.....	65
Recommendations.....	72
Horse Theft Awareness and Prevention Initiative.....	72
Recommendations for Further Research.....	72

	Page
REFERENCES.....	74
APPENDIX A HORSE THEFT AWARENESS AND PREVENTION SURVEY.....	80
APPENDIX B LETTER TO MIKE HEIMER REGARDING DATA COLLECTION.....	83
APPENDIX C POST-TEST ONLY INSTRUMENT.....	85
APPENDIX D DATA COLLECTION COVER LETTER.....	88
APPENDIX E DATA COLLECTION FOLLOW UP LETTER.....	90
APPENDIX F DATA COLLECTION SECOND FOLLOW UP LETTER.....	92
APPENDIX G POST TEST INSTRUMENT.....	94
APPENDIX H DATA RECODING SCHEMA FOR BREEDS OF HORSES..	97
APPENDIX I DATA RECODING SCHEMA FOR DISCIPLINE.....	99
VITA.....	102

LIST OF TABLES

TABLE	Page
1 The Nine Major Diffusion Research Traditions.....	29
2 Experimental Design Treatment and Observation Procedures.....	43
3 Percentage of Breeds Owned by Participants.....	51
4 Uses and Disciplines of Horses Represented by Respondents.....	52
5 Permanent Marking Prior to Participation in a Clinic.....	53
6 Percentage of Theft Prevention Practices Used by Participants Prior to the Educational Program.....	54
7 Percentage of Participant Satisfaction.....	59
8 Frequencies and Percentages of Responses to Theft Prevention Practices Questions by Breed of Horses Owned.....	60
9 Frequencies and Percentages of Responses to Theft Prevention Practices Questions by Discipline.....	61
10 Adoption of the 15 Theft Prevention Practices Due to Educational Program.....	62

CHAPTER I

INTRODUCTION

Introduction and Background

Horse theft is of some concern to Texans. Currently, horse theft is a second degree felony. Factors that may contribute to horse theft include; limited horse inspection at equine auctions, unsuspecting attitude by many horse owners, and delayed reporting of horse theft. In the U.S., fewer than 10% of burglaries result in an arrest, and 1.2% result in imprisonment. The lack of a paper trail on the sale of stolen horses, little evidence, and reasonable doubt likely contribute to the non-violent theft of horses and related equipment (Donald, 1997). While the low probability of being caught or punished may contribute to horse theft, primarily horses are stolen because they have value.

Horse theft can potentially affect a large number of citizens. Texas is home to more than one million horses, representing approximately 15% of all horses nation wide (Jones et al., 1993). There are 953,983 Texans who are participants in the horse industry and there are 288,839 Texas horse owners with 3.7 horses per household (Gibbs et al., 1998). The average overall selling price is \$5,249 per head, and the mean cost of maintaining a horse is \$1,963 per year. The average horse owning household has \$7,858 invested in saddles, bridles, halters, saddle pads, blankets/sheets, brushes, protective boots/leg wraps and chaps. Without determining depreciated value, the new price

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inventory value of tack for all horse owning households is \$2.4 million, translating into an average investment of \$2,500 per horse industry participant. The total average cost of a horse, tack, and one year of maintenance is approximately \$9,712 (Gibbs et al., 1998). In some cases, an individual theft represents significant impact to the owner.

In addition to the economic impact, there is also the emotional impact on horse owners when horses are stolen. Horses are a part of the social fabric of Texas. According to Gibbs, et. al. (1998) “It has been common knowledge for years that they make important contributions to the livelihood and well-being of people” (p. 5). In this same report, based on an eight county survey, researchers found that 63% of people reportedly owned horses for the improved quality of life, followed by 61% for relaxation and decreased stress.

Industry experts estimate that as many as 40,000 horses and ponies are stolen in the United States annually; yet, there is no uniform crime-reporting category for this type of offense (Donald, 1999). Based on national estimates, it is conceivable that as many as 6,000 horses and ponies could fall victim to theft in Texas. The Texas and Southwestern Cattle Raisers Association reported 89 horses stolen in 2002. Of these, 66 were recovered for a total reported value of \$222,995 (T. Cassaday, personal communication, January 24, 2002).

Texas law does not require a person who is in possession of a horse to prove ownership of the horse. Stolen horses are sold at auction houses, slaughterhouses, or by private treaty.

The Horse Theft Awareness and Protection Act (Texas House Bill 2396) was passed in 1997 and challenged Texas Cooperative Extension (TCE) to develop and conduct ongoing education in horse theft awareness and prevention for horse owners and law enforcement offices. This legislation also set forth guidelines for identifying horses, provided regulations for the inspection of horses intended for slaughter, and made horse theft a second degree felony. The legislation was designed to help in the prevention of horse theft. This program must include information on methods of permanent identification of horses and other security measures to prevent horse theft” (H. B. 2396, Section 151.02).

Present Status of the Question

In response to this legislation, the Texas Horse Theft Awareness and Prevention Initiative (HTAPI) was the first program of its kind conducted by a state agency on a state-wide basis. The initial advisory committee was held in McLennan County in 1998. Texas Cooperative Extension (TCE) developed this ongoing initiative to increase awareness and promote prevention of horse theft. Outcome measures have provided some evaluation on the adoption of recommended practices by horse owners (Gibbs, 2002). Additional studies are needed to further document the extent to which this educational initiative has prompted changes in thinking and management behaviors by both horse owners and law enforcement agencies.

Purpose of the Study

The purpose of this study was to measure the educational effectiveness of selected HTAPI educational programs conducted by the TCE. The first three of

Kirkpatrick's (1998) levels of program evaluation, namely satisfaction, knowledge, and change in behavior, will be examined to assess programmatic quality and effectiveness of the HTAPI.

Specific objectives were:

1. To describe HTAPI participants and the horse theft prevention practices currently used in Texas.
2. To evaluate the educational effectiveness of the HTAPI on the first three of Kirkpatrick's levels, namely learner satisfaction, knowledge acquired, and change in learner behavior.
3. To examine relationships in the rate of adoption of HTAPI recommended practices and the following demographic variables: gender, age, equine discipline, and size of investment in the equine business.

Review of Literature

The theoretical base for this study was developed from a relevant review of the literature. The intent of this review was to investigate the methods in which an adult educational program could be evaluated. To accomplish this review of literature, the topics researched included program evaluation, adult education, adoption of innovations, and or behavioral change.

In today's society, accountability has become more important than ever. Budget constraints at the national, state, and local levels have created competition for funds among various agencies, including Cooperative Extension. The programs that most likely will be funded will be those that can demonstrate the greatest return for the dollars

spent (Van Laanen & Nies, 1995). Cooperative Extension can no longer take for granted that programs are adequate and that participants are benefiting from the education gained. These programs must be evaluated to demonstrate accountability (Andrews, 1983). Shepard (2002) concluded that the degree of emphasis on accountability is at an all time high because of the demand for effective and efficient programs in Extension.

Traditionally, Cooperative Extension agents have provided decision makers data describing specific programs and numbers, ethnicity, and gender of citizens who have participated in programs. Defined as outputs such data does not measure outcome or impact of these programs. Therefore outcome measures help answer such questions as “What behaviors did participants adopt as a result of participating in these programs?” and “What impact did this program have in terms of dollars saved/earned, health benefits, and or social change?” (Van Laanen & Nies, 1995, p.1). According to Diem traditionally Extension has under-utilized systematic research methods in evaluating educational programs. Diem contends that many Extension educators, research is thought of as something conducted by academics, and evaluation is nearly as mysterious. Research methods can be a useful and effective way to evaluate educational programs according to Diem (2002).

Systematic evaluations can be costly and time consuming. Many Cooperative Extension agents do not have the resources available to conduct such evaluations because most agents are out in the field with clientele (Hamilton, 1985). One method of relieving the burden of evaluation is to conduct collaborative evaluations that involve personnel located in academic units in the associated land-grant university headquarters.

This model can provide an effective and efficient way of sharing expertise and resources to accomplish systematic evaluations (Verma & Burns, 1996).

There are many definitions to describe evaluation. One widely accepted definition among educational evaluators is that of the Joint Committee of Standards. Stufflebeam and Shrinkfield (1985) defined evaluation as the systematic assessment of the worth or merit of some object, and concluded that evaluation should satisfy four main conditions. These were:

1. An evaluation should be useful. It should be addressed to those persons and groups who are involved in or responsible for implementing what ever is being evaluated. It should help them to identify and attend to strengths and weaknesses in the object. It should place heaviest emphasis on addressing the questions of most importance to them. It should issue clear reports in a timely manner. And, in general, it should provide not merely feedback about strengths and weaknesses but also direction for improvement.
2. It should be feasible. It should employ evaluation procedures that can be implemented without major disruption. It should take into account and exert reasonable controls over political forces that might otherwise subvert the evaluation. And it should be conducted efficiently.
3. It should be ethical. It should be founded on explicit agreements that incur that the necessary cooperation will be provided, that the rights of all concerned parties will be protected, and that the findings will not be

compromised. Moreover, it should provide a balanced report that reveals both strengths and weaknesses.

4. It should be accurate. It should clearly describe the object as it evolved, and in its context. It should reveal the strengths and weaknesses of the evaluation plan, procedures, and conclusions. It should be controlled for bias. And it should provide valid and reliable findings. (p. 10)

Integrating evaluation with program development is critical to producing educational programs that have demonstrable impact (Brown and Kiernan, 1998). During the past decade program evaluation had developed as a process distinct from educational research and has become a force for educational improvement (Worthen and Sanders, 1991). There is consensus in the literature that program evaluation must be an integrated part of program planning to provide clients of these programs information that reflects their needs, is up-to-date, and of high quality (Stufflebeam and Shrinkfield; 1985, Caffarella, 1994). Scriven (1967) was the first to define two types of educational program evaluation; formative and summative. Patton (1994) outlined their sequential nature. First, formative data are collected and used to prepare for the summative evaluation. Then a summative evaluation is conducted to provide data for external accountability.

Adult education has developed into its own field of study; simply defined, adult learning is the process of adults gaining knowledge and expertise (Knowles, Holton, & Swanson 1998). Knowles introduced into the United States in the 1970s the concept that adults and children learn differently. Knowles made a distinction between pedagogy and

andragogy. Pedagogy was widely understood as the methods in which children learn. Knowles defined androgogy as methods in which adults learn. These two important terms have changed the way educators look at education. “Adults can and do want to learn regardless of age, they have a rich background of knowledge and experience that can be used in the learning process, and want to apply their learning to present situations” (Cafferella, 1994, p.24). In developing adult educational programs, Knowles, Holton and Swanson (1998) suggest that the program developer should take into account the following considerations: (1) the learner’s need to know, (2) the self-concept of the learner, (3) the experience of the learner, (4) their readiness to learn, (5) their orientation to learning, and (6) their motivation to learn.

Getting a new idea adopted, even when it has obvious advantages, can be difficult. A common problem for many individuals and organizations is how to speed up the rate of diffusion of an innovation. Rogers (2003) defines an innovation as an idea, practice, or object that is perceived as new by an individual or other unit of adoption. Diffusion of an innovation is the process by which an innovation is communicated through channels over time among members of a social system (Rogers, 2003). The purpose of the HTAPI is to diffuse information about horse theft awareness and prevention practices to a social system of horse owners.

Rogers suggested that there are four main elements in diffusion of innovations. (1) an innovation (2) is communicated through certain channels (3) over time (4) among members of a social system. Members of a social system adopt an innovation based on

characteristics of that innovation. Roger (2003) divides these characteristics into five categories: relative advantage, compatibility, complexity, trailability, and observability.

Innovativeness is defined as the relative rate at which a member of a social system adopts innovations. Measuring this interval allows one to classify adopters into five adopter categories. These categories, from relatively early to relatively late, are innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003).

A change agent is an individual who tries to influence clients innovation-decisions in a direction deemed desirable by a change agency. Change agents operate interventions, defined as actions with a coherent objective to bring about change, in order to produce identifiable outcomes. The seven roles of the change agent, as defined by Rogers (2003), are (1) to develop a need for change on the part of clients, (2) to establish information-exchange relationship, (3) to diagnose problems, (4) to create an intent to change in the client, (5) to translate intentions into action, (6) to stabilize adoption and prevent discontinuance, and (7) to achieve a terminal relationship with clients.

Delimitations

This study was delimited to people who voluntarily participated in Texas Cooperative Extension horse programs in the spring and fall of 2004.

Limitations

The generalized population for this study was limited to horse owners in Texas who participate in Texas Cooperative Extension horse educational programs.

Data were collected in selected areas of the state, from those participating in specific equine disciplines, who self selected to participate in horse education programs. Due to the size and complexity of the horse owning population in the state, not all horse owners were represented in the sample. Therefore, the results of this study should not be generalized to other populations of horse owners.

Basic Assumptions

It is assumed that all participants of the Horse Theft Awareness and Prevention clinics own horses. The major assumption of this study was that the participants answered the questionnaire truthfully and to the best of their ability. An additional assumption was that the audience understood the questionnaire.

Definition of Terms

For the purpose of this study, the following terms are defined:

- Horse Theft Awareness and Prevention Program (HTAPI): A program established by Texas House Bill 2396 that challenged Extension to conduct on going educational theft prevention program.
- Equine: Scientific name for the horse.
- Discipline: Methods or the manner in which horse owners use horses (roping, barrel racing, cutting, etc).
- Horse Uses: A horse's use can be categorized into two categories, either used for breeding or for riding purposes
- Breeds: Defined as the phenotypical characteristics of a horse as defined by breed registries.

Summary

Horse theft has become a concern in Texas. There are approximately 3.7 horses per horse owning household with an average selling price of \$5,249 per animal. Industry experts estimate that some 40,000 horse and ponies are stolen in the U.S. Based on national estimates, it is conceivable that as many as 6,000 horses and ponies could fall victim to theft in Texas. In 1997, Texas House Bill 2396 was passed to encourage training programs to promote horse theft awareness and prevention for horse owners and law enforcement agencies. Chapter 151 of Section 1 of this bill reads, “The Texas Agricultural Extension Service shall develop an ongoing training program for horse owners to promote the prevention of horse theft.” The purpose of this study was to measure the educational effectiveness of this program at selected educational programs using the first three of Kirkpatrick’s four levels of program evaluation, namely, satisfaction, knowledge, and change in behavior.

CHAPTER II

REVIEW OF LITERATURE

A relevant review of literature was conducted to form a foundation for this research project. This literature review addressed subjects considered relevant to conducting this research. The topics were program evaluation, methods of evaluation, Kirkpatrick's model of program evaluation, and adoption and diffusion of innovations.

Literature Review of Program Evaluation

Evolution of Formal Evaluation in Education

Formal evaluation in the public sector can be dated back to as early as 2000 B.C. in China. And in education, Socrates verbally mediated evaluations as part of the learning process. It wasn't until centuries later that religious and political beliefs became the driving force behind social and educational evaluation. Natural science in the 1700s began to come into evaluation, giving rise to the use of experimental techniques for evaluation (Worthen, Sanders, & Fitzpatrick, 1987).

Program Evaluation: 1800-1940

In this span of about 140 years, evaluation in education was primarily concerned with accreditation until 1940. In 1942, an eight year program was conducted by Smith and Tyler that set a new standard for educational evaluation with sophisticated methodology that linked outcome measures with learning outcomes. "Efficiency Experts" were emerging in industry calling for greater efficiency. But then the Great Depression and Roosevelt's New Deal programs increased government's role in program evaluation (Worthen, Sanders, & Fitzpatrick, 1987).

Program Evaluation: 1940-1965

World War II expanded research in the applied social sciences in evaluation of programs to help soldiers returning from war. “Social scientists began focusing research on entire programs rather than parts of them” (Worthen, Sanders & Fitzpatrick, 1987, p. 29).

“Rossi and Freeman stated that it was commonplace in this period to see social-scientists engaged in evaluations of delinquency-prevention programs, long-rehabilitation projects, psychotherapeutic and psychopharmacological treatments, public housing programs, and community organization activities...[as well as] family planning.... nutrition and health care... and agricultural and community development.”(Worthen, Sanders, & Fitzpatrick, 1987, pp. 29-30).

Emergence of Modern Program Evaluation

These trends in evaluation movements didn't create a strong evaluation movement, but each contributed context to the modern evaluation movement.

Presidents Kennedy's and Johnson's underlying social agenda was to implement programs to enhance opportunities for all citizens. The private sector and industry had already established Planning, Programming, and Budgeting System (PPBS) for monitoring productivity and profitability. These ideas spilled over into government in monitoring its programs (Worthen, Sanders, & Fitzpatrick, 1987).

Stufflebeam and Shrinkfield (1985) stated that “evaluation is one of the most fundamental components of sound professional services. In order for professionals to keep their services up-to-date and ensure that they are effectively meeting the needs of

their clients, professionals must continually obtain pertinent evaluative feedback” (Stufflebeam & Shrinkfield, 1985, p. 1). Evaluation practices are able to be used across a wide array of arenas (Worthen, Sanders & Fitzpatrick, 1987).

The model chosen to guide this study was Kirkpatrick’s Model. The first three levels were used. A recent study indicated that 94% of companies surveyed use a form of Kirkpatrick’s model in evaluating programs (Boyle & Cosby, 1997). Kirkpatrick’s model, although designed for evaluating training programs, can be easily used in evaluating educational programs (Freed, 2003).

Methods of Evaluation

Methods of evaluation for extension programs were explored during the literature review. Shepard (2002) used a survey to evaluate an Extension based water resource outreach program. Shepard phoned potential participants to introduce the survey and its purposes. During the phone call, a screening question gave the researcher an option to either accept the participant or defer the participant if they had been involved with the project. After agreeing to participate in the study, the participants were given an option of receiving a survey via e-mail or FAX.

Researchers Van Laanen and Nies (1995) used a pre- and post- test that was administered after the program was presented in the evaluation of food safety education in Texas. There was no baseline data available, so the researchers were forced to administer a pre-post instrument at the end of the program. A problem could have existed by administering a pre-post instrument in this nature; participants might have

been led to over-represent a positive experience by downplaying their behavior before the program, likewise is true for the post test scores.

Fitzpatrick, Duncan, Williamson, and Smith (1997) employed a pre- post survey instrument in the evaluation of two modes of self-paced agent inservice training. All agents in Alabama were sent a pre/test. Random samples of the respondents from the pre/test were assigned to either a written group, audiotape group, or a control group. Post/test was mailed to participants one week later.

McCorkle (2005) used a descriptive correlational study utilizing a instrument to measure the impact of the program. The census was mailed to participants who had received a post instrument 2 1/2 years after the completion of Master Marketer program.

Segers (1998) used a form of the Solomon four group research design to evaluate knowledge, perceptions, and attitudes of county agents of the Texas Agricultural Extension Service concerning the use of electronic technology and distance education. Segers used the pre-test/post-test treatment group, post-test only treatment group and pre-test only group omitting the pre-test/post-test control group from the Solomon four-group design to collect data. Segers' study used intact groups and is therefore characterized by a lack of random assignment of individuals to treatment or control groups. Segers' design was found in the educational program evaluation literature (Foster, 2001; Shavelson, 1987).

Kirkpatrick's' Model

Donald Kirkpatrick first introduced his four level model of evaluation in 1959 as a result of his doctoral work at the University of Wisconsin (Kirkpatrick, 1998 p. 1). The

four levels present a sequence of ways to evaluate programs. “Kirkpatrick (1998, p. 1) states that “the reason for evaluating is to determine the effectiveness of a training program.” The four levels which make up Kirkpatrick’s model are:

Level 1-Reaction

Level 2-Learning

Level 3-Behavior

Level 4-Results

Following are Kirkpatrick’s descriptions of the four levels of his model and suggestion for evaluation of each level:

Level 1- Reaction as the word implies, evaluation on this level measures how those who participate in the program react to it. It is a measure of customer satisfaction. In many in-house programs, participants are required to attend whether they want to or not. It is important not only to get a reaction but to get a positive reaction. The future of a program depends on positive reaction. In addition, if participants do not react favorably, they probably will not be motivated to learn. Positive reaction may not ensure learning, but negative reaction almost certainly reduces the possibility of it occurring (Kirkpatrick, 1998 p.19). Kirkpatrick suggest eight guidelines to evaluate reaction, they are (pp. 28-41):

1. *Determine what you want to find out.* In every program it is imperative to get reactions both to the subject and to the leader. And it is important to separate these two ingredients of every program.

2. *Design a form that will quantify reaction.* The ideal form provides a maximum amount of information and requires the minimum amount of time.
3. *Encourage written comments and suggestions.* The ratings that you tabulate provide only part of the participants' reactions. They do not provide the reasons for those reactions or suggest what can be done to improve the program.
4. *Get 100% immediate response.* Participants should complete and return their reaction sheets before they leave the program. It increases the response rate and second it will be a more meaningful response.
5. *Get honest responses.* Some participants may be reluctant to make a critical reaction or comment because they fear repercussions. Therefore, to be sure that the reactions are honest, you should not ask the participants to sign the forms. Also, you should ask that completed forms be put in a pile on a table so there is no way to identify the person who completed an individual form.
6. *Develop acceptable standards.* A numerical tabulation can be made from forms. You can use these rating to establish a standard of acceptable performance.
7. *Measure reactions against standards, and take appropriate action.* Once realistic standards have been established, you should evaluate the various aspects of the program and compare your findings with the standards.
8. *Communicate reactions as appropriate.* Communicating the reactions of others depends on two factors: who wants to see them and with whom

training staff want to communicate. Regarding the desire of training staff to communicate the reactions, the question is how often the information should be communicated and in what detail. Those who make decisions about staffing, budgets, salary increases, promotions, and layoffs should be informed. And if there is an advisory committee they should also be informed. (Kirkpatrick, 1998, pp. 28-38)

Level 2- Learning can be defined as the extent to which participants change attitudes, improve knowledge, and/or increase skill as a result of attending the program. Programs on topics like leadership, motivation, and communication can aim at all three objectives. In order to evaluate learning, the specific objectives must be determined. Some trainers say that no learning has taken place unless change in behavior occurs. Learning has taken place when one or more of the following occurs: Attitudes are changed. Knowledge is increased. Skill is improved. On or more of these changes must take place if a change in behavior is to occur.

Kirkpatrick (1998 pp. 40-47) list guidelines to evaluating learning; they are:

1. *Use of control groups if practical.* Control groups refer to a group that does not receive the training. The group that receives the training is called the experimental group. The purpose of using a control group is to provide better evidence that change has taken place. Any difference between the control group and the experimental group can be explained by the learning that took place because of the training program.

2. *Evaluate knowledge, skills, and/or attitudes both before and after the program.* A pretest and a posttest can be administered to measure learning. To measure skills of participants then a performance test is needed.
3. *Get 100% Response rate.* Anything less than 100% response requires a carefully designed approach to select a sample group and analyze the result statistically.
4. *Take appropriate action.* Taking appropriate action is in regards to making changes with instruction to make it more effective. The important point is that we are measuring our own effectiveness as instructors when we evaluate participants learning.

Level 3-Behavior Behavior can be defined as the extent to which change in behavior has occurred because the participant attended the training program. In order for change to occur, four conditions are necessary:

1. The person must have a desire to change.
2. The person must know what to do and how to do it.
3. The person must work in the right climate.
4. The person must be rewarded for changing.

Behavior is more complicated to measure. Trainees cannot change their behavior until they have an opportunity to do so. Second, it is impossible to predict when a change will occur. In fact change in behavior may occur at any time after the first opportunity, or it may never occur.

Kirkpatrick (1998, pp. 48-56) list seven guidelines for evaluating behavior change and they are:

1. *Use control group if practical.*
2. *Allow time for behavior to change to take place.* Give participants an opportunity to change their behavior. They may or may not have had time to change behavior depending on desired behavior change.
3. *Evaluate both before and after the program if practical.*
4. *Survey or interview persons who know behavior.* Survey and/or interview one or more of the following: trainees, their immediate supervisor, their subordinates, and others who often observe their behavior.
5. *Get 100% response or sampling.*
6. *Repeat the evaluation at appropriate times.* People change their behavior at different opportunities and some maintain the change and others may revert back to old behavior over time. Multiple evaluations will give a more accurate idea of behavior change.
7. *Consider cost versus benefits.* Just with investments, evaluators should compare the cost of evaluating change in behavior with the benefits that could result from the evaluation.

Level 4-Results Results can be defined as the final results that occurred because the participants attended the program. The final results can include increased production, improved quality, decreased costs, reduced frequency and/or severity of accidents, increase sales, reduced turnover, and higher profits. These can be measured easily. If a

program is trying to change the attitudes this is a less tangible to measure. It is difficult if not impossible to measure final results for programs on such topics as leadership, decision making, or managing change. (Kirkpatrick, 1998 pp. 20-23)

Kirkpatrick (1998 pp. 61-64) list six guidelines for evaluating results, they are:

1. *Use a control group if practical.*
2. *Allow time for results to be achieved.* The time between training and application on the job may be different for each individual.
3. *Measure both before and after the program if practical.*
4. *Repeat the measurement at appropriate times.* Each organization must decide how often and when to evaluate. Results can change at any time in either a positive or negative direction.
5. *Consider cost versus benefits.*
6. *Be satisfied with evidence if proof is not possible.*

Literature Review of Adult Education

Evolution of Adult Learning Theory

Torraco informs us that “a theory simply explains what a phenomenon is and how it works (Knowles, Holton, & Swanson 1998, p. 9). Until recently there has been little or no research published about adult learning. “The lack of research in this field is especially surprising in view of the fact that all of the great teachers of ancient times—Confucius and Lao Tse of China, the Hebrew prophets and Jesus in Biblical times, Aristotle, Socrates, and Plato in ancient Greece, and Cicero, Evelid and Quintillian in ancient Rome—were all teachers of adults, not of children” (Knowles, Holton, &

Swanson 1998, p. 35). In the seventh century education turned focus to the education of young males to become priests. The principal mission of teachers was to educate them in the ways of the church and religion. They formed their own set of assumptions about learning and methods of teaching. This mission and learning assumptions developed at this time was later to be coined “pedagogy” (Knowles, Holton & Swanson, 1998).

“Pedagogy means the art of teaching children,” the term is derived from the Greek words “paid,” meaning “child,” and “agogus,” meaning “leader of” (Knowles et al. 1998 pp. 36).”

After World War I, theories of adult education started emerging from around the world. Around 1926, adult education research in the United States got started. Knowles et al. (1998) refers to the work of Thorndike in 1928 that demonstrated that adults could learn. Lindman laid the foundation for a systematic theory about adult learning in his book entitled *The Meaning of Adult Education* in 1926. Knowles et al. (1998) state that in “Lindman’s book several key assumptions about adult learners were made; they are summarized below:

1. Adults are motivated to learn as they experience needs and interests that learning will satisfy; therefore, these are the appropriate starting points for organizing adult learning activities.
2. Adult’s orientation to learning is life-centered; therefore, the appropriate units for organizing adult learning are life situations, not subjects.
3. Experience is the richest resource for adults’ learning therefore the core methodology of adult education is the analysis of experience.

4. Adults have a deep need to be self-directing; therefore, the role of the teacher is to engage in a process of mutual inquiry with them rather than to transmit his or her knowledge to them and evaluate their conformity to it.
5. Individual differences among people increase with age; therefore, adult education must make optimal provision for differences in style, time, place, and pace of learning (p. 40).

In 1949, attempts started to bring together adult education concepts and research findings to create an integrated framework. Such a concept had been evolving in Europe for some time coined andragogy to differentiate the theory from pedagogy (Knowles et al., 1998). “Efforts to formulate a theory that considers all that is known from experience and research about the unique characteristics of adult learners have been underway for more than four decades” (Knowles et al., p. 61)

Pedagogical Model and Andragogical Model

In the pedagogical model making decisions about what to learn, how to learn, when to learn and if it has to be learned is done by the teacher. Knowles et al. (1998) list six assumptions that the pedagogical model is based on and they are as follows:

1. *The need to know.* Learners only need to know that they must learn what the teacher teaches if they want to pass and get promoted; they do not need to know how what they learn will apply to their lives.
2. *The learner’s self-concept.* The teacher’s concept of the learner is that of a dependent personality; therefore, the learner’s self-concept eventually becomes that of a dependent personality.

3. *The role of experience.* The learner's experience is of little worth as resource for learning; the experience that counts is that of the teacher, the textbook writer, and the audio-visual aids producer. Therefore, transmittal techniques (e.g., lectures, assigned readings, etc.) are the backbone of pedagogical methodology.
4. *Readiness to learn.* Learners become ready to learn what the teacher tells them they must learn if they want to pass and get promoted.
5. *Orientation to learning.* Learners have a subject-centered orientation to learning; they see learning as acquiring subject-matter content. Therefore, learning experiences are organized according to the logic of the subject-matter content.
6. *Motivation.* Learners are motivated to learn by external motivators (e.g., grades, the teacher's approval or disapproval, parental pressures). (pp. 62-63)

U.S. adult educators were first exposed to the term andragogy by a Yugoslavian adult educator in 1960. It meant the "art and science of helping adults learn" (Knowles et al., 1998, p.61). Knowles later formulated a theory of adult learning that he coined "andragogy." The term adult can be defined in many ways either by a legal or physiological definition. The key definition according to Knowles is the meaning derived from psychology. The psychologist definition of an adult, is that when an individual becomes an adult psychologically, is when the individual arrives at a self-concept of being responsible for his or her own life, of being self-directing (Knowles et

al., 1998, p. 64). Knowles developed his andragogical model for adult learning and the six assumptions are as follows:

1. *The need to know.* Adults need to know why they need to learn something before undertaking to learn it. Tough found that when adults undertake to learn something on their own they will invest considerable energy in probing into the benefits they will gain from learning it and negative consequences of not learning it. Consequently, one of the new aphorisms in adult education is that the first task of the facilitator of learning is to help learners become aware of the “need to know.” At the very least, facilitators can make an intellectual case for the value of learning in improving the effectiveness of the learners’ performance or the quality of their lives. Even more potent tools for raising the level of awareness of thinned to know are real or simulated experiences in which the learners discover for themselves the gaps between where they are now and where they want to be.
2. *The learners’ self-concept.* Adults have a self-concept of being responsible for their own decisions, for their own lives. Once they have arrived at that self-concept they develop a deep psychological need to be seen by others and treated by others as being capable of self-direction. They resent and resist situations in which they feel others are imposing their wills on them. As adult educators become aware of this problem, they make efforts to create experiences in which adults are helped to make the transition from dependent learner to self-directing learners.

3. *The role of the learners' experiences.* Adults come into an educational activity with both a greater volume and different quality of experience from youths. By virtue of simply having lived longer, they have accumulated more experience than they had as youths. But they also have had a different kind of experience. This difference in quantity and quality of experience has several consequences for adult education.

It assures that in any group of adults there will be a wider range of individual differences than is the case with a group of youths. Any group of adults will be more heterogeneous in terms of background, learning style, motivation, needs, interest and goals than is true of a group of youths. Hence, greater teaching emphasis in adult education is placed on individualization of teaching and learning strategies.

4. *Readiness to learn.* Adults become ready to learn those things they need to know and be able to do in order to cope effectively with their real-life situations. An especially rich source of “readiness to learn” is the developmental tasks associated with moving from one developmental stage to the next. The critical implication of this assumption is the importance of timing learning experiences to coincide with those developmental tasks.

It is not necessary to sit by passively and wait for readiness to develop naturally, however. There are ways to induce readiness through exposure to models of superior performance, career counseling, simulation exercises, and other techniques.

5. *Orientation to learning.* In contrast to children's and youths' subject-centered orientation to learning (at least in school), adults are life-centered (or task-centered or problem-centered) in their orientation to learning. Adults are motivated to learn to the extent that they perceive that learning will help them perform tasks or deal with problems that they confront in their life situations. Furthermore, they learn new knowledge, understandings, skills, values, and attitudes most effectively when they are presented in the context of application to real-life situations.
6. *Motivation.* While adults are responsive to some external motivators (better jobs, promotions, higher salaries, and the like), the most potent motivators are internal pressures (the desire for increased job satisfaction, self-esteem, quality of life, and the like). Tough found in his research that all normal adults are motivated to keep growing and developing, but this motivation is frequently blocked by such barriers as negative self-concept as a student, inaccessibility of opportunities or resources, time constraints, and programs that violate principles of adult learning.

Literature Review of Diffusion and Adoption Theory

Diffusion of innovations is not a new concept; the theory of diffusion of innovations can be traced back to the turn of the century to German-Austrian and British schools in Anthropology. In 1903, Gabriel Tarde a French sociologist was responsible for the development of the S-shaped curve which showed the level of adoption over time (Rogers, 1976). Some new innovations diffuse rapidly creating a steep S-curve; other

innovations have a slower rate of adoption, creating a more gradual slope of the S-curve. Tarde also pioneered the role of opinion leaders in a process he called “imitation.” It was not until 1943 that sociologists Ryan and Gross published a seminal study on diffusion of hybrid seed corn among Iowa farmers was diffusion research was reconceptualized (Rogers, 1976). Ryan and Gross (1943) collected data by personal interviews with all Iowa farmers in two communities. Data collected followed the S-shaped curve when plotted on a cumulative basis over time. Ryan and Gross found that the early adopters traveled to Des Moines more frequently than did the later adopters and were of higher socioeconomic status. First knowledge of hybrid corn for many Iowa farmers came from seed corn salesman, but interpersonal communication with peers was the most frequent channel leading to adoption. Ryan and Gross’s study found that it took nine years from first awareness/knowledge to final adoption indicating that it took a reasonable amount of time for adoption to occur (Rogers, 1976). Since 1943 the study of adoption and diffusion of innovations has rapidly grown in recent years. It has branched into many facets across many disciplines in academia. It has branched into and been studied by researchers in a variety of fields: business and economics, communication, education, agriculture and the health sciences (Table 1). Each of these disciplines pursued diffusion research in its specialized way and, for some time, with out much interchange with the other diffusion research traditions (Rodgers, 1976).

Table 1

The Nine Major Diffusion Research Traditions

Diffusion Research Tradition*	Estimated Percentage of All Diffusion Publication	Typical Innovations Studied	Method of Data Gathering and Analysis	Main Unit of Analysis	Major Types of Findings
Anthropology	4%	Technological ideas (steel ax, horse, water boiling)	Participant and non-participant observation and case study	Tribes or peasant villages	Consequences of innovation; relative success of change agents
Early Sociology		City Manager government, postage stamps, ham radios	Data from secondary sources and statistical analysis	Communities or individuals	S-shaped adopter distribution; characteristics of adopter categories
Rural sociology	20%	Agricultural ideas (weed sprays, hybrid seed, fertilizers)	Survey interviews and statistical analysis	Individual farmers in rural communities	s-shaped adopter distribution; characteristics of adopter categories; perceived attributes of innovations and their rate of adoption; communication channels by stages in the innovation – decision process; characteristics of opinion leaders

Table 1 continued.

Education	8%	Teaching/learning innovations (kindergartens, modern math, programmed instruction, team teaching)	Mailed questionnaires, survey interviews, and statistical analysis	School systems teachers, or administrators	s-shaped adopter distributions; characteristics of adopter categories
Public health and medical sociology	10%	Medical and health ideas (drugs, vaccinations, family-planning methods, AIDS prevention)	Survey interviews and statistical analysis	Individuals or organizations such as hospitals and health departments	Opinion leadership in diffusion; characteristics of adopter categories; communication channels by stages of the innovation decision process
Communications	15%	News events, technological innovations, new communication technologies	Survey interviews and statistical analysis	Individual consumers	Characteristics of adopter categories; opinion leadership in diffusion
Marketing and management	16%	New products (a coffee brand, the touch-tone telephone, clothing fashions; new communication technologies)	Survey interviews and statistical analysis; field experiments	Individual consumers	Characteristics of adopter categories; opinion leadership in diffusion

Table 1 continued.

Geography	4%	Technological innovations	Secondary records and statistical analysis, maps	Individuals and organizations	Role of spatial distance in diffusion
General sociology	9%	A wide variety of ideas	Survey interviews and statistical analysis	Individuals, other units	Characteristics of adopter categories
Other Traditions**	14%	-----	-----	-----	-----
Total	100%				

*The exact number of major research traditions is arbitrary. We chose these because they represent the relatively greatest number of empirical diffusion publications (an exception is the early sociology tradition, which is included because of its influence on certain of the other traditions that developed later).

** Includes general economics, public administration and political science, agricultural economics, psychology, industrial engineering, statistics, and others/unknown.

Source: Rogers, E. M. 2003, Diffusion of Innovations (5th Ed.), pp 44-45.

The Diffusion Process

Rogers (2003, p. 11) defines “diffusion” as the process by which (1) an *innovation* (2) is *communicated* through certain *channels* (3) over *time* (4) among members of a *social system*(pp.11). The four main elements in diffusion of innovations are:

The Innovation

Rogers (2003 p.12) defines an “innovation” as an idea, practice, or object that is perceived as new by an individual or other unit of adoption. Innovations are a new to the adopter regardless of when the innovation was first known about or used. If the idea

is new to the adopter it is an innovation. The adopter not only needed to know about the idea but must decide or be persuaded to adopt. “Innovations” and “technology” can be used interchangeably when talking about diffusion. Technology can be looked at in two ways (1) being the tool that contains the technology (2) is information only. Information only technology is diffused much slower than tool oriented innovation because it cannot be visibly seen. Some innovations are adopted rather quickly, yet others require considerable time for the adoption process to occur. Rogers (2003, p. 15) describes five characteristics of innovations that are perceived by individuals in the adoption process that help explain the different rates of adoption. They are as follows:

1. *Relative advantage* is the degree to which an innovation is perceived as better than the idea it supersedes. The degree of relative advantage may be measured in economic terms, but social prestige factors, convenience, and satisfaction are also important factors. It does not matter so much whether an innovation has a great deal of “objective” advantage. What does matter is whether an individual perceives the innovation as advantages. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be.
2. *Compatibility* is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. An idea that is incompatible with the values and norms of a social system will not be adopted as rapidly as an innovation that is compatible.

3. *Complexity* is the degree to which an innovation is perceived as difficult to understand and use. Some innovations are readily comprehended by most members of a social system; others are more complicated and are adopted more slowly. New ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understanding.
4. *Trialability* is the degree to which an innovation may be experimented with on a limited basis. New ideas that can be tried on the installment plan will generally be adopted more quickly than innovations that are not divisible. Ryan and Gross (1943) found that every one of their Iowa farmer respondents adopted hybrid corn by first trying it on a partial basis. An innovation that is trial able represents less uncertainty to the individual who is considering it for adoption, as it is possible to learn by doing.
5. *Observability* is the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt. Such visibility stimulates peer discussion of a new idea, as the friends and neighbors of an adopter often request innovation evaluation information about it. Less visible products diffuse more slowly.

Rogers (2003) stated that innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, and observability and less complexity will be adopted more rapidly than other innovations.

Communication

Rogers (2003, p. 18) defined “communication” as the process by which participants create and share information with one another in order to reach a mutual understanding. It is a process where one individual communicates or diffuses information that pertains to the new idea. Communication channels are the methods that information about the new idea is passed from one person to another that did not previously have knowledge of the new idea. This is usually accomplished through mass media channels as they are the fastest and most efficient method of communication. But the most efficient method of communication about an innovation is by a person like themselves who has already adopted the innovation.

Time

Time is involved in the innovation-decision process, and there are five steps that Rogers conceptualizes in this process: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation (Rogers, 2003, p. 20).

1. *Knowledge* is gained when an individual learns of the innovation’s existence and gains some understanding of how it functions.
2. *Persuasion* takes place when an individual forms a favorable or unfavorable attitude toward the innovation.
3. *Decision* occurs when an individual engages in activities that lead to a choice to adopt or reject the innovation.
4. *Implementation* takes place when an individual puts an innovation into use.

5. *Confirmation* occurs when an individual seeks reinforcement of an innovation-decision that has already been made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation.

These five steps occur in time-ordered sequence except when an adopter is forced to adopt an innovation because of an authority figure. The length of time for these five steps to occur is referred to as the innovation-decision period. In the innovation decision period adopters can be classified in a social system as to the rate of adoption based on when they adopt and innovation the classifications are: (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards (Rogers, 2003, p. 22).

Social System

A “social system” is defined by Rogers (2003, p. 23) as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal. Members of these units may be individuals, informal groups, organizations, and/or subsystems. Diffusion occurs within a social system. In social setting one will find social structure in which information is passed down or mandated from hierarchical positions to lower subordinate individuals. An exception to formal structured social systems is that there is interpersonal networks linking system members. Social systems generally have what is called “norms,” which Rogers (2003, p. 26) defines as the established behavior patterns for members of a social system. These systems can greatly influence the rate of diffusion and adoption within a social system. Two members of a social system that influence the rate of adoption and diffusion are opinion leaders and change agents.

Rogers defines opinion leaders as the degree to which an individual is able to influence other individuals' attitudes or overt behavior informally in a desired way with relative frequency. A change agent is defined as an individual who influences clients innovation-based decisions in a direction deemed desirable by a change agency. Examples of a change agent in agriculture would be the Extension service.

In agriculture, moving research based information from land grant universities to the field has historically been conducted by extension educational programs (Baro, 1992). "A major function of extension agents is to facilitate the adoption of new ideas and practices and to influence the rate of diffusion and adoption of innovations by their clients" (Rollins, 1993, p. 1). "Extension programs are to cause people to adopt new ideas and practices to increase their effectiveness in their various life roles as a person, parent, worker and citizen" (Brereton, 1972, p. 1). "But getting a new idea adopted, even when it has obvious advantages, is difficult (Roger, 2003, p. 1)." Extension professionals many times are asked to conduct a "one-shot" lesson or program. Motivated participants may make a change in behavior as a result of a one-shot program. Many others may or may not adopt a new behavior. Extension Agents are required to report the number of program participants who have changed their practices (Clements, 1999). "Extension, both at the state and county levels, has been and remains one of the most notable and successful agents for assisting farmers with knowledge and technology adoption" (Hall, Dunkelberger, Ferreira, Prevatt, & Martin, 2003 p. 1)

Riesenberg and Gor (1989) charge that there is too much useful technologies that have been left sitting idle in research centers because of the lack of appropriate

information strategies. The problem doesn't lie in the language or cultural difference but in the method agricultural information is disseminated. Extension is experiencing a reduction in force caused by budget constraints more emphasis is being placed on the use of mass media for information transfer.

Summary

The HTAPI program was evaluated based on guidelines of the program evaluation model devised by Kirkpatrick to see if the program created change in horse theft prevention practices by adult participants of this program. In addition, Rogers' model of diffusion of innovations was followed closely.

CHAPTER III

METHODOLOGY AND PROCEDURES

Purpose of the Study

The primary objective of this study was to determine if participation in the Texas Cooperative Extension (TCE) Horse Theft Awareness and Prevention Initiative (HTAPI) had affected the theft prevention practices of horse owners. The study attempted to gain insight into any relationships that may exist between specific demographic variables and the practices adopted in theft prevention as a result of educational programs.

Kirkpatrick's four step model of program evaluation was used to accomplish this (Kirkpatrick, 1998). This study addressed the first three steps of Kirkpatrick's model. The first step measured was reaction or participant satisfaction. The second measured learning, defined as the extent to which participants change attitudes, improve knowledge, and/or increase a skill as a result of attending the program. The third step measured a change in the behavior of individuals as a result of the educational activity. Kirkpatrick's fourth level is to assess the impact of an educational program. Insufficient resources were available to address this level.

The objective of this study was to measure the educational effectiveness of selected HTAPI educational programs conducted by the TCE. Three levels of program evaluation, satisfaction, knowledge, and change in behavior were examined to assess programmatic quality and effectiveness of the HTAPI (Kirkpatrick, 1998).

Specific objectives that directed the study were:

1. Describe HTAPI participants and the horse theft prevention practices currently used in Texas.
2. Evaluate the educational effectiveness of the HTAPI on the first three of Kirkpatrick's levels, namely, learner satisfaction, knowledge acquired, and change in learner behavior.
3. Examine relationships in the rate of adoption of HTAPI recommended practices and the following demographic variables: gender, age, equine discipline, and size of the investment in the equine business.

Population

Texas is home to more one million horses with an estimated 953,983 horse owners (Gibbs et al., 1998). The HTAPI program is designed to reach as many of these owners as possible, realizing not all horse owners participate in TCE educational programs. The target population for this study was limited to adult horse owners in Texas who participated in TCE horse educational programs. The sample population consisted of adult horse owners who voluntarily participated in TCE educational horse programs that may or may not have included curriculum from the Texas Horse Theft Awareness and Prevention and Awareness Initiative in the spring, summer and fall of 2004. The target population was sampled three times. The first sample, post-only, consisted of participants (n=244) of the TCE Mare Foal, Performance Horse, and Basic Horse Management 101 workshops conducted in February 2004 in College Station, Texas. This group was utilized because existing addresses could be obtained. Participants were mailed a post-test instrument 180 days after the completion of the clinic. TCE had

acquired funding to pay for the postage of mailing the instruments. The instruments, along with a cover letter and a self-addressed envelope, were mailed from the TCE Equine Specialist's office on September 23, 2004. The remaining two samples consisted of pre-only and pre/post sample. The pre-only sample consisted of participants (n=56) of TCE programs in Denton and Montgomery Counties in the fall of 2004. The pre/post sample group consisted of horse owners who participated in (n= 32) TCE horse programs in Hopkins and Polk Counties in the fall of 2004.

Instrumentation

Two instruments were developed to collect data. Separate pre-test and post-test instruments were developed. These instruments were designed using methods and principles described by Gall, Borg, and Gall (1996). Both tests contained questions that relative to the 15 steps to prevent horse theft (Gibbs, 2003). These 15 steps are as follows:

- Step 1 Consider permanently marking horses using one or more methods.
Freeze branding, hot iron branding, microchip, or lip tattoo.
- Step 2 Photograph horses and keep photos current. Include photos of
horse from both sides as close as possible. Photograph the front of the
horse be sure to get a picture of the head, and also take picture of the
rear view.
- Step 3 Establish an organized, easy to find proof of ownership file. That
includes horse registration papers, dated bill of sale, photographs,
written description of horse's unique characteristics.

- Step 4 Record the permanent brand or mark with the county clerk's office in the county where the horse lives.
- Step 5 Secure barns, corrals or pens from the road with a good perimeter fence and well built gates that can be locked.
- Step 6 If you plan to build a barn or corral, locate it away from the road.
- Step 7 Manage pastured horses to make theft more difficult. Never leave halters on pastured horses. Do not feed horses close to the road or pasture gate. Keep pasture gates locked. Check pastured horses regularly and vary the time of your trips to the pasture.
- Step 8 Do not hang halters and lead ropes on stall fronts, corral gate posts, or anywhere in the open.
- Step 9 Permanently identify and lock up expensive tack.
- Step 10 Make horse and livestock trailers inaccessible, hide them from view, and be able to prove ownership. Use commercially available locks to secure the hitch on bumper-pull trailers. Lock hitches on gooseneck trailers as well. Park trailers out of sight. Record VIN# and license plate, and take photographs of the trailer.
- Step 11 Use signs and warning posters where appropriate. No trespassing signs, security signs, and farm and livestock association membership signs.
- Step 12 Install motion sensor lights.

- Step 13 Talk to local law enforcement authorities about the value of dogs and other animals to deter theft.
- Step 14 Keep the activity level up around horses. Vary your routine to make it difficult for potential thieves to know when you will be away. Avoid advertising when you are leaving town.
- Step 15 Establish a horse and facility watch program with other horse owners in your area. Take turns checking each other's horses. Check on group members' horses regularly when they are out of town.

The pre-test was designed to measure the theft prevention practices that horse owners used prior to attending a TCE horse educational program and also to collect demographic information.

The post test was designed to collect demographic information and adoption of horse theft prevention practices based on knowledge gained at TCE educational programs. Questions were designed to measure educational effectiveness of the clinics, including how many participants chose permanent identification of horses. The questions relating to measuring changes in theft prevention practices were asked "As a result of the workshop, did you do any of the following". In addition the post instrument administered to the pre/post sample measured participant's satisfaction with the clinic.

A pilot test of the instrument was conducted to improve internal consistency prior to questionnaires distribution. The pilot study sample was drawn from horse owners in Lamar County, Texas who were not participants of study (Gall, Borg, & Gall, 1996). Test instruments were administered to 18 people at the TJRA rodeo on August 19, 2004

in Lamar County. The sixteen items of interest were checked for internal consistency using Cronbach's alpha and the reliability was found to be ($r=.854$).

Procedures

Experimental Design

The study was a quasi-experimental design following Segers (1998). The Solomon four-group experimental design (Cambell & Stanley, 1963) was used excluding one group as illustrated in Table 1. This study employed a Solomon-Three Group design (Kiboss, Ndirangu, & Wekesa, 2004). The three groups used were a post-test only treatment group (Treatment – Observation), a pre-test only control group (Control – Observation), and a pre-test/post-test treatment group (Observation – Treatment – Observation). No pre-test post-test control group, Group #4 in Table 2, was utilized (Observation – Control – Observation). This study used intact groups and is therefore characterized by a lack of random assignment of individuals to treatment or control groups. This design was used in the educational program evaluation literature (Foster, 2001; Shavelson, 1987).

Table 2

Experimental Design Treatment and Observation Procedures

Group	Procedure	Procedure	Procedure
1		Treatment	Observation
2		Control	Observation
3	Observation	Treatment	Observation
4	Observation	Control	Observation

Pre-Only Data Collection

Dr. Pete Gibbs, State Equine Specialist for the TCE, identified two counties with the highest numbers of educational horse programs annually. Denton and Montgomery Counties were identified, and agents from these counties were contacted for permission and collaboration related to use of instruments at countywide educational horse programs. Programs in these counties were assigned to sample groups based on curriculum that was to be presented at each program.

A list of educational horse programs were obtained from both county agents in Denton and Montgomery counties in Texas. Programs were selected where HTAPI information was not going to be presented by TCE.

On September 23, 2004, Denton County hosted a program on horse theft awareness and prevention being taught by field agents of the Texas and Southwestern Cattle Raisers' Association. Pre/only instruments (Appendix A) were administered to 15 participants prior to the beginning of program by the researcher. Upon further analysis of the completed instruments, three were completed by people who did not currently own horses and two were completed by people who were under the age of 18. The five instruments were pulled from the study, yielding 10 viable instruments.

On November 9, 2004, contact was made with the Montgomery County agent for assistance in administering pre/only instrument in his county. Due to geographical and time constraints, the researcher could not administer an instrument to this sample group. Sample population and protocol were discussed in detail to assure consistency of pre/only sample groups. Pre-only instruments (Appendix A) and a protocol (Appendix

B) were mailed to Montgomery County November 9, 2004. The Montgomery county agent administered the pre-only instrument according to the protocol sent, to participants of the Montgomery Horse Council on November 16, 2004. Forty-six completed instruments were received from Montgomery County via US mail November 23, 2004. Data from both Denton and Montgomery Counties were coded and entered into SPSS for analyzes.

Post-Only Data Collection

Participants of the 2004, Mare Foal, Horsemanship, Horse 101 clinic conducted in College Station, Texas in February 2004 were selected for the post-only sample. Mailing lists of participants were obtained from the TCE State Equine Specialist. The post-only group received the treatment and was mailed a post-instrument (Appendix C) and cover letter (Appendix D) 180 days after the clinic was conducted. Two hundred and forty four post-only instruments and were mailed on September 23, 2004, from TCE Horse Specialist office and 78 completed instruments were returned. After further review of the mailing list, the researcher found 37 duplicate addresses; four received instruments that did not attend the clinic and four participants were from out of the state of Texas. Further, seven addresses were not correct because instruments were returned to sender. Taking into account these oversights, the total population for the post/only sample group was (n=196). Two further attempts were made to contact non-respondents (Dillman, 2002). On October 13, 2004, a post card reminder (Appendix E) with the researchers contact information was sent 20 days after the first instrument was mailed. Then a second instrument along with a self addressed envelope and a cover letter

(Appendix F) were mailed 90 days after the reminder card was sent during the week of February 8, 2005. One hundred fifty post instruments were mailed to non-respondents. As of March 22, 2005, 96 of post/only instruments had been returned for a 49% response rate.

Pre/Post Data Collection

Pre/Post data were collected by administering a pre/test instrument to participants of a Horse Theft Awareness and Prevention Clinic and then mailing a post/test instrument 30 days after the conclusion of the clinic. Two counties were selected based on two criteria. The first criteria were that the counties were geographically dispersed to prevent participants from attending both clinics. Second was that Dr. Pete Gibbs, TCE Equine Specialist was conducting both clinics. The second criterion was important in that it minimized any bias as to the way the information was delivered to participants.

The first pre/post instrument was administered to participants in Hopkins County on October 4, 2004, by the researcher. There were 24 pre/instruments completed and collected. The instruments were administered during the meal prior to the start of the clinic. On November 8, 2004, the post instrument (Appendix G) was mailed to participants of the Sulphur Springs Clinic. Ten post instruments were returned prior to a reminder card being sent. On December 6, 2004, a reminder card was sent to non-respondents that contained the researchers contact information. Then on December 29, 2004, a cover letter, post instrument and a self addressed envelope were mailed to non respondents. Twenty four pre/instruments were completed at the clinic, 16 post tests

were received as of January 21, 2005. A response rate of 66% was obtained from the Sulphur Springs clinic.

The second pre/post sample group was administered on December 2, 2004 in Polk County Texas. The pre/instrument was administered by TCE Equine Specialist prior to the beginning of clinic. Once the instruments had been completed and collected, they were mailed to the researcher. A post/instrument was mailed to participants of Polk County on December 28, 2004. On January 20, 2005, no post/instruments had been received and a reminder card was mailed out to the participants. Three instruments were received as of February 7, 2005. On February 8, 2005, five post instruments were mailed to non respondents in Polk County. From this final mailing, two more instruments were returned one being a viable instrument and one returned. One was a viable instrument and another was omitted from the study do to respondent's age. As of March 22, 2005, five post instruments were returned for a response rate of 63%.

In the initial, exploratory, analysis of the data it was discovered that participants were reporting performing fewer of many of the theft management practices on the post/test than they had indicated on the pre/test. Instruments were reviewed and found that the pre/post test questions were not exactly the same. The post test instrument question contained the added words "as a result of this program." This apparently caused many respondents who were in fact using one of the practices, to report that they were not using it "as a result of this program." For this reason, the pre/post analysis was abandoned and alternate methods of analysis were sought.

Data Analysis

Data were entered into Microsoft Excel. Individuals were assigned to rows and survey questions to columns. In the 21 cases where two instruments were provided from identical individuals, duplicate columns were created and variables were renamed by appending a “2” at the end of the variable name. Statistical tests were conducted using SPSS for Windows Version 13.

To accomplish inferential analysis on the influence of breeds of horses, the data for breeds were recoded from the 44 breeds reported by respondents into the following six: Quarter Horses, Paint, Arabian, Thoroughbred Horses, Appaloosa Horses, and Other. The five breeds accounted for more than 80% of all breeds reported. A summary of the original 44 breeds reported is provided in (Appendix H).

To accomplish inferential analysis on the uses and disciplines of horses, data from uses and disciplines were recoded into two uses either breeding or riding. The 46 reported disciplines were recoded into the following five; western horses, English horses, trail/pleasure, show horses, and other. A table listing the categories summarized into each of these new categories is provided in (Appendix I).

To analyze data for innovativeness, an innovativeness variable was created by taking the sum of the variables that represented the 15 theft prevention practices and number of horses that had been marked by four methods of permanent identification.

Data were analyzed using SPSS 13.0. Descriptive statistics were calculated including frequencies and means and cross tabs as appropriate. Inferential statistics used included the Pearson correlation technique.

Summary

In this study a Solomon four-group experimental research design minus one step was used to acquire data. Three sample groups were used, first was a post/only sample group (n=196) with 96 returned for a 49% response rate, a pre/only sample group (n=56), and a pre/post sample group (n=21) with a response rate of 66%. This yielded a total population of 189 completed surveys.

In analyzing the data, three variables were recoded to assess breeds, disciplines, and innovativeness. There were 44 breeds reported, these were recoded into six categories: Quarter horse, Thoroughbred, Appaloosa, Arabian, Paints, and other breeds. The second variable that was recoded was disciplines. There were 46 reported disciplines for horses. They were recoded into western, English, trail/pleasure, show, breeding, and other. Data were analyzed using descriptive and inferential statistics.

CHAPTER IV

RESEARCH FINDINGS AND DISCUSSION

Descriptive Statistics

In this study a total of 189 people participated in Texas Cooperative Extension Horse theft awareness and prevention programs. Of the 189 total participants 68.8% of the participants were female and the remaining 31.2% were male. The mean age of the participants was 43.3 years of age with a range 18 to 81 year old.

Horse owners who participated in the programs owned an average of 7.4 horses with an average value at \$31,658. The number of horses owned by participants ranged from 0 to 100 head of horses. The average dollar investment in horses ranged from \$0 to \$1,000,000. The five breeds of horse that were most frequently reported were Quarter Horses (n=133), Paints (n=57), Arabians (n=18), Thoroughbreds (n=19), Appaloosa (n=12), and all other breeds (reclassified into a variable labeled other breeds) (n=69).

Owners can own more than one breed. Almost three-fourths (70.4%) of horse owners reported owning a Quarter Horse followed by 36.5% reporting owning breeds that fell into the other breeds category, 30.2% reported owning a Paint, 10.1% reported owning a Thoroughbred, 9.5% reported owning Arabian, and 6.3% reported owning an Appaloosa. These are summarized in Table 3.

Table 3

Percentage of Breeds Owned by Participants.

Breeds	f	% ownership*
Quarter Horse	133	70.4%
Other Breeds	69	36.5%
Paint	57	30.2%
Thoroughbred	19	10.1%
Arabian	18	9.5%
Appaloosa	12	6.3%

* An owner can own more than one breed of horse.

In responding, participants listed 46 disciplines for their horses. These 46 disciplines were separated and recoded into 2 major uses, breeding or riding. Breeding uses were represented by 7 of the 46 disciplines. The 39 remaining disciplines were recoded into the following riding disciplines; western, English, show, trail/ pleasure and other uses. The breeding discipline is defined as a horse owner who uses horses for breeding purposes. Western discipline can be described as people who ride in western attire and or tack in their respective events (examples, team roping, barrel racing, ranch work etc.). The English discipline is described as any event in which the rider is using English attire and or tack (hunter under saddle, jumping, dressage, etc.). Showing is the act of using a horse in a competitive show event. The trail/pleasure category includes any person who rides horses for pleasure or recreation. The greatest number of respondents reported using horses for breeding purposes (n=121) which made up 64% of respondents. The most frequently listed riding discipline reported was western events

(n=65) and represented 34.4% of the disciplines. The second riding discipline was comprised of people who participate in competitive showing (n=44) and was 23.3% of the uses reported. The third riding discipline was other discipline (n=30) representing 15.9% of respondents. The fourth riding discipline reported was English riding events (n=23) representing 12.2%. Fifth was trail/ pleasure (n=22), or 11.6% of the reported disciplines. These data are summarized in Table 4.

Table 4

Uses and Disciplines of Horses Represented by Respondents

Uses	Disciplines	f	%
Breeding	Breeding Purposes	121	64%
Riding	Western Events	65	34.4%
Riding	Competitive Showing	44	23.3%
Riding	Other Use	30	15.9%
Riding	English	23	12.2%
Riding	Trail/Pleasure riding	22	11.6%

* An owner could use horses for more than one use or discipline.

In this study 48.7% of the respondents had horses permanently marked with a freeze brand, fire brand, micro chip, or a lip tattoo. Freeze branding is a process of permanently marking an animal using a brass iron and liquid nitrogen to freeze the hair follicles and cause the hair to return with white hair in the shape of the iron. Fire

branding is using a red hot iron to permanently mark the skin of an animal. Micro chipping is a process in which a small computer chip is inserted into the nuchal ligament of the neck of a horse and the chip can be read with a scanner to reveal the owners number which is logged into a data base that contains owners information. Lip tattooing is a method of permanently marking a horse where a tattoo is placed on the inside of the upper lip of a horse for identification. In this study 32.3% of the participants reported that they owned a horse that was freeze branded. Also 11.6% of the participants had horses that were hot iron branded. Further, 17.5% reported having a horse that with a lip tattoo and 4.2% owned a horse that was permanently marked with a micro-chip. These data are summarized in Table 5.

Table 5

Permanent Marking Prior to Participation in a Clinic

ID Method	% With Horse Permanently Marked
Freeze Branded	32.3%
Lip Tattooed	17.5%
Hot Iron Branded	11.6%
Micro-chipped	4.2%

* Owner could report on more than one horse.

Only 18.5% of owners had a brand or mark recorded with the county clerk's office and 7.9% of these owners had a horse permanently marked with hot brand, freeze brand, micro-chip, or lip tattoo.

Respondents used a combination of theft prevention practices in their operations. The percentages below are out of 189 total respondents. It was found that 88.4% of horse owners who participated in the theft prevention clinics indicated they already had a secure perimeter fence. As a result of the education, 81.5% of the respondents indicated they have created a file that contains information and documentation of ownership of their horse. Further, 75.1% of the participants indicated they had current pictures of their horses. And 64% reported they no longer leave a halter accessible. Only 56.1% of the respondents indicated that they had the recorded the VIN#. Only 55% of horse owners had a guard animal. People who locked tack rooms represented only 50.3% of participants and 42.9% of participants had security lighting at their horse facility. Of the population sampled, 42.3% indicated they had posted signs around installed. Of those who had trailers, only 30.2% locked the tongue of their trailer to help prevent theft and only 29.1% parked their trailer out of view. Further, 22.2% of participants permanently marked tack. The least reported theft prevention practice adopted was the formation of a neighborhood watch (5.3%). This data is summarized in Table 6.

Table 6

Percentage of Theft Prevention Practices Used by Participants Prior to the Educational Program

Practices used	f	% Using Practice
Secure perimeter fence	167	88.4%
File that contains horse information	154	81.5%
Current picture of horse	142	75.1%

Table 6 continued.

Make halter inaccessible	121	64%
Have recorded trailer VIN number	106	56.1%
Guard animal	104	55%
Lock tack room	95	50.3%
Have security lights	81	42.9%
Have posted signs	80	42.3%
Lock tongue of trailer	57	30.2%
Park trailer out of sight	55	29.1%
Mark tack	42	22.2%
Recorded brand with county clerks office	35	18.5%
Have horse permanently marked	15	7.9%
Participate in security watch program	10	5.3%

*Participants could use more than one theft prevention practice.

Correlations Using Demographic Variables

Demographic variables were evaluated for relationships using the Pearson Correlation. Relationships were looked at between gender and age and whether a person had a horse permanently marked prior to the clinic by freeze branding, hot iron branding, micro-chipping or lip tattooed. Gender and age of owners was not significantly related to the use of permanent identification of owner's horses.

The total number of horses owned had a positive correlation with having animals permanently marked prior to clinic ($r=.143$ and $p=.049$). The more horses that a

participant owns, the greater the chance that they had permanently marked their horses prior to attending a clinic.

The total number of horses owned was positively correlated to the use of freeze branding ($r=.671$ and $p<.001$) as a method of permanent identification. Horse owners who had a larger number of horses were more likely to have horses with freeze brands vs. microchips, tattoos or hot iron branding.

In addition, there was a relationship between the total number of horses owned and having horses micro-chipped prior to the clinic with a value ($r=.293$ and $p<.001$). Participants, who owned a greater number of horses, had more horses that were marked with a micro-chip.

The total number of horses owned had a positive relationship with a person having horse's lip tattooed ($r=.683$ and $p<.001$). The greater the number of horses owned by participants the more likely that they owned horse that were permanently marked with a lip tattoo. In summary, the greater number of horses owned the more likely the owners were to have horses permanently marked with a freeze brand, micro-chip, hot iron brand, or a lip tattoo.

Relationships between horse breed and permanent ID prior to attending a clinic were also examined. The owner's of both other breeds ($r=.146$ and $p=.045$) and the Thoroughbreds ($r=.202$ and $p=.005$) were more likely to have horses marked prior to the clinic.

In addition Quarter Horse owners were less likely to have a horse micro-chipped ($r = -.144$ and $p = .048$) than were owners with all other breeds. Thoroughbred horses were correlated with lip tattoos ($r = .302$ and $p = .002$).

Pearson correlations were calculated on the variables of horse disciplines. Disciplines were recoded into the following classifications, breeding horses, western horses, English horses, trail/pleasure horses, show horses and horses used for other purposes. The relationships between disciplines and prior marking, freeze branding, hot iron branding, micro-chip and lip tattoo were analyzed. There was a negative correlation with people who owned horses for breeding purposes and hot iron brands ($r = -.181$ and $p = .013$). Additionally, people who used horses in the western discipline had more horses marked prior to coming to a clinic. And were more likely to have horses with hot iron brands ($r = .202$ and $p = .005$).

People with horses used for English type riding were more likely to have had horses micro chipped than any of the other discipline listed ($r = .149$ and $p = .040$). The data also indicated that owners whose horses fell into the other category had more horses lip tattooed prior to participating in a HTAPI clinic.

Correlations with Other Theft Prevention Practices

Relationships were examined between gender and age and the 15 theft prevention practices by running Pearson's point biserial correlations. Men were more likely than women to have recorded the VIN# to trailers ($r = -.163$ and $p = .032$). The older a person became the less likely they were to lock up tack and related equipment.

No relationship existed between the value of the horse and the 15 theft prevention practices.

Relationships were examined between the 15 theft prevention practices and the 6 most frequently listed uses and riding disciplines which were breeding horses, western horses, English horses, trail/pleasure, show horse, and other use. People who owned horses for breeding purposes were less likely to permanently mark tack than other disciplines ($r=-.159$ and $p=.030$).

People with horses used for western activities were more likely to have security lights around their facility ($r=.168$ and $p=.023$).

A relationship between theft prevention practices and the trail/pleasure discipline was found. People who owned horses for trail/pleasure were less likely to have current pictures of their horses ($r=-.158$ and $p=.033$).

Owners with show horses were negatively correlated ($r= -.169$ and $p=.026$) with recording the horse trailer's VIN#. Additionally, owners with show horses were less likely to leave a halter hanging on the gate after the horse was turned out or placed in a stall ($r=-.197$ and $p= .007$).

A relationship was found between owners reporting other breeds and locking tack room ($r=.159$ and $p=.033$). Quarter Horse owners more likely to record brands with the county clerk's office ($r=.246$ and $p=.001$), and had more of their horses permanently marked ($r=.192$ and $p=.009$). They were less likely to leave halters hanging on gates ($r=.154$ and $p=.036$), and they also reported more secure perimeter fences ($r=.170$ and

$p=.20$). However, Quarter Horse people were less likely to have tack marked ($r=-.159$ and $p=.030$).

Arabian breed ownership was more positively correlated with participation in neighborhood watch programs ($r=.255$ and $p<.001$).

Program Satisfaction

From those 20 respondents who completed the satisfaction question on the survey, 60% indicated they were completely satisfied, 20% were moderately satisfied, and 20% were not satisfied with the information they received during the clinic. These data are summarized in Table 7.

Table 7

Percentage of Participant Satisfaction

Satisfaction	f	% Satisfied
Not satisfied	4	20%
Moderately satisfied	4	20%
Completely satisfied	12	60%

Adoption of 15 Theft Prevention Practices and Permanent Identification

There were 101 respondents who answered the question “as a result of the workshop, did you do any of the following” permanently mark your horse by freeze branding, fire branding, micro-chip, or lip tattoo, or adopt any of the 15 theft prevention practices. Participants who responded to the questions were an average of 44 years old,

and had an average of eight horses. On average these respondents, reported they had \$40,750 invested in horses. People who responded to these questions were able to be analyzed according to the breeds owned and the disciplines in which they used the horses that were recoded into the 6 breed's categories and the 6 discipline categories reported earlier in this study. It was reported that 64.4% of the respondents own Quarter Horses, 30.7% owned Paint, 9.9% owned Arabians, 9.9% owned Thoroughbreds and 8.9% owned Appaloosa's. These data are summarized in Table 8.

Table 8

Frequencies and Percentages of Responses to Theft Prevention Practices Questions by Breed of Horses Owned.

Breeds	f	Percentages of Respnses
Quarter Horse	65	64.4%
Paints	31	30.7%
Arabian	10	9.9%
Thoroughbred	10	9.9%
Appaloosa	9	8.9%

Theft prevention practices were analyzed to determine the percentage of people who responded to changing practices by disciplines. The disciplines were categorized as breeding purposes, western, English, trail/pleasure, showing, and other uses. Horse owned for breeding represented 65.3% of the respondents. In addition, 28.7% reported using horses in the western discipline. Participants who used horses in English disciplines accounted for 16.8%. Trail/pleasure horses were represented 12.9% of the

respondents. Participants who owned horses for the purposes of showing accounted for 29.7% of the responses. And 11.9% of the respondents reported owning horse that from the other use category. These data are summarized in Table 9.

Table 9

Frequencies and Percentages of Responses to Theft Prevention Practices Questions by Disciplines.

Disciplines	f	Percentage of Reponses
Breeding	66	65.3%
Western	29	28.7%
English	17	16.8%
Trail/pleasure	13	12.9%
Show	30	29.7%
Other use	12	11.9%

Responses to the 15 theft prevention questions were analyzed. It was found that 78.2% of the participants indicated they had created a file that contains all horse information. Further, 74.3% of the respondents had taken a current picture of their horses. In addition, 49.5% of the participants had recorded trailer VIN#. Participants who registered brands with the county clerks office was 13.9%. It was found that 46.5% indicated that they know lock their tack room. It was discovered that 24.8% said they park their trailer out of sight and 33.7% also indicated they lock the tongue of their trailer. And 39.6% reported know having posted signs around their facility. Further, 10.9% of the respondents had a horse permanently ID as a result of their participation in

the workshop. A small fraction of the respondents indicated that they participate in a neighborhood watch program was represented by only 10.9%. It was found that 66.3% no longer leave halters hanging on gaits or stall doors and 22.7% have tack marked. Further, it was found that 40.6% of the respondents indicated that they had some type of guard animal around horses and 24.8% had security lighting. But, 90.1% answered that they had a secure perimeter fence with lockable gaits. These data are summarized in Table 10.

Table 10

Adoption of the 15 Theft Prevention Practices Due to Educational Program

Practices	f	%
Lockable perimeter fence	91	90.1%
Horse information file	79	78.2%
Current pictures of horses	75	74.3%
Halter not accessible	67	66.3%
Recorded VIN#	50	49.5%
Locked tack Room	47	46.5%
Security lights	25	24.8%
Placed posted signs	40	39.6%
Locked tongue of trailer	34	33.7%
Parked trailer out of sight	25	24.8%
Tack marked	28	27.7%

Table 10 continued.

Registered brand	14	13.9%
Horses ID	11	10.9%
Neighborhood watch program	6	5.9%

Correlation of Innovativeness with Demographic Variables

A Pearson correlation test was conducted using demographic variables of gender, age, and dollars invested in horses to explore if any correlation existed between these variables and the variable that was recoded for innovativeness and no significant correlation existed.

Breed variables that were recoded into Quarter Horse, Paint, Thoroughbred, Appaloosa, and other breeds were examined for correlation with the variable for innovativeness. No significant correlation was found between breeds owned by participants and innovativeness.

Relationships were examined between disciplines of horses and innovativeness. A positive correlation was found between people who own Quarter Horses and innovativeness ($r=.159$) ($p=.029$). People who own Quarter Horses are more likely to adopt theft prevention practices and one or more of the four methods of permanent identification.

Summary

There were 189 people who participated in this study. This study used descriptive statistics describe the participants of the HTAPI program. In addition the relationship

between demographic variables and permanent identification and the 15 theft prevention practices were examined. Further, disciplines of the animals and breeds were examined to see if there were any correlations that existed in the adoption of theft prevention practices and permanent identification of animals. Data was examined to see if correlation existed between the innovativeness variable created and demographic, breeds, disciplines variables.

Participant satisfaction was measured in the pre/post sample group. It was found that 60% of participants indicated that they were completely satisfied with the information that was received while participating in the HTAPI program. 20% indicated that they were some what satisfied and 20% indicated that they were not satisfied at all with the information presented.

Adoption due to the educational program was measured by using the questions “as a result of the workshop did you do any of the following.” All participants reported adopting one or more of the 15 steps as a result of participation in the HTAPI program.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Research question one was aimed at describing participants and horse theft prevention practices currently used in Texas. The instrument was designed to collect demographic information such as age, gender, dollar value of horses, number of horses owned. The mean age of participants of the HTAPI program was 43.3 years of age. Further, 68.8% of the population was female and the remaining 31.2% being male.

Horse owner's who participated in HTAPI clinic that were surveyed owned 7.4 horses per participant which is double the 3.7 horses owned reported by (Gibbs et al., 1998). Furthermore, horse owners had an average value invested in horses ranging from \$0 to \$1,000,000 which translates into \$31, 658 total invested in horses; they had \$4,336 invested per horse which is considerably higher than the \$2500 value per horse reported by (Gibbs et al., 1998). The five most frequently reported breeds owned by participants were Quarter Horses, Paints, Arabians, Thoroughbreds, Appaloosa, and all other breeds were classified into a variable together. People who owned Quarter Horses represented 70.4% of the horse owners and 29.6% reported owning breeds other than a Quarter Horses.

The most frequent use for horses was for breeding purposes followed by using horses for riding. The largest reported riding discipline was western followed by competitive showing. The third most frequently reported discipline consisted of people who owned horses that did not fall into the four most frequent categories of disciplines.

Horse owners who used horses for the English discipline made up the fourth most reported category. And the least reported riding discipline was made up of horse owners who used horses for trail/pleasure.

Approximately half of the people who completed an instrument had horses that were permanently marked with a freeze brand, fire brand, micro-chip, or a lip tattoo. The most frequently used method of permanent marking a horse was by freeze branding and the least used method was by micro-chipping.

Horse owners used a combination of theft prevention practices in their operations. Almost all horse owners reported having secure perimeter fencing. Over three quarters of the respondents had created a file that contains information and documentation of ownership information and had taken a current picture of their horses. More than half of the horse owners no longer leave halters accessible, have recorded trailer VIN#, have obtained a guard animal, and locked tack room. Slightly less than half of horse owners had security lighting at their horse facility and had posted signs around facilities. Of the horse owners who had trailers approximately one-third locked the tongue of trailers and parked trailer out of view. Further, participants who permanently marked tack and had brands or mark recorded with the county clerk's office represented less than a quarter of horse owners. Less than ten percent of these owners had horses permanently marked with hot brand, freeze brand, micro-chip, or lip tattoo. And the least reported theft prevention practice used was the formation of a neighborhood watch group.

It should be noted that approximately half of the people surveyed had at least some of their horses permanently marked with at least one of the four methods of permanent

identification. In addition, fifty percent of the sample grouped practiced approximately half of the 15 theft prevention practices.

The second research question attempted to evaluate the HTAPI for educational effectiveness based on the first three of Kirkpatrick's levels of evaluation, namely learner satisfaction, knowledge acquired, change in learner behavior.

It was concluded from the sample group that sixty percent of the participants were completely satisfied, twenty percent were moderately satisfied, and the remaining participants were not satisfied with the information that they received from the HTAPI program.

It can be concluded from the data that Quarter Horse owners had the highest rate (64.4%) of response to the 15 theft prevention practices questions. Paint owners followed with a considerably lower rate (30.7%) of response. Arabian and Thoroughbreds responded the same with (9.9%). Appaloosa owner's had the lowest response rate to the questions "As a result of this workshop did you do any of the following", with (8.9%) responding. These response rates were proportional to the number of horses that owner's reported owning.

As a result of participation in the HTAPI program horse owner's adopted some 15 theft prevention practices. Nearly all horse owners have a lockable perimeter fence to keep horses secure. Over three-quarters of the participants had created a file containing horse information and picture of horses. Further, approximately half of horse owners recorded trailer VIN#, stopped leaving halters accessible, and started locking tack room. Not all owners of horses have facilities that lend to the locking up of tack. Less than fifty

percent of horse owners obtained a guard animal. Not all people who own horses own their own facility; many horse owners board horses. Approximately one-third of the horse owners know lock the tongue of trailer, have marked tack, and have placed posted signs around their facilities. In addition, nearly one-quarter of the respondents indicated that they know park trailers out of sight and have installed security lights. Less than fifteen percent of horse owner's reported recording brands and marks with the county clerk's office in which they live. Due to the number of horses that were permanently marked in this study could explain why the numbers of brands recorded were low as well. And only a small portion of the respondents indicated that they had horses marked permanently marked as a result of the workshop. Having an animal permanently marked requires some planning effort on the owner's part to have this done. First, the cost of having animals marked has to be taken into account; secondly the owner must find someone who can mark their animal. Permanent marking of horses is not something that every horse owner can do without some training. Horse owner's who started participating in neighborhood watch programs was represented the smallest change in practices. People who participate in watches must live in same area and must all have horses. People's day to day life schedules greatly influences the time people have to spend in a watch program.

Rogers (2003) states that innovations perceived by individuals as having greater relative advantage, compatibility, trialability, and observability and less complexity will be adopted more rapidly than other innovations.

The third research question was to examine the relationships in the rate of adoption of the HTAPI recommended practices using gender, age, number of horse's owned, equine discipline, and size of investment in the equine business. Gender and age were examined to see if a relationship existed between these two variables and having a horse permanently marked prior to attending a HTAPI program and no relationship existed.

Correlations are reported according to Davis (1971). Gender and age did have a positive correlation with the 15 theft prevention practices. A low correlation existed between men and recording trailer VIN#. Men were more likely to record trailer VIN# than women. Also, a low relationship existed between owner's age and locking tack room. The older a person becomes the less likely they are to lock up tack and related equipment.

The total number of horses owned had a low positive correlation with having a horse permanently marked prior to the clinic. Further, total number of horses owned substantially association with freeze branding. People who owned more horses were more likely to have horses permanently marked with a freeze brand prior to attending a clinic. Owners who owned a large number of horses had a low association with having a horse micro-chipped prior to the clinic. A substantial association existed between the total number of horses owned and having horses lip tattooed prior to clinic.

Relationships existed between breeds of horses and whether they had animals marked prior to the clinic. A low association existed for Participants who owned Thoroughbred horses or horses which fell into the other breeds category and

permanently marked prior to the clinic. These two breed classifications were more likely to have animals permanently marked prior to the clinic than the four other breed categories.

Quarter Horse owners had a low negative relationship with micro-chipping horses. Owners of Quarter Horses are less likely to have a horse micro-chipped. Thoroughbred horses were more likely to have horses marked by a lip tattoo than any other breed.

Correlations existed between horse uses and disciplines and permanently marking horses prior to the clinic. Breeding horses had a low negative association and hot iron branding. A low association also existed with owners who use horses for western riding activities and having horses permanently marked prior to attending a clinic. Western horse owners also had a low association with having horses that were hot iron branded than other disciplines. Owners with horses used for English type riding had a low association with having a horse micro-chipped prior to attending a clinic. People who owned horses in the other discipline had more horses lip tattooed prior to clinic.

Associations were looked at between uses and disciplines and 15 theft prevention practices. People who owned breeding horses had a low negative relationship with permanently marking tack. The western discipline also had a low positive correlation with the 15 theft prevention practices in that they were more likely to have security lights around their place. The trail/pleasure disciplines had a low negative association; trail/pleasure disciplines are less likely to have current pictures of horses. In addition,

show horse disciplines also had a low negative correlation in that they were less likely to leave a halter hanging on the gait when the horse is turned out or stalled, and were less likely to record trailer VIN#.

Relationships also existed for breeds of horses and the 15 theft prevention practices. A low relationship was found in that people who owned horses that fell into the recorded breed of other horses were more likely to have locked tack room than the other five breeds. Quarter Horse owners were more likely to have recorded brand with the county clerk's office and in addition they had more of their horses permanently marked. Further, Quarter Horse owners were less likely to leave halters hanging on gaits and they also had securer perimeter fencing. However Quarter Horse people were less likely to have tack marked. Quarter Horse owners also adopted more of the 15 theft prevention practices and one or more of the permanent identification methods. Further, Quarter Horse owners had a low negative association with marking tack. And Arabian owners were more likely to participate in neighborhood watch programs.

Associations between breeds and 15 thefts prevention practices yielded no statistically significant relationships. All participants had adopted some of the theft prevention practices.

The size of the investment and the 15 theft prevention practices were looked at for relationships that existed. The value of horses had no significant correlation with any of the 15 theft prevention practices. The total number of horses owned the greater the chance that a participant owned a horse that was permanently marked.

Recommendations

Based on the results of this research project, recommendations were formulated in two areas. One area relates to the implementation of future HTAPI clinics. A second area pertains to recommendations for future research related to this study.

Horse Theft Awareness and Prevention Initiative

The following recommendations were developed for future HTAPI programs:

- (1) From the data, forty three year old women represented the largest gender sector in this study. More attention in planning needs to be done to attract a variation of participants.
- (2) Attempts need to be made to address different discipline owners.
- (3) County agents in which the program is conducted should provide information as to the cost of permanent marking and people in the area who are qualified to permanently mark horses.
- (4) Based on information gathered in the study about diffusion of permanent identification of animals and theft prevention practices, objectives for the program should be formulated and a means of conducting a formative evaluation should be employed to continue to improve programs.

Recommendations for Further Research

The following recommendations are for further research as it relates to this study:

- (1) Create a more discriminating method of determining innovativeness based on the adoption of methods of permanent identification and the 15 theft prevention practices.

- (2) Investigate whether geographical location impacts methods of theft prevention practices and permanent methods of horse identification.
- (3) Determine if the effects of educational delivery methods affect the rate of adoption of theft prevention practices and permanent identification of horses.

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APPENDIX A

HORSE THEFT AWARENESS AND PREVENTION SURVEY

2004
Horse Theft Awareness and Prevention Survey

Name _____ Circle: Male Female
 Address _____ Your Age: _____
 City, Town, Zip _____ How many horses do you currently own?
 Phone (____) _____
 E-mail _____ Estimated total value of all horses?
 \$ _____

Have you ever attended a Texas Cooperative Extension Horse Theft Awareness and Prevention clinic or received Horse Theft Awareness and Prevention information from the Texas Cooperative Extension Service? Yes No

In the spaces provided please list the primary breeds of your horses. (Ex. Arabian, Paint, Quarter) and the primary discipline or use of your horse(s)? (Ex. Western, English, Show, Pleasure/Recreational riding, Broodmares, foals)

Breed	Discipline or Use
_____	_____
_____	_____
_____	_____

Are any of your horses permanently marked for identification? Yes No
 If yes, how many are: Freeze Branded _____ Hot Iron Branded _____
 Micro chipped _____ Lip Tattooed _____

Do you practice any of the following management practices?

Have a file that contains all horse information?	Yes	No
Have current pictures of your horses?	Yes	No
Write down the license and VIN #'s of your trailer?	Yes	No
Is your mark or brands recorded with the county clerk's office?	Yes	No
Is your tack locked in your tack room?	Yes	No
Do you parked/kept your trailer out of sight?	Yes	No
Lock tongues or hitches on trailers?	Yes	No
Are no trespassing signs or some other signs posted property?	Yes	No
Are you a member of Cattle Raisers' Association's Horse ID Program?	Yes	No
Are you a member of a Neighborhood Horse and Farm Watch Program?	Yes	No

(Over)

Do you avoid hanging your halters and/or lead ropes on stalls, corral gates or entrances to where horses are kept?	Yes	No
Is your tack permanently marked?	Yes	No
Currently, do you own a watch dog or other animal to deter theft?	Yes	No
Do you have security lights or motion sensor lights around where you keep your horses and tack?	Yes	No
Are your horses secured from the road with a good perimeter fence and well-built gates that can be locked?	Yes	No

Any other changes you've made to minimize theft of horses and equipment?

What are any unanswered questions that you still have about managing horses and horse-related equipment to minimize theft?

Have you ever had a horse or horses stolen? Yes No If yes, how many? ____ When? ____ Was the horse(s) recovered? Yes No

Have you ever had tack or horse-related equipment stolen? Yes No
What and When? _____

Was the tack or equipment ever recovered? Yes No

Permanent Identification is optional for individual horse owners in Texas. If you do not have your horses permanently marked by methods such as microchip or brand, would you tell us why?

THANK YOU! Please mail in the envelope provided.

APPENDIX B

LETTER TO MIKE HEIMER REGARDING DATA COLLECTION

To: Mike Heimer

From: Patt Swaim

Subject: Horse Theft Awareness and Prevention Survey Instrument

Could you please administer the pre-test to the horse council group that we had discussed earlier on the phone?

Protocol for administering survey instrument

Please explain that information from them is needed to gain insight into horse theft prevention and awareness practices that are used by Texas horse owners for the completion of a record of study at Texas A&M. All information collected from this survey will be kept confidential. (Horse owners are all that need to fill out this instrument.)

Please administer this survey instrument at the beginning of the meeting.

Collect the survey instruments once completed.

Place in envelope provided and return as soon as possible.

Please make as many copies of instrument as needed!

Thanks for Your Help!

Patt Swaim

The title of this study is: Diffusion of Texas Cooperative Extension's Horse Theft Awareness and Prevention Initiative. The information you provide is kept confidential on an individual person basis, and will not be shared with anybody. You can elect not to participate in this study by simply not returning the survey instrument. There are no personal discomforts or inconveniences other than completing survey and returning by mail. The information collected will be used in the completion of a dissertation at Texas A&M University. Participation in this research project does not provide any personal benefits to you as the subject.

This research study has been reviewed by Institutional Review Board-Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Research Compliance, and Office of Vice President for Research at (979)845-8585 (mwbuckley@tamu.edu).

APPENDIX C
POST-TEST ONLY INSTRUMENT

TAMU Horse Owner Workshops - 2004
Follow-up Survey - Theft Prevention

Name _____ Circle: Male Female
 Address _____ Your Age: _____
 City, Town, Zip _____ How many horses do you currently own? _____
 Phone (____) _____
 E-mail _____ Estimated total value of all horses? \$ _____

In the spaces provided please list the primary breeds of your horses. (Ex. Arabian, Paint, Quarter) and the primary discipline or use of your horse(s)? (Ex. Western, English, Show, Pleasure/Recreational riding, Broodmares, foals)

Breed	Discipline or Use
_____	_____
_____	_____
_____	_____

At the workshop, did you watch the demonstrations on Permanent Identification of horses such as freeze branding? Yes No

Did you pick up the printed materials on Permanent Id and 15 steps to minimize theft? Yes No

Were any of your horses permanently marked prior to the workshop in February? Yes No

If yes, how many were already: Freeze Branded _____ Hot Iron Branded _____
 Micro chipped _____ Lip Tattooed _____

As a result of the workshop, did you go home and do any of the following?

Have a horse or horses freeze branded? Yes No If yes, how many? _____
 Have a horse or horses hot iron branded? Yes No If yes, how many? _____
 Have a horse micro chipped? Yes No If yes, how many? _____
 Have a horse lip tattooed? Yes No If yes, how many? _____

As a result of the workshop, did you do any of the following?

Make a file that contains all horse information? Yes No
 Take pictures of your horses to keep on hand? Yes No
 Write down the license and VIN #'s of your trailer? Yes No

Record marks or brands with the county clerk's office?	Yes	No
Put locks on tack room doors or start locking up tack?	Yes	No
Change the location of where trailer is parked/kept?	Yes	No
Lock tongues or hitches on trailers?	Yes	No

(Over)

Post no trespassing signs or some other sign?	Yes	No
Join the Cattle Raisers' Association's Horse ID Program	Yes	No
Start a Neighborhood Horse and Farm Watch Program	Yes	No
Do you now avoid hanging your halters and/or lead ropes on stalls, corral gates or entrances to where horses are kept?	Yes	No
Have you permanently marked your tack?	Yes	No
Obtain a watch dog or other animal to deter theft?	Yes	No
Install security or motion sensor lights of some kind?	Yes	No
Are your horses secured from the road with a good Perimeter fence and well-built gates that can be locked?	Yes	No

Any other changes you've made to minimize theft of horses and equipment?

What are any unanswered questions that you still have about managing horses and horse-related equipment to minimize theft?

Have you ever had a horse or horses stolen? Yes No If yes, how many? ____ When? ____ Was the horse(s) recovered? Yes No

Have you ever had tack or horse-related equipment stolen? Yes No
 What and When? _____
 Was the tack or equipment ever recovered? Yes No

Permanent Identification is optional for individual horse owners in Texas. If you have not had one or more of your horses permanently marked by methods such as microchip or brand, would you tell us why?

THANK YOU! Please mail in the envelope provided.

APPENDIX D
DATA COLLECTION COVER LETTER

September 1, 2004

To: All Participants at TAMU Horse Workshops-2004**From:** Patt Swaim
Dr. Pete Gibbs**Subject:** Follow-up Survey

All 375 participants of the 2004 Mare/Foal, Performance Horse and Basic Horse Management 101 Workshops are receiving this follow-up survey. The survey is a part of a graduate student project. **THANK YOU FOR PARTICIPATING!**

Information from you is needed to better understand the practices that Texas horse owners are using to prevent horse theft.

Enclosed you will find a 2 page survey and a stamped return envelope. If you could, please take a few moments to complete the survey and return it in the envelope. If we can answer any questions for you, please contact us.

Thank you, for your time and participation.
Sincerely,

Patt Swaim	Pete Gibbs, Professor, Extension Horse Specialist
Rt 4 Box 156U	Rm. 249 Kleberg TAMU MS 2471
Paris, Texas 75462 (903)737-0424	College Station, TX 77843 979-845-1562
pswaim@paris.cc.tx.us	p-gibbs@tamu.edu

The title of this study is: Diffusion of Texas Cooperative Extension's Horse Theft Awareness and Prevention Initiative. The information you provide is kept confidential on an individual person basis, and will not be shared with anybody. You can elect not to participate in this study by simply not returning the survey instrument. There are no personal discomforts or inconveniences other than completing survey and returning by mail. The information collected will be used in the completion of a dissertation at Texas A&M University. Participation in this research project does not provide any personal benefits to you as the subject.

This research study has been reviewed by Institutional Review Board-Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Research Compliance, Office of Vice President for Research at (979)845-8585 (mwbuckley@tamu.edu).

APPENDIX E
DATA COLLECTION FOLLOW UP LETTER



To: All participants of the Mare/Foal, Performance Horse and Horsemanship 101 clinics

From: Patt Swaim
Dr. Pete Gibbs

You were mailed a survey instrument two weeks ago that dealt with horse theft prevention. Your horse information is vital in the completion of this research project. Please take a few moments and complete and mail the survey instrument in envelope that was provided. If you have lost or have not received the survey please contact me at (903)782-0449 or e-mail me at pswaim@paris.cc.tx.us and I will see that you receive another survey instrument.

Thanks for your participation!

Patt Swaim
Texas A&M Graduate Student

APPENDIX F

DATA COLLECTION SECOND FOLLOW UP LETTER

February 7, 2005

To: All Participants at TAMU Horse Workshops-2004**From:** Patt Swaim
Dr. Pete Gibbs**Subject:** Follow-up Survey

I have tried to contact you two times in the past. Due to unforeseen circumstances you might not have received a survey. Information from you is needed to better understand the practices that Texas horse owners are using to prevent horse theft.

All 375 participants of the 2004 Mare/Foal, Performance Horse and Basic Horse Management 101 Workshops have received this follow-up survey. The survey is a part of a graduate student project. **THANK YOU FOR PARTICIPATING!**

Enclosed you will find a 2 page survey and a stamped return envelope. If you could, please take a few moments to complete the survey and return it in the envelope. If we can answer any questions for you, please contact us.

Thank you, for your time and participation.
Sincerely,

Patt Swaim	Pete Gibbs, Professor, Extension Horse Specialist
Rt 4 Box 156U	Rm. 249 Kleberg TAMU MS 2471
Paris, Texas 75462 (903)737-0424	College Station, TX 77843 979-845-1562
pswaim@paris.cc.tx.us	p-gibbs@tamu.edu

The title of this study is: Diffusion of Texas Cooperative Extension's Horse Theft Awareness and Prevention Initiative. The information you provide is kept confidential on an individual person basis, and will not be shared with anybody. You can elect not to participate in this study by simply not returning the survey instrument. There are no personal discomforts or inconveniences other than completing survey and returning by mail. The information collected will be used in the completion of a dissertation at Texas A&M University. Participation in this research project does not provide any personal benefits to you as the subject.

This research study has been reviewed by Institutional Review Board-Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Research Compliance, Office of Vice President for Research at (979)845-8585 (mw Buckley@tamu.edu).

APPENDIX G
POST TEST INSTRUMENT

Record marks or brands with the county clerk's office?	Yes	No
Put locks on tack room doors or start locking up tack?	Yes	No
Change the location of where trailer is parked/kept?	Yes	No
Lock tongues or hitches on trailers?	Yes	No
Post no trespassing signs or some other sign?	Yes	No
Join the Cattle Raisers' Association's Horse ID Program	Yes	No
Start a Neighborhood Horse and Farm Watch Program	Yes	No
Do you now avoid hanging your halters and/or lead ropes on stalls, corral gates or entrances to where horses are kept?	Yes	No
Have you permanently marked your tack?	Yes	No
Obtain a watch dog or other animal to deter theft?	Yes	No
Install security or motion sensor lights of some kind?	Yes	No
Are your horses secured from the road with a good Perimeter fence and well-built gates that can be locked?	Yes	No

Any other changes you've made to minimize theft of horses and equipment?

What are any unanswered questions that you still have about managing horses and horse-related equipment to minimize theft?

Have you ever had a horse or horses stolen? Yes No If yes, how many? ___ When? ___ Was the horse(s) recovered? Yes No

Have you ever had tack or horse-related equipment stolen? Yes No
What and When?

Was the tack or equipment ever recovered? Yes No

Permanent Identification is optional for individual horse owners in Texas. If you have not had one or more of your horses permanently marked by methods such as microchip or brand, would you tell us why?

_THANK YOU! Please mail in the envelope provided.

APPENDIX H

DATA RECODING SCHEMA FOR BREEDS OF HORSES

Breeds of horses codes that have been recoded

Breeds of Horses	Original Breed variable codes	New coded variable	Breeds of Horses	Original Breed variable codes	New coded variable
Quarter Horse	1	1	Shetland	11	*6
Paint	4	2	Arabian/Quarter	13	*6
Arabian	6	3	Tennessee	14	*6
Thoroughbred	17	4	Clydsdale	15	*6
Appaloosa	12	5	Saddle Horse	16	*6
Other breeds		6	Argentine Tb	18	*6
Percheron	2	*6	Arabian/Paint	19	*6
Saddle bred/Arabian	3	*6	Donkey	20	*6
Andalusian/Lusitano	5	*6	Quarter/Tb	22	*6
Clydsdale/Quarter	7	*6	Breeding Stock Paint	24	*6
Foundation Quarter	8	*6	Icelandic	26	*6
Pinto	9	*6	Miniature	28	*6
Missouri Fox Trotter	10	*6	Irish Sport	30	*6
Irish Sport Horse	21	*6	Warm Blood	32	*6
Morab	23	*6	Hanoverians	34	*6
Paint/Tb	25	*6	Paso Fino	36	*6
Arabian/Peruvian Paso	27	*6	Appendix	38	*6
Cleveland Bays/ Dutch	29	*6	Kentucky Mountain	40	*6
Arabian Cross	31	*6	Miniature	42	*6
Mustang	33	*6	Andalusian	44	*6
Morgans	35	*6			
Belgian	37	*6			
Rocky Mountain	39	*6			
Hanoverian	41	*6			
Racking	43	*6			

* Denotes that the variable has been recoded from original code to “other breeds” variable.

APPENDIX I
DATA RECODING SCHEMA FOR DISCIPLINES

Recoded Variables for Horse Disciplines

Horse Disciplines	Uses	Original codes	Recoded disciplines
Breeding	B	**1	**1
Western	R	**2	**2
English	R	**3	**3
Trail/Pleasure	R	**4	**4
Showing	R	**5	**5
Other	R	**6	**6
Pleasure	R		*4
Broodmare	B	2	*1
Foals	B	3	*1
Dressage	R	4	*3
Cutting	R	5	*2
Driving	R	6	*5
Western	R	7	*2
Pets	R	8	*6
Hunter Jumper	R	28	*3
Rodeo Events	R	31	*2
Play days	R	34	*2
Mounted Police	R	37	*6
Pulling	R	40	*6
Search and Rescue	R	43	*6
Drill Team	R	46	*2
English	R	10	*3
Therapy	R	46	*6
Team penning	R	11	*2
Show	R	12	*5
Stallion	B	13	*1
Barrel racing	R	14	*2
Western pleasure	R	15	*5
Yearling	B	16	*1
Rope	R	17	*2
Ranch work	R	18	*2
Halter	R	29	*5
Lessons	R	32	*6
Clicker training	R	35	*6
Stud	B	38	*1
Tease gelding	B	44	*6
Breeding	B	19	*1

Polo	R	20	*6
Cow horses	R	22	*2
Reining	R	23	*2
Performance	R	24	*6
Roping	R	25	*2
Horse Racing	R	30	*6
Eventing	R	33	*3
Natural Horsemanship	R	36	*6
Parades	R	39	*4
Working Cow horse	R	42	*2
Pulling	R	45	*6

B Denotes animals are used for breeding purposes

R Denotes animals are used for riding purposes

**Denotes coded variables for discipline categories.

* Denotes that disciplines have been recoded into one of the following categories:
breeding, western, English, trail/pleasure, showing and other.

VITA

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