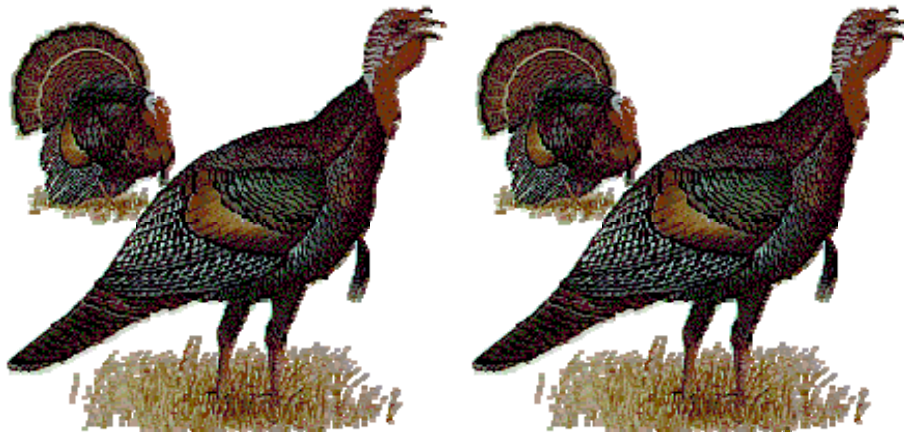


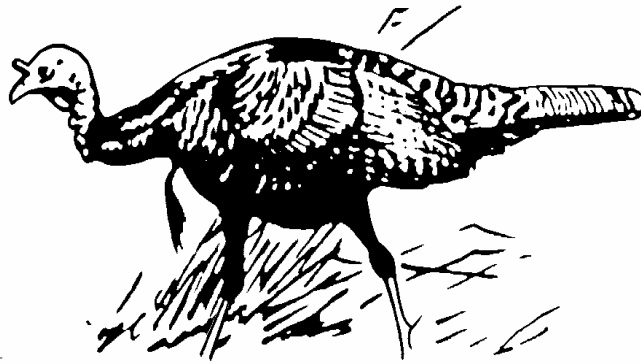
South Dakota Resident Spring Turkey Hunter Opinion Survey Report-2009

HD-5-09.AMS

Larry M. Gigliotti, Ph.D.
Planning Coordinator/Human Dimensions Specialist



Game, Fish & Parks
523 E. Capitol
Pierre, SD 57501



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Executive Summary

SOUTH DAKOTA RESIDENT SPRING TURKEY HUNTER OPINION SURVEY REPORT–2009

Game Fish & Parks / Division of Wildlife Agency Report HD-5-09.AMS

Larry M. Gigliotti, Ph.D.

This survey had two major objectives. One objective was to evaluate the validity of using e-mail and the Internet to survey South Dakota big-game hunters. The benefits of Internet-based surveys are often exaggerated with claims that Internet surveys are always faster, better, cheaper and easier for researchers than conventional survey methods. The fact is that typical online surveys fall short of the scientific rigor required for valid public opinion research. However, Internet-based surveys do have some benefits that can be exploited by first understanding their weaknesses and pitfalls and addressing them in the overall survey design.

This study used e-mail to contact survey participants (sample of South Dakota resident spring turkey hunters) with an Internet-based response survey compared with a traditional mailed survey methodology. Two significant problems were identified with the Internet-based survey: coverage (having a complete list of e-mail addresses) and response rate, which must be addressed in order to meet the standards for a properly implemented scientific survey. Both problems can be addressed by either using a mixed-mode survey (Internet-based survey followed by a mailed survey to people without e-mail addresses and to non-respondents) or using an alternate survey method to collect enough information to adjust the data collected via the Internet for non-response bias and in-complete coverage.

The Internet-based survey was not better than the traditional mailed survey methodology due to coverage and non-response issues. Unfortunately, strategies needed to adjust for the shortcomings of the Internet-based survey results in an overall longer response time for the survey, greatly increases complexity, and may or may not result in cost savings. Generally, the most important reason for selecting an Internet-based survey

methodology is cost savings. The question should not be whether or not to address the problems associated with Internet-based surveys, but whether or not adding an Internet-based component to the overall design can reduce the overall costs of conducting a scientific survey. Most of the Internet-based survey costs are up-front, one-time costs while most of the mailed survey costs are incremental. This means that the larger the sample size the more likely that using a mixed-mode survey design by adding an Internet-based data collection component can result in cost savings. Such a decision must be based on a case-by-case analysis of the estimated costs based on all the appropriate factors involved.

The other objective was to measure spring turkey hunters' attitude towards banning rifles and handguns for the remainder of the East River spring turkey units and the Black Hills spring turkey unit. Slightly more East River resident spring turkey hunters were opposed to restricting rifles/handguns for the remaining East River units that currently allow rifles/handguns than were in favor of the restrictions (Table A). Black Hills resident spring turkey hunters were about evenly split regarding the issue of restricting rifles/handguns for the Black Hills spring turkey season (Table A).

The issue of restricting rifles/handguns for the spring turkey season had been explored in 2000 via a mailed survey. There was no change from 2000 to 2009 in resident spring turkey hunters' attitude towards this issue (Table A). In 2000, non-resident hunters were much more supportive of restrictions on rifles/handguns for spring turkey hunting compared to resident hunters. This information was used to estimate Black Hills spring turkey hunters' attitude (residents and non-residents combined) towards banning rifles/handguns for spring turkey hunting (60% favorable to 40% opposed) (Table B). Non-resident attitude towards this issue does not apply for the 2009 survey of East River spring turkey hunters because there were no non-residents hunting in the units covered by this survey (East River spring turkey units that currently allow rifles/handguns).

Table A. Trends (2000 – 2009): Resident attitudes regarding the issue of restricting rifles and handguns for spring turkey hunting (non-resident data from the 2000 survey added to bottom of table).

Attitude	2000 Survey / Residents		2009 Survey / Residents	
	Prairie ¹	Black Hills	East River	Black Hills
Favor	41.2%	45.7%	40.1%	44.1%
Neutral / No Opinion	13.3%	13.4%	12.8%	12.1%
Oppose	45.5%	40.9%	47.1%	43.8%
Total Number	1,002	868	454	951
Pearson Chi-Sq.: $X^2=0.336$; $df=2$; $p=0.845$ (Prairie 2000 vs. East River 2009)				
Pearson Chi-Sq.: $X^2=1.793$; $df=2$; $p=0.408$ (Black Hills 2000 vs. Black Hills 2009)				
SUMMARIZED RESULTS WITHOUT NEUTRAL/NO OPINION CATEGORY				
FAVOR	47.5%	52.8%	46.0%	50.1%
OPPOSE	52.5%	47.2%	54.0%	49.9%
Total Number	869	752	396	836
Pearson Chi-Sq.: $X^2=0.268$; $df=1$; $p=0.605$ (Prairie 2000 vs. East River 2009)				
Pearson Chi-Sq.: $X^2=1.132$; $df=1$; $p=0.287$ (Black Hills 2000 vs. Black Hills 2009)				
Attitude	2000 Survey / Non-residents			
	Prairie ¹	Black Hills		
Favor	66.1%	66.2%		
Neutral / No Opinion	10.3%	11.4%		
Oppose	23.6%	22.4%		
Total Number	330	482		
SUMMARIZED RESULTS WITHOUT NEUTRAL/NO OPINION CATEGORY				
FAVOR	73.6%	74.7%		
OPPOSE	26.4%	25.3%		
Total Number	296	427		

¹Includes West River and East River spring turkey hunters.

Table B. Trends (2000 – 2009): Black Hills spring turkey hunters' attitudes regarding the issue of restricting rifles and handguns for spring turkey hunting with a proportional estimate for the influence of non-resident hunters for the 2009 data.

Attitude	All Black Hills Spring Turkey Hunters	
	2000 (measured)	2009 (estimated for population)
Favor	53.0%	52.7%
Neutral / No Opinion	12.7%	11.8%
Oppose	34.3%	35.5%
Total Number	1,350	5,474
SUMMARIZED RESULTS WITHOUT NEUTRAL/NO OPINION CATEGORY		
FAVOR	60.7%	59.7%
OPPOSE	39.3%	40.3%
Total Number	1,179	4,827

Table of Contents

Executive Summary	i
Introduction.....	1
<i>Are Internet-based Surveys Faster?</i>	2
<i>Are Internet-based Surveys Better?</i>	2
<i>Are Internet-based Surveys Cheaper?</i>	2
<i>Are Internet-based Surveys Easier to Conduct?</i>	2
Methods.....	3
Study Design & Sample Size.....	3
Questionnaire Design.....	3
Survey Implementation.....	4
Results	4
Returns	4
Survey Method Comparison (E-mail vs. Regular Mail).....	5
Season Comparison (East River vs. Black Hills).....	7
Summary Description of Spring Turkey Hunter Behavior	9
Motivations of Spring Turkey Hunters	11
Importance of Turkey Hunting	11
Attitude towards Banning Rifles & Handguns for East River and Black Hills Spring Turkey Hunting	12
Trends – Spring Turkey Hunting Behavior (2000 – 2009).....	21
Trends – Spring Turkey Hunting Motivations and Attitudes (2000 – 2009).....	21
Discussion.....	22
Validity of Using E-mail/Internet-based Surveys.....	22
Resident Spring Turkey Hunters’ Attitudes towards Equipment Restrictions ...	24
Trends in Spring Turkey Hunting and Attitudes (2000 – 2009).....	25
Literature Cited	26

Figure 1. Relationship between attitude towards hunting equipment restrictions for the East River spring turkey season and attitudes towards factors important to consider in the decision-making process	15
Figure 2. Relationship between attitude towards hunting equipment restrictions for the Black Hills spring turkey season and attitudes towards factors important to consider in the decision-making process	15
Figure 3. Relationship between attitude towards hunting equipment restrictions for the spring turkey season and hunter’s rating of the importance of turkey hunting.....	16

Table 1. Return rates for the 2009 spring turkey hunter survey by survey method.....	5
Table 2. Return rates for the 2009 spring turkey hunter survey by survey and by season	5
Table 3. Summary of comparison by survey method (e-mail vs. regular mail) (2009 Spring Turkey Hunter Survey)	6
Table 4. Summary of comparison by sprint turkey season (East River vs. Black Hills) (2009 Spring Turkey Hunter Survey).....	8
Table 5. Summary of East River and Black Hills spring turkey hunter behavior.....	10
Table 6. Summary of mean importance of 8 motivations and their most important motivation for liking turkey hunting by East River and Black Hills spring turkey hunters.....	11
Table 7. East River and Black Hills spring turkey hunters’ rating of the importance of turkey hunting.....	12
Table 8. Importance of turkey hunting analyzed by hunters’ most important motivation for liking turkey hunting.....	12
Table 9. Summary of how much emphasis should be placed on ethics, conflicts, safety and opportunity in making decisions related to hunting equipment restrictions by East River and Black Hills spring turkey hunters ...	13
Table 10. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons	14
Table 11. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by hunters’ rating of the importance of turkey hunting	16
Table 12. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by motivational hunter type	17
Table 13. Motivations for liking turkey hunting analyzed by attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons.....	18
Table 14. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by preferred hunting equipment.....	18
Table 15. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by gender.....	19

Table 16. Mean age analyzed by attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons19

Table 17. Mean attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by age category20

Table 18. Mean attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by residence type.....20

Table 19. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by residence type.....20

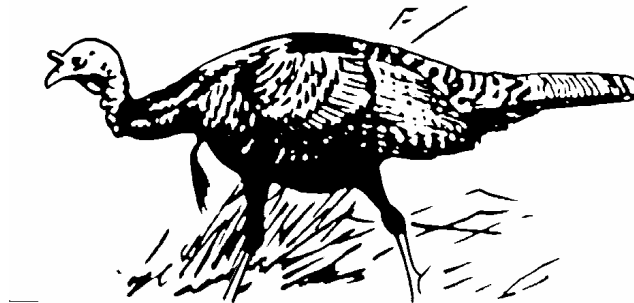
Appendix A–South Dakota Resident Spring Turkey Hunter Survey–2009
Questionnaire and other mailings used in the survey27

Appendix B–TABLES. Survey responses by the four samples and comparisons for both survey methods and seasons40

Appendix C–TABLES. Trends comparing 2000 spring turkey hunter survey data with 2009 spring turkey hunter survey data62

Appendix D–Optional comments provided by resident spring turkey hunters69

Appendix E–Report sent to Survey Participants91





S.D. Resident Spring Turkey Hunter Opinion Survey Report–2009

HD-5-09.AMS

Larry M. Gigliotti, Ph.D.
South Dakota Game, Fish & Parks
Pierre, SD 57501

INTRODUCTION

This survey had two major objectives. The first objective was to measure spring turkey hunters' attitude towards banning rifles and handguns for the remainder of the East River spring turkey units and the Black Hills spring turkey unit. The second objective was to evaluate the validity of using e-mail and the Internet to survey South Dakota big-game hunters.

The issue of banning rifles and handguns was previously explored via a survey of spring turkey hunters in 2000 (Gigliotti, 2000a). The results from this survey cannot be directly compared with the 2000 survey results because the issue was slightly different and there were significant differences in sample selection. The 2000 survey looked at the issues of banning rifles and handguns for all spring turkey hunting (including West River) while the 2009 survey looked at banning rifles and handguns for the remainder of the East River spring turkey units and the Black Hills spring turkey unit as two separate decisions. Also, the 2000 survey included non-resident hunters in the sample while the 2009 survey only collected resident hunter information.

“Research on Internet surveys is still in its infancy” (Schonlau, et al., 2002) and therefore little information is available in which to judge the general value and validity of Internet surveys. The benefits of Internet-based surveys are often exaggerated with claims that Internet surveys are always faster, better, cheaper and easier for researchers than conventional survey methods. According to Mark Duda¹ (*personal communication*), “online surveys fall short of the scientific rigor necessary for scientifically valid public opinion research”. However, Internet-based surveys do come with some benefits that can be exploited by first understanding the weaknesses and pitfalls associated with Internet-based surveys and addressing them in the survey design.

¹ Mark Damian Duda, Executive Director of Responsive Management, Harrisonburg, VA.

Internet-based surveys have a plethora of methodological nuances that can affect the value and validity of survey results and thus must be considered when evaluating Internet surveys.

Are Internet-based Surveys Faster? This will depend on how survey sample participants are initially contacted. This small advantage is only realized when the participant is initially contacted by e-mail (as opposed to initial contact via mail or phone) (Schonlau, et al., 2002) and it helps if the e-mail provides a hot-button link to the Internet survey. To take advantage of this benefit will require a sampling list containing e-mail addresses.

Are Internet-based Surveys Better? The main difficulties with Internet-based surveys are coverage and response rates. Unless these issues can be addressed in the survey design then Duda's assessment of online surveys (mentioned above) is true, i.e., the answer is 'no – Internet-based surveys are not better'. However, if these shortcomings are addressed there are aspects of and situations in which survey research can be improved via Internet-based surveys (Schonlau, et al., 2002 and Dillman, 2007). This research was designed to address this question in relation to surveying South Dakota big-game hunters.

Are Internet-based Surveys Cheaper? The main costs associated with traditional mailed surveys are printing, postage (out and return), data entry and labor. Often labor costs are ignored when the survey is conducted in-house making it appear that Internet-based surveys are cheaper, however, labor costs associated with design, construction and operations of Internet-based surveys can be substantial. The greatest savings with Internet-based surveys occur when survey participants are initially contacted via e-mail. Most of the Internet-based costs are one-time, up-front costs while most of the mailed survey costs are incremental, thus cost-savings associated with Internet-based surveys will increase as sample size increases, the exact point of when the Internet-based survey becomes overall cheaper than a mailed survey will depend on a number of specific factors.

Are Internet-based Surveys Easier to Conduct? Internet-based surveys are much more technically involved than traditional mail or telephone surveys. Also, many types of unanticipated technical problems can develop during implementation. Overtime,

Internet-based surveys will become easier as experience is gained through continued use, but not necessarily becoming any easier than traditional survey methods.

METHODS

Study Design & Sample Selection. The study design consisted of two e-mail samples (East River and Black Hills) and two samples using regular mail (East River and Black Hills). The East River samples only selected hunters from the units that do not currently restrict the use of rifles/handguns (Units: 7A, 12A, 13A, 17A, 19A/B, 36A, and 62A/B). Two samples (East River = 400; Black Hills = 800) from the 2009 resident spring turkey hunter database were randomly selected for the e-mail survey from the licensed hunters that provided an e-mail when they submitted their application. The original study was planning on comparing the results from using an e-mail and internet pathway to collect hunter information with data collected from hunters that did not have (or provide) an e-mail when they applied for their spring turkey license. The study changed when we discovered that we did not have enough hunters without e-mails addresses in the database² to comparing e-mail/internet data collection with information collected using a mailed, paper survey and postage-paid business-reply envelope provided. The two samples using regular mail first selected all the resident hunters that did not have an e-mail address (East River sample: 227, 57% and Black Hills sample: 324, 41%) and then randomly selected enough hunters from the remainder of the database (minus those already selected for the e-mail/internet survey) to reach the target sample size (East River = 400; Black Hills = 800).

Questionnaire Design. Questions 1 through 7 describes the nature of spring turkey hunting in terms of hunting practices and questions 8 and 9 measures some aspects of fall turkey hunting, to explore the relationship between spring and fall turkey hunting. Questions 10 through 12 and 16 through 18 describe spring turkey hunting in terms of motivations and demographic characteristics. The main purpose of these questions was to compare the two survey methods used in this study. Question 13 is a ‘focusing’ question that was used to help respondents to think about the many aspects of the issue before answering the attitude question. Questions 14 and 15 are the main focus of the

² About 83% of the East River hunters and 85% of the Black Hills hunters in the 2009 spring turkey hunter database provided an e-mail address.

survey, measuring attitude towards the issue of banning rifles and handguns for spring turkey hunting for the remainder of the East River units and the Black Hills unit.

Survey Implementation. All licensed spring turkey hunters received a notice sent along with their turkey license that GFP was planning on conducting an opinion survey at the end of this year’s spring turkey season.

The mailed survey was four pages in length and included a mailing address so that it could be mailed out using a window envelope, mailed May 21, 2009 along with a separate cover letter (Appendix A). A postcard reminder was sent May 28, 2009 (Appendix A). A second mailing of the questionnaire and different cover letter was sent on June 12th (Appendix A) with the last day of collection of mail surveys on July 1, 2009.

The Internet survey was designed to look as much alike as possible to the paper questionnaire. An advance e-mail was sent to the e-mail sample on May 26 and the e-mail containing the link to the survey was sent on May 28 (Appendix A). A second e-mail with the survey link was sent on June 12 and an e-mail reminder was sent on June 22. Last day of data collection for the e-mail survey was June 26, 2009.

RESULTS

Returns. The initial sample size for both the e-mail survey and the regular mailed survey was 1,200. We received 531 responses (44%) from the e-mail survey and 902 responses (75%) from the regular mail survey (Table 1). We only had eight (0.7%) undeliverable mailed surveyed, but we had a number of categories of ‘undeliverable’ e-mail surveys starting with 19 (1.6%) initially collected ‘invalid’³ addresses and 56 (4.7%) returned as ‘undeliverable’. Five (0.4%) opted out of the survey.⁴ Eight (0.7%) attempted to respond but had some technical problems⁵ and seven (0.6%) sent us an e-mail stating that they were ‘unable to download the survey’. For these last two categories we don’t know the full extent of the technical problems because some people

³ E-mail addresses are entered by the license applicant. The ‘invalid’ addresses were identified by a program that scanned the addresses and identified any addresses that did not have a proper e-mail format.

⁴ Legitimate Internet surveys require an ‘opt out’ button as part of the initial e-mail contact. This is similar to the opt-out check box that I normally provide with mail surveys. The opt-out response will eliminate follow-ups to these particular non-respondents.

⁵ The Internet survey had two types of question formats. Some people had technical problems with one of the format types in which answers were removed as the attempted to move to the next question.

experiencing these problems may not have taken the time to contact us. Return rates by season were relatively similar (Table 2).

Table 1. Return rates for the 2009 spring turkey hunter survey by survey method.

Parameter	Survey Method	
	E-mail	Regular Mail
Initial Sample Size	1,200	1,200
Undeliverable	56	8
Initial Invalid E-mail Addresses	19	
Partial Problems	8	
Responded → Unable to Download Survey	7	
Opted Out / Blank	5	0
Number of Completed Surveys	531	902
Percent Return	44.3%	75.2%

Table 2. Return rates for the 2009 spring turkey hunter survey by survey and by season.

Parameter	E-mail		Regular Mail	
	Season		Season	
	ER	BH	ER	BH
Initial Sample Size	400	800	400	800
Number of Completed Surveys	168	363	298	604
Percent Return	42.0%	45.4%	74.5%	75.5%

Parameter	Season	
	East River	Black Hills
Initial Sample Size	800	1,600
Number of Completed Surveys	466	967
Percent Return	58.3%	60.0%

Survey Method Comparison (E-mail vs. Regular Mail). I conducted 36 statistical tests comparing the combined e-mail survey with the combined regular mailed survey and found nine (25%) with significant differences (Table 3 and Appendix B–Tables 1–17). The two survey methods provided very similar descriptions of spring and fall turkey hunting with only one small statistical difference: a slightly higher percent of the e-mail sample of spring turkey hunters reported using a facemask or camouflage face-paint compared to the regular mail sample (77.4% vs. 72.6%) (Appendix B–Table 3).

Table 3. Summary of comparison by survey method (e-mail vs. regular mail) (2009 Spring Turkey Hunter Survey).

Variable Measured – Appendix B – Tables	Significant	p-value
Type of Hunting Equipment for Spring Turkey Hunting		
Table 1: Preferred weapon for spring turkey hunting.	NS	0.222
Table 2: Normally wear camouflage while hunting turkeys	NS	0.902
Table 3: Normally wear a facemask or face-paint	Sign.	0.044
Table 4-A: Normally use hen turkey decoy	NS	0.095
Table 4-B: Normally use jake/gobbler turkey decoy	NS	0.252
Table 4-C: Normally use strutting tom turkey decoy	NS	0.213
Table 5: Normally use a portable blind	NS	0.352
Table 6: Normally wear florescent orange while walking	NS	0.548
Table 7A: Normally use florescent orange for dead turkeys	NS	0.322
Fall Turkey Hunting		
Table 8: Normally turkey hunt in the fall	NS	0.637
Table 9: Preferred weapon for spring turkey hunting.	NS	0.155
Motivations and Attitudes Related to Turkey Hunting		
Table 10-A: Motivation – FOOD	NS	0.074
Table 10-B: Motivation – NATURE	NS	0.721
Table 10-C: Motivation – EXCITEMENT	NS	0.500
Table 10-D: Motivation – SOCIAL	NS	0.283
Table 10-E: Motivation – ACCOMPLISHMENT	Sign.	0.002
Table 10-F: Motivation – CHALLENGE	Sign.	0.006
Table 10-G: Motivation – SOLITUDE	Sign.	0.011
Table 10-H: Motivation – ADDITIONAL HUNTING	Sign.	0.033
Table 11: Most important motivation for turkey hunting	NS	0.091
Table 12: Importance of turkey hunting – Frequency	NS	0.428
Table 12: Importance of turkey hunting – Mean	NS	0.534
Table 13: Ethics	Sign.	0.033
Table 13: Conflicts among types of hunters	NS	0.764
Table 13: Safety	Sign.	<0.001
Table 13: Hunting opportunity & Tradition	NS	0.645
Table 14: East River hunter attitude – Frequency	NS	0.197
Table 14: East River hunter attitude – Mean	NS	0.317
Table 14-A: East River hunter attitude – Summary	NS	0.617
Table 15: Black Hills hunter attitude – Frequency	NS	0.655
Table 15: Black Hills hunter attitude – Mean	NS	0.340
Table 15-A: Black Hills hunter attitude – Summary	NS	0.345
Demographic Information		
Table 16-A: Age – Frequency	Sign.	<0.001
Table 16-A: Age – Mean	NS	0.106
Table 16-B: Gender	Sign.	0.015
Table 17: Residence type	NS	0.150

There were six significant differences in motivations and attitudes related to turkey hunting between survey methods (Table 3). Mail survey respondents rated four motivations for liking turkey hunting higher in importance than did the e-mail respondents: accomplishment (4.7% higher), challenge (3.4% higher), solitude (3.6% higher) and having additional hunting opportunity (2.9% higher) (Appendix B – Tables 10-E – 10-H). The mail survey respondents also rated ethics 2.2% higher in importance in making turkey management decisions than did the e-mail respondents while the e-mail sample rated the importance of safety 5.7% higher than did the mail survey respondents (Appendix B – Table 13).

In spite of the differences in some of the ratings for motivations, the two survey methods produced statistically similar motivational types (based on respondents' selection of their most important motivation for liking spring turkey hunting (Appendix B – Table 11). Also in spite of the some differences in the ratings of the importance of factors to consider in making management decisions related to the issue of banning rifles and handguns for spring turkey hunting, the two survey methods measured statistically similar attitudes towards the issue (Appendix B – Tables 14 and 15).

The e-mail survey had higher proportions of respondents in the age range of 20–59 while the mail survey sample has higher proportions of 11–19 year olds and 60–99 year olds (Appendix B – Table 16-A). Also, the response by gender was significantly related to survey method: a higher percent of female turkey hunters responded by mail (5.8%) compared to female response by e-mail (2.8%) (Appendix B – Table 16-B).

Season Comparison (East River vs. Black Hills). I conducted 36 statistical tests comparing the combined East River sample with the combined Black Hills sample and found 17 (47%) with significant differences (Table 4 and Appendix B– Tables 1–17). In addition, two variables were almost significant (Motivations: excitement and social). It was interesting that only two of these 17 significant variables were the same significant variables for the survey method comparison (Motivations: accomplishment and challenge).

Table 4. Summary of comparison by spring turkey season (East River vs. Black Hills) (2009 Spring Turkey Hunter Survey).

Variable Measured – Appendix B – Tables	Significant	p-value
Type of Hunting Equipment for Spring Turkey Hunting		
Table 1: Preferred weapon for spring turkey hunting.	NS	0.595
Table 2: Normally wear camouflage while hunting turkeys	Sign.	0.025
Table 3: Normally wear a facemask or face-paint	NS	0.274
Table 4-A: Normally use hen turkey decoy	Sign.	<0.001
Table 4-B: Normally use jake/gobbler turkey decoy	Sign.	<0.001
Table 4-C: Normally use strutting tom turkey decoy	Sign.	0.001
Table 5: Normally use a portable blind	Sign.	<0.001
Table 6: Normally wear florescent orange while walking	Sign.	0.015
Table 7A: Normally use florescent orange for dead turkeys	NS	0.571
Fall Turkey Hunting		
Table 8: Normally turkey hunt in the fall	Sign.	0.027
Table 9: Preferred weapon for spring turkey hunting.	NS	0.194
Motivations and Attitudes Related to Turkey Hunting		
Table 10-A: Motivation – FOOD	Sign.	<0.001
Table 10-B: Motivation – NATURE	NS	0.714
Table 10-C: Motivation – EXCITEMENT	NS	0.055
Table 10-D: Motivation – SOCIAL	NS	0.055
Table 10-E: Motivation – ACCOMPLISHMENT	Sign.	<0.001
Table 10-F: Motivation – CHALLENGE	Sign.	<0.001
Table 10-G: Motivation – SOLITUDE	NS	0.080
Table 10-H: Motivation – ADDITIONAL HUNTING	NS	0.234
Table 11: Most important motivation for turkey hunting	NS	0.187
Table 12: Importance of turkey hunting – Frequency	NS	0.449
Table 12: Importance of turkey hunting – Mean	Sign.	0.033
Table 13: Ethics	NS	0.092
Table 13: Conflicts among types of hunters	NS	0.302
Table 13: Safety	NS	0.131
Table 13: Hunting opportunity & Tradition	NS	0.724
Table 14: East River hunter attitude – Frequency	Sign.	<0.001
Table 14: East River hunter attitude – Mean	Sign.	0.005
Table 14-A: East River hunter attitude – Summary	Sign.	<0.001
Table 15: Black Hills hunter attitude – Frequency	Sign.	<0.001
Table 15: Black Hills hunter attitude – Mean	NS	0.290
Table 15-A: Black Hills hunter attitude – Summary	Sign.	<0.001
Demographic Information		
Table 16-A: Age – Frequency	NS	0.092
Table 16-A: Age – Mean	NS	0.165
Table 16-B: Gender	NS	0.214
Table 17: Residence type	Sign.	0.004

East River and Black Hills resident spring turkey hunters reported relatively different spring and fall turkey hunting behaviors (Table 4). Black Hills spring turkey hunters reported a 3.4% higher use of camouflage than did East River Spring turkey hunters and Black Hills spring turkey hunters were 6.3% more likely to also hunt turkeys in the fall (Appendix B – Tables 2 and 8). East River spring turkey hunters reported 12.5% higher use of hen decoys, 16.3% higher use of jake/gobbler decoys, 9.8% higher use of strutting tom decoys, 25.4% higher use of portable blinds and 5.3% more likely to wear fluorescent orange while walking to and from where they set up to hunt turkeys compared to Black Hills spring turkey hunters (Appendix B – Tables 4–6).

East River spring turkey hunters rated three motivations for liking turkey hunting higher in importance than did Black Hills spring turkey hunters: food (7.0% higher), accomplishment (9.7% higher) and challenge (5.3% higher) as well as rating the importance of turkey hunting 2.8% higher (Appendix B – Tables 10-A, 10-E, 10-F and 12). Overall, East River spring turkey hunters were more opposed to banning rifles and handguns for spring turkey hunting (Appendix B – Tables 14–15). East River spring turkey hunters were more likely to have a rural residence while Black Hills spring turkey hunters were more likely to have a city residence (Appendix B – Table 17).

Summary Description of Spring Turkey Hunter Behavior. Data is reported for each of the four surveys plus summarized data comparing survey methods and comparing seasons in Appendix B. Because data describing spring and fall turkey hunting behavior was relatively similar between survey methods but relatively different by season it is summarized here for each season (Table 5). Most spring turkey hunters preferred hunting with a shotgun (about 70%) with about 15% preferring a rifle; however, of the spring turkey hunters that also hunt in the fall turkey season the percent preferring a rifle for fall turkey hunting jumps to about 30% (Table 5). Also, most spring turkey hunters wear camouflage and use turkey decoys.

Table 5. Summary of East River and Black Hills spring turkey hunter behavior.

Preferred Method	Spring Turkey Hunting		Fall Turkey Hunting	
	East River	Black Hills	East River	Black Hills
Shotgun	71.1%	72.9%	57.8%	56.9%
Rifle	15.2%	15.4%	28.9%	32.7%
Handgun	0.7%	1.0%	0.0%	1.4%
Muzzleloader	0.4%	0.6%	0.6%	0.9%
Bow/Arrow	12.6%	10.0%	12.7%	8.1%
Total Number	461	960	173	422
Do you normally wear camouflage while hunting turkeys?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			90%	93.4%
Do you normally wear a facemask or use camouflage face-paint while hunting turkeys?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			72.5%	75.3%
Do you normally use hen turkey decoy(s) for hunting turkeys?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			76.9%	64.4%
Do you normally use jake/gobbler turkey decoy(s) for hunting turkeys?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			60.9%	44.6%
Do you normally use strutting tom turkey decoy(s) for hunting turkeys?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			30.7%	20.9%
Do you normally use a portable blind for hunting turkeys?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			44.6%	19.2%
Do you normally wear fluorescent orange while walking to and from your turkey hunting location?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			22.2%	16.9%
Do you normally use fluorescent orange wrap for transporting a dead turkey in the woods?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			23.6%	25.0%
Do you normally turkey hunt in the Fall Turkey Season?				
			Spring Turkey Hunters	
			East River	Black Hills
Percent YES			37.8%	44.1%

Motivations of Spring Turkey Hunters. In spite of a few minor differences, East River and Black Hills spring turkey hunters were relatively similar in the motivations for liking turkey hunting (Table 6). Excitement, nature enjoyment and social interactions were the top three motivations for liking spring turkey hunting.

Table 6. Summary of mean importance of 8 motivations and their most important motivation for liking turkey hunting by East River and Black Hills spring turkey hunters.

Motivation of Spring Turkey Hunters	East River Mean (Rank)	Black Hills Mean (Rank)
Excitement	6.46 (1)	6.36 (2)
Nature	6.41 (2)	6.45 (1)
Social	5.89 (3)	6.05 (3)
Challenge	5.77 (4)	5.40 (5)
Additional Hunting	5.63 (5)	5.52 (4)
Solitude	5.40 (6)	5.22 (6)
Accomplishment	4.74 (7)	4.06 (7)
Food	3.58 (8)	3.09 (8)
Most Important Motivation	East River Percent (Rank)	Black Hills Percent
Excitement	33.8% (1)	26.8% (2)
Nature	27.9% (2)	32.8% (1)
Social	17.4% (3)	19.0% (3)
Challenge	9.6% (4)	9.3% (4)
Solitude	4.6% (5)	3.7% (6)
Additional Hunting	3.9% (6)	4.7% (5)
Food	1.7% (7)	2.5% (7)
Accomplishment	1.1% (8)	1.2% (8)
Total Number	459	953

Importance of Turkey Hunting. Most spring turkey hunters reported that turkey hunting was a ‘very’ or ‘moderately’ important activity (Table 7). Overall, East River hunters had a slightly higher rating of the importance of spring turkey hunting than did Black Hills hunters. The accomplishment and challenge motivational hunter types had the highest importance rating for spring turkey hunting and the social and additional hunting motivational hunter types had the lowest rating of importance (Table 8).

Table 7. East River and Black Hills spring turkey hunters’ rating of the importance of turkey hunting.

Importance rating (scale)	East River	Black Hills
Most Important (4)	6.2%	4.6%
Very Important (3)	43.0%	39.8%
Moderately Important (2)	38.3%	40.0%
Slightly Important (1)	10.1%	12.4%
Not Important (0)	1.7%	2.3%
No Opinion (0)	0.6%	0.8%
Total Number	465	959
Mean	2.41	2.30

Table 8. Importance of turkey hunting analyzed by hunters’ most important motivation for liking turkey hunting.

Most Important Motivation	Mean Importance¹	95% C.I.	Number
Accomplishment	2.69	2.31 – 3.06	16
Challenge	2.58	2.45 – 2.71	133
Excitement	2.46	2.38 – 2.53	410
Food	2.31	1.90 – 2.73	32
Nature	2.27	2.19 – 2.35	440
Solitude	2.23	1.99 – 2.47	56
Social	2.19	2.08 – 2.29	261
Additional Hunting	2.14	1.91 – 2.37	63
Average	2.34	2.29 – 2.38	1,411

ANOVA: $F=5.226$; $df=7/1,403$; $p<0.001$

¹Importance scale ranged from 0=Not Important to 7=Very Important

Attitude towards Banning Rifles & Handguns for East River and Black Hills Spring Turkey Hunting. Survey participants were provided a list and short description of four ‘social’ considerations related to making management decisions regarding hunting equipment restrictions and asked to rate how much emphasis (importance) should be placed on each category (*see survey questionnaire in Appendix A*). East River and Black Hills hunters were very similar in their decision-making model placing most emphasis on safety, but also placing a relatively high emphasis on hunting opportunity and ethics (Table 9).

Regardless of which spring turkey season hunters were licensed to hunt they could provide an opinion on the hunting equipment restrictions issue for both seasons (East River and Black Hills) (Appendix B – Tables 14 –15). Limiting the response to only the season that survey respondents were licensed to hunt showed that East River spring turkey hunters were more opposed to restricting rifles and handguns while Black Hills spring turkey hunters were nearly evenly split regarding the issue (Table 10).

Attitudes towards hunting equipment restrictions were strongly related to attitudes towards factors important to consider in the decision-making process (Figures 1 and 2). The importance of hunting opportunity decreased with an increasingly favorable attitude towards restricting rifles and handguns while the importance of safety and ethics increased with an increasingly favorable attitude towards restricting rifles and handguns.

Attitudes towards hunting equipment restrictions were strongly related to hunters' rating of the importance of turkey hunting (Figure 3 and Table 11). Hunters who rated turkey hunting as their 'most' important recreational activity were much more favorable towards restricting rifles and handguns for spring turkey hunting.

Table 9. Summary of how much emphasis should be placed on **ethics, conflicts, safety** and **opportunity** in making decisions related to hunting equipment restrictions by East River and Black Hills spring turkey hunters. Respondents divided 100 points among the four categories to show how much emphasis should be placed on each category.

Category	East River Mean Weight	Black Hills Mean Weight
Safety	35.9	38.0
Hunting Opportunity	25.9	25.4
Ethics	23.7	21.9
Conflicts	12.3	11.7

Table 10. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting season.

Attitude (scale)	East River Season		Black Hills Season	
	ER only ¹	Complete	BH only ²	Complete
Strongly Favor (3)	24.4%	24.2%	31.0%	26.5%
Moderately Favor (2)	9.9%	9.5%	8.5%	9.3%
Slightly Favor (1)	5.7%	5.7%	4.5%	4.5%
Neutral (0)	12.1%	15.6%	4.5%	13.4%
Slightly Oppose (-1)	4.8%	3.6%	3.7%	3.6%
Moderately Oppose (-2)	8.6%	7.7%	8.2%	8.2%
Strongly Oppose (-3)	33.7%	25.9%	32.0%	29.5%
No Opinion (0)	0.7%	7.8%	1.9%	4.9%
Total Number	454	1,394	951	1,402
Mean	-0.24	0.01	-0.01	-0.06
95% Confidence Interval	-0.47 – -0.02	-0.11 – 0.13	-0.18 – 0.15	-0.19 – 0.07
SUMMARIZED RESULTS				
FAVOR	40.1%	39.4%	44.1%	40.3%
NEUTRAL / NO OPINION	12.8%	23.4%	12.1%	18.3%
OPPOSE	47.1%	37.2%	43.8%	41.4%
SUMMARIZED RESULTS WITHOUT NEUTRAL/NO OPINION CATEGORY				
FAVOR	46.0%	51.5%	50.1%	49.3%
OPPOSE	54.0%	48.5%	49.9%	50.7%
Total Number	396	1,067	836	1,145

¹ER only: results from just the East River licensed hunters in the sample.

²BH only: results from just the Black Hills licensed hunters in the sample.

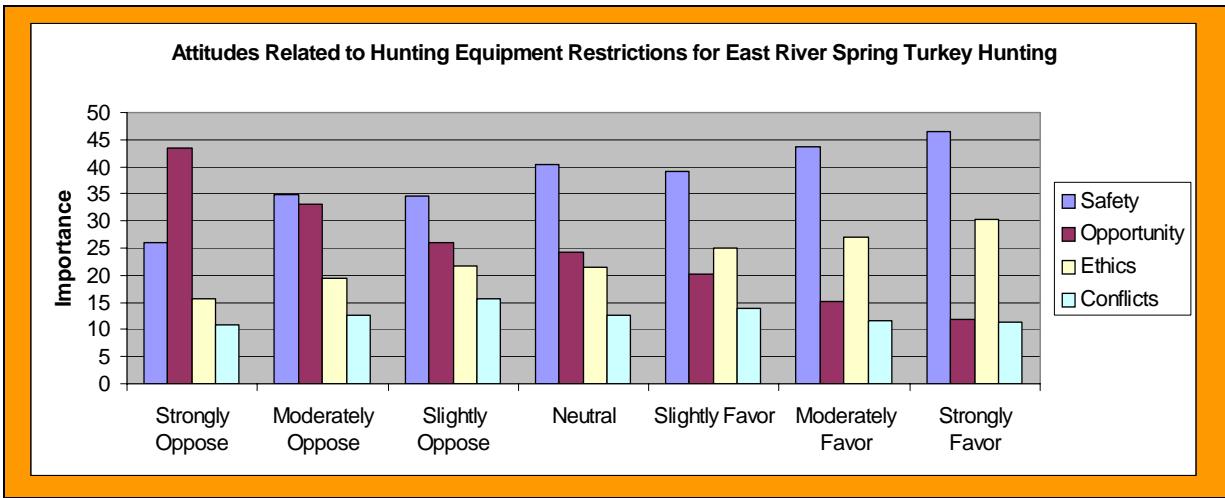


Figure 1. Relationship between attitude towards hunting equipment restrictions for the East River spring turkey season and attitudes towards factors important to consider in the decision-making process.

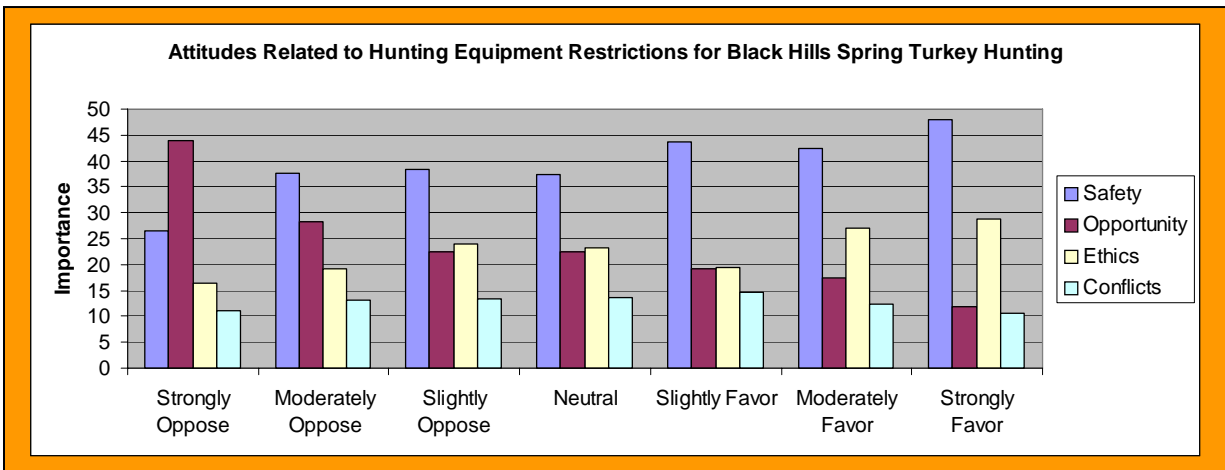


Figure 2. Relationship between attitude towards hunting equipment restrictions for the Black Hills spring turkey season and attitudes towards factors important to consider in the decision-making process.

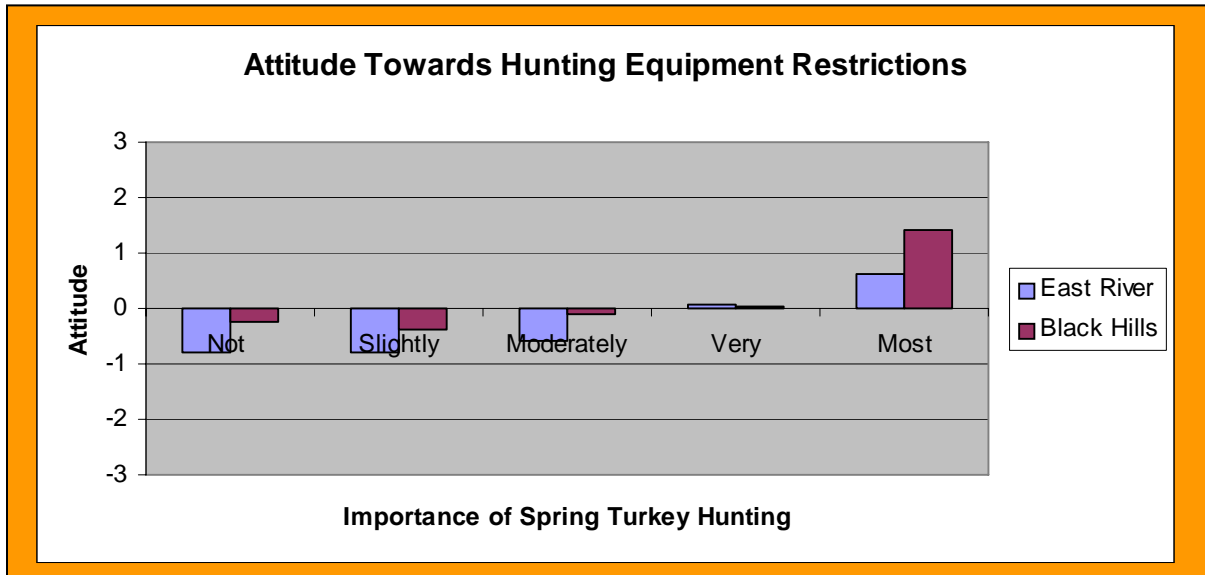


Figure 3. Relationship between attitude towards hunting equipment restrictions for the spring turkey season and hunter’s rating of the importance of turkey hunting.

Table 11. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by hunters’ rating of the importance of turkey hunting.

Importance of Turkey Hunting	East River Attitude Towards Hunting Equipment Restrictions				Black Hills Attitude Towards Hunting Equipment Restrictions			
	Favor	Neutral	Oppose	Number	Favor	Neutral	Oppose	Number
Not	20.0%	30.0%	50.0%	10	23.3%	40.0%	36.7%	30
Slightly	30.4%	8.7%	60.9%	46	39.1%	13.9%	47.0%	115
Moderately	32.9%	13.9%	53.2%	173	41.1%	13.9%	45.0%	382
Very	47.4%	10.7%	41.8%	196	47.4%	7.9%	44.7%	380
Most	55.2%	20.7%	24.1%	29	69.8%	9.3%	20.9%	43
Chi-square	$X^2=21.350$; $df=8$; $p=0.001$				$X^2=44.080$; $df=8$; $p<0.001$			

Attitudes towards hunting equipment restrictions were related to motivational hunter type (Table 12). East River challenge hunters tended to favor banning rifles and handguns for the East River spring turkey season while all other East River motivational hunter types tended to be opposed. Black Hills challenge and excitement hunter types tended to favor banning rifles and handguns for the Black Hills spring turkey season, nature hunters were about neutral, and the other Black Hills motivational hunter types tended to be opposed.

Hunters’ ratings of five of the eight motivations for liking turkey hunting were also significantly related to attitude towards restricting rifles/handguns for spring turkey hunting (Table 13). Those in favor of restricting rifles/guns for spring turkey hunting gave higher importance ratings for challenge, excitement and nature than did those opposed. Those opposed to restricting rifles/guns for spring turkey hunting gave higher importance ratings for additional hunting opportunity and food than did those in favor of the restrictions. Those in favor and those opposed gave statistically similar ratings for the importance of solitude, accomplishment and social motivations.

As would be expected, attitudes towards hunting equipment restrictions were strongly related to preferred hunting equipment (Table 13). Spring turkey hunter preferring the bow and arrow or shotgun tended to favor banning rifles and handguns for the spring turkey hunting while those preferring the rifle, handgun or muzzleloader rifle tended to be opposed.

Table 12. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by motivational hunter type.

Motivational Hunter Type	East River Mean Attitude	Motivational Hunter Type	Black Hills Mean Attitude
Challenge	0.41	Challenge	0.72
Excitement	-0.11	Excitement	0.47
Nature	-0.12	Nature	0.01
Accomplishment	-0.20	Accomplishment	-0.27
Social	-0.51	Solitude	-0.49
Solitude	-0.81	Additional Hunting	-0.56
Additional Hunting	-1.00	Social	-0.59
Food	-2.00	Food	-1.57

Table 13. Motivations for liking turkey hunting analyzed by attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons.

Motivations ¹	East River Season			Black Hills Season		
	Favor	Oppose	p-value	Favor	Oppose	p-value
Challenge	5.79	5.39	<0.001	5.80	5.32	<0.001
Excitement	6.49	6.32	0.002	6.50	6.33	0.002
Nature	6.50	6.37	0.018	6.50	6.38	0.020
Additional Hunting	5.47	5.70	0.021	5.46	5.72	0.007
Food	3.06	3.44	0.003	3.09	3.33	0.050
Solitude	5.41	5.24	0.129	5.38	5.21	0.104
Accomplishment	4.42	4.30	0.328	4.38	4.18	0.098
Social	5.94	6.03	0.350	5.99	6.07	0.326

¹Importance scale ranged from 0=Not Important to 7=Very Important

Table 14. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by preferred hunting equipment.

Preferred Weapon	East River Attitude	Number	Preferred Weapon	Black Hills Attitude	Number
Bow / Arrow	0.31	58	Bow / Arrow	0.57	92
Shotgun	0.15	319	Shotgun	0.50	694
Muzzleloader rifle	-0.50	2	Rifle	-2.48	145
Rifle	-2.53	68	Handgun	-2.60	10
Handgun	-3.00	3	Muzzleloader rifle	-2.83	6

Although a slightly higher percent of female spring turkey hunters opposed banning rifles and handguns for spring turkey hunting the relationship was not significant (possible due to the small sample size of female hunters) (Table 14). Also, age of hunter was not related to attitude in any meaningful way, although there was an overall significant relationship between mean attitude and age category for the Black Hills sample (Tables 15 and 16). The hunters in the 20-29 age category were most opposed while the hunters in the 40-49 age category were most favorable; however, the correlation between attitude and age was not significant (Table 16).

Residence type was strongly related to attitudes towards banning rifles and handguns for spring turkey hunting (Tables 17 and 18). Overall, city residents tended to

favor restrictions on the use of rifles/handguns for spring turkey hunting and rural residents tended to be opposed (Table 17). For the East River spring turkey season, only 24% of the rural resident hunters favored restrictions on the use of rifles/handguns for spring turkey hunting while 49% of the small town resident hunters and 50% of the city resident hunters favored the restrictions (Table 18). For the Black Hills spring turkey season the small town resident hunters were more similar to the rural resident hunters with 40% of both the rural and small town resident hunters favoring restrictions on the use of rifles/handguns for spring turkey hunting and 50% of the city resident hunters favoring the restrictions.

Table 15. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by gender.

Attitude	East River		Black Hills	
	Male	Female	Male	Female
FAVOR	39.2%	40.0%	44.7%	30.8%
NEUTRAL / NO OPINION	13.6%	8.0%	12.2%	12.8%
OPPOSE	47.1%	52.0%	43.1%	56.4%
Total Number	403	25	870	39
Pearson Chi-square	$X^2=0.684$; $df=2$; $p=0.710$		$X^2=3.171$; $df=2$; $p=0.205$	
Mean	-0.28	-0.36	0.02	-0.56
95% CI	-0.52 – -0.04	-1.45 – 0.73	-0.15 – 0.19	-1.38 – 0.25
ANOVA	F=0.025; $df=2/426$; $p=0.874$		F=1.971; $df=2/907$; $p=0.161$	

Table 16. Mean age analyzed by attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons.

Attitude	East River	Black Hills
	Mean Age	Mean Age
FAVOR	46.0	47.1
NEUTRAL / NO OPINION	45.8	46.3
OPPOSE	44.1	45.6
Average	45.1	46.4
ANOVA	F=0.774; $df=2/439$; $p=0.462$	F=0.839; $df=2/906$; $p=0.432$

Table 17. Mean attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by age category.

Age Category	East River	Black Hills
	Mean Attitude (number)	Mean Attitude (number)
11 – 19	-0.86 (28)	-0.02 (58)
20 – 29	-0.66 (61)	-0.60 (114)
30 – 39	0.27 (73)	-0.04 (135)
40 – 49	-0.61 (86)	0.65 (193)
50 – 59	-0.22 (107)	-0.22 (207)
60 – 69	0.34 (44)	0.18 (157)
70 – 79	-0.14 (28)	-0.25 (53)
80 – 99	0.60 (5)	-0.25 (12)
Average	-0.25 (442)	0.02 (929)
ANOVA	F=1.755; df=7/434; p=0.095	F=3.204; df=7/921; p=0.002
Pearson Correlation	0.070	0.039
p-value	p=0.143	P=0.236

Table 18. Mean attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by residence type.

Residence Type	East River			Black Hills		
	Mean	95% CI	Number	Mean	95% CI	Number
RURAL	-1.02	-1.37 – -0.68	169	-0.34	-0.63 – -0.05	314
SMALL TOWN	0.14	-0.27 – 0.54	140	-0.09	-0.40 – 0.21	250
CITY	0.31	-0.10 – 0.72	142	0.31	0.63 – 0.56	385
Average/Total	-0.24	-0.47 – -0.02	451	-0.01	-0.17 – 0.15	949
ANOVA	F=14.631; df=2/448; p<0.001			F=5.858; df=2/946; p=0.003		

Table 19. Attitude regarding the issue of restricting rifles and handguns for the East River and Black Hills spring turkey hunting seasons analyzed by residence type hunting.

Attitude	East River – Residence Type			Black Hills – Residence Type		
	Rural	Small Town	City	Rural	Small Town	City
Favor	24.3%	49.3%	50.0%	40.4%	40.0%	49.9%
Neutral	14.8%	9.3%	13.4%	7.3%	16.8%	12.7%
Oppose	60.9%	41.4%	36.6%	52.2%	43.2%	37.4%
Total	169	140	142	314	250	385
Chi-square	X ² =30.019; df=4; p<0.001			X ² =24.186; df=4; p<0.001		

Trends – Spring Turkey Hunting Behavior (2000 – 2009). The following hunting behavior changes are not a perfect comparison in that the 2000 survey data includes West River and non-resident spring turkey hunters as well as East River and Black Hills (Gigliotti, 2000b) while the 2009 survey data only consists of resident East River and resident Black Hills spring turkey hunters (Appendix C – Tables 1 – 8). The 2000 survey report combined the four sub-samples (resident and non-resident prairie spring turkey hunters and resident and non-resident Black Hills spring turkey hunters) for the description of spring turkey hunters behaviors because the responses were relatively similar, however, caution must be taken before attributing all differences between the 2000 data and the 2009 to a change in trends because some of the differences may be attributable to the different make-up of the samples being compared.

There was no significant difference from 2000 to 2009 in the percent reporting that they wear camouflage (92.1% to 92.3%) and wear a facemask/face-paint (76.9% to 74.4%) while hunting turkeys (Appendix C – Tables 3 and 4). There were significant differences between 2000 and 2009 for all the other behaviors measured. There was an increase in preference in using bow/arrow for spring (4.6% to 10.8%) and fall (5.5% to 9.4%) turkey hunting (Appendix C – Tables 1 and 2). Use of hen turkey decoys (59.0% to 68.5%) and jake/gobbler decoys (41.1% to 49.9%) increased from 2000 to 2009 (Appendix C – Tables 5-A and 5-B). Use of portables blinds by spring turkey hunters appears to have increased by a lot (7.5% to 27.5%) (Appendix C – Table 6). Wearing some fluorescent orange while turkey hunting increased slightly (11.3% to 18.6%) while using fluorescent orange wrap for transporting a dead turkey in the woods decreased slightly (30.0% to 24.5%) from 2000 to 2009 (Appendix X – Tables 7 and 8).

Trends – Spring Turkey Hunting Motivations and Attitudes (2000 – 2009). The comparisons in this section are just between resident spring hunters in both years (Appendix C – Tables 9 – 12) (Gigliotti, 2000a). The main difference in spring turkey hunters' rating of the importance of turkey hunting from 2000 to 2009 was a larger percent of the 2009 sample rating turkey hunting as 'moderately' important (39.5% vs. 29.1%) (Appendix C – Table 9). The resident spring turkey hunters in both years had a similar mean importance rating for turkey hunting.

Spring turkey hunters' rating of eight motivations for liking turkey hunting was measured both years and the mean ratings by season are reported in Appendix C – Table 10. Overall the ratings between years for each season were relatively similar. The largest difference was a 6.9% increase in the importance rating for 'food' from 2000 to 2009 for the Prairie/East River spring turkey hunters.⁶ The 2000 and 2009 resident spring turkey hunters were nearly identical in their selection of their most important reason for liking turkey hunting (Appendix C – Table 11).

The attitude question in the 2000 survey involved restricting rifles/handguns for the entire spring turkey season while the attitude question in the 2009 survey involved two separate questions, one restricting rifles/handguns for the remaining East River spring turkey units and the other restricting rifles/handguns for the Black Hills. However, this difference is minimized because the analysis was conducted separately for each season. Overall, there was almost no change in attitude regarding the issue by either the Prairie/East River or the Black Hills spring turkey hunters (Appendix C – Table 12). This issue remains an almost even split for South Dakota resident spring turkey hunters between favor/oppose regarding the issue of restricting rifles/handguns for spring turkey hunting.

DISCUSSION

Validity of Using E-mail/Internet-based Surveys. The first issue to consider is 'coverage' (having a complete list of e-mail addresses), also referred to as sample validity. An unbiased study requires that every member of the population under study must have an equal chance of participating (Vaske, 2008). In South Dakota, sportsmen's use of the internet to purchase licenses has steadily increased over the past six years and especially so for limited, big-game licenses, which require an application. E-mail addresses are part of the information collected during the on-line application process. About 85% of the 2009 spring turkey hunter database included an e-mail address. This coverage rate is likely to continue to increase to a point where coverage is no longer an issue. A good scientifically designed survey should include methodology to account for the 15% of the population without e-mail addresses because of the potential that this

⁶ Percent change is calculated by dividing the difference in means by 7 (because an 8-point scale '0 – 7' was used).

group has characteristics and attitudes that are very different from the group with e-mail addresses. Although addressing this problem via additional methodological steps increases complexity, response time and costs, the same methodological solutions for the coverage issue can also address the second and larger e-mail validity issue, namely ‘non-response bias’ due to the much lower response rates normally achieved with e-mail surveys.

This study confirmed findings of others (Responsive Management, 2009; Dillman, 2007; and Schonlau, et al., 2002) of lower response rates from e-mail surveys compared to mailed surveys: 44% of the e-mail sample responded compared to 75% for the mail survey. Non-response bias must be assumed in a scientific survey and methodologies employed to allow for adjustment, and especially for a response rate as low as 44%. This can be addressed by using a mixed-mode survey design that starts with an Internet-based survey followed by a mailed (or telephone) survey to all non-respondents. This method could also address the issue of in-complete coverage (i.e., including participants that did not have an e-mail address). An alternate method would treat both the in-complete coverage problem and the non-response problem with the Internet-based survey as an overall non-response problem in which only a small sample of the non-respondents and those not in the original sample due to lacking an e-mail address are contacted via alternate methods in order to obtain enough information to adjust the original data for non-response bias and in-complete coverage.

Accounting for coverage and non-response methodological issues is a must for a properly implemented scientific survey. Any methodology used in conjunction with an Internet-based survey will increase complexity, response time and costs, but the question should not be whether or not to address these issues. The question should be whether or not adding an Internet-based component to the overall design can reduce overall costs of the survey. Most of the Internet survey costs are up-front, one-time costs while most of the mailed survey costs are incremental (i.e., the larger the sample size the more likely that using a mixed-mode survey design by adding an Internet-based data collection mode can result in cost savings). By taking into account the various costs it should be possible to make a rough estimate of when a mixed-mode survey will be more or less expensive than simply using a single, traditional survey method (mail or telephone).

Most of the surveys conducted by the South Dakota Game, Fish and Parks Department are of licensed hunters and anglers. It is likely that coverage problems will decrease overtime as more and more people purchase their license on-line and provide an e-mail address. However, there are two opposing thoughts on the future of the non-response problem associated with Internet-based surveys. One thought is that response rates will increase as people become more comfortable with providing information via the Internet. Another thought is that response rates will decrease as the market becomes flooded with nonscientific surveys and people become so inundated with requests to complete a survey that they begin to routinely ignore e-mail requests to participate in a survey. Non-scientific surveys are easy to implement and very inexpensive to conduct via the Internet and thus are growing exponentially. Unfortunately, most people do not distinguish between scientific surveys and non-scientific surveys. Good scientific surveys could easily become lost in the growing mass of non-scientific surveys on the Internet.

Resident Spring Turkey Hunters' Attitudes towards Equipment Restrictions.

No matter how the statistics are viewed the general conclusion is that this is a very polarized issue (defined by strongly held, opposing opinions) with attitudes fairly evenly split. The easiest comparison is to drop the 'neutral and no opinion' categories and combining the remaining categories into two opposing categories (favor/oppose). Looking at only the East River survey respondents' opinions towards restricting the use of rifles/handguns for the remaining East River spring turkey units then East River resident spring turkey hunters were slightly more opposed. However, if you include the Black Hills hunters that had an opinion on this issue the result is closer to an even split in opinion. Looking at only the Black Hills survey respondents' opinions towards restricting the use of rifles/handguns for the Black Hills spring turkey unit then Black Hills resident spring turkey hunters were evenly split on the issue, and including the East River hunters does not change the results by much.

Hunters favoring a restriction on rifles/handguns for spring turkey hunting tended to emphasize safety and ethical reasons while those opposed tended to downplay the safety aspect and placed more emphasis on opportunity, tradition, personal choice and freedom. For many hunters this issue tends to touch on some core values held by both sides of the issue, which makes this an emotional issue for many.

Other significant findings include the strong relation between hunters' attitude towards this issue and their rating of the importance of turkey hunting. A significant majority of hunters who said that turkey hunting was their 'most' important recreational activity would favor having restrictions on rifles/handguns for spring turkey hunting. Also, a slightly higher percent of hunters rating turkey hunting as a 'very' important recreational activity favored restrictions on rifles/handguns for spring turkey hunting than those opposed. Hunters rating turkey hunting as less important (from moderately important to not important) were progressively more opposed to having restrictions on rifles/handguns for spring turkey hunting.

This research survey also identified how hunters may be affected (positively and negatively) by a decision regarding restrictions of rifles/handguns for spring turkey hunting. Hunters that favored the restrictions gave higher emphasis to the challenge, excitement and nature aspects of turkey hunting while those opposed gave higher importance to food and having additional hunting opportunities (attitude on this issue was not significantly related to hunters' evaluation of the solitude, accomplishment and social aspects of turkey hunting). There is also a rural/urban component with this issue: a higher percent of rural resident hunters were opposed while a higher percent of urban resident hunters favored restrictions on rifles/handguns for spring turkey hunting.

Trends in Spring Turkey Hunting and Attitudes (2000 – 2009). While there appears to be some changes in hunting behaviors from 2000 to 2009, motivations and attitudes of spring turkey hunters appear to be very stable. Resident spring turkey hunters' attitude towards restricting rifles/handguns for spring turkey hunting measured in 2009 was statistically the same as that measured in 2000.

Since motivations and attitudes of resident spring turkey hunters were relatively stable between 2000 and 2009 it might be assumed that non-resident spring turkey hunters' attitudes were also relatively stable during this time period. In 2000, non-resident spring turkey hunters were much more favorable than residents towards restricting rifles/handguns for spring turkey hunting (Gigliotti, 2000a; *data is also summarized in Appendix C – Table 12*). This information can be used to estimate the proportional impact of non-resident attitudes on this issue for the 2009 data. No non-resident licenses were sold in the units from which the East River sample was selected

South Dakota Resident Spring Turkey Hunter Survey Report–2009

Larry M. Gigliotti, Ph.D.

(Units: 7A, 12A, 13A, 17A, 19A/B, 36A, and 62A/B)⁷ so no adjustment in attitude measurement is needed for the East River sample, however 38.8% of the Black Hills spring turkey licenses were sold to non-residents. A non-resident proportional adjustment for attitudes towards restricting rifles/handguns for spring turkey hunting in the Black Hills would result in about 60% favorable to 40% opposed (Appendix C – Table 13).

Appendix D contains optional comments from hunters received by e-mail or included with their returned questionnaire.

Appendix E is a copy of the Report to Survey Participants for the South Dakota Resident Spring Turkey Hunter Survey Report–2009.

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⁷East River Spring Turkey Licenses are not available to non-residents until after the second drawing.