

Responsive Management™



Excerpts from

SPORT SHOOTING PARTICIPATION IN THE UNITED STATES IN 2009

Related to the subject of Modern Sporting Rifles

Conducted for the National Shooting Sports Foundation

by Responsive Management

2010

SPORT SHOOTING PARTICIPATION IN THE UNITED STATES IN 2009

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EXECUTIVE SUMMARY

INTRODUCTION AND METHODOLOGY

This study was conducted for the National Shooting Sports Foundation (NSSF) to determine the national participation rates for target shooting and sport shooting. The study entailed a telephone survey of 8,204 U.S. residents ages 18 years old and older.

For the survey, telephones were selected as the preferred sampling medium because of the almost universal ownership of telephones among U.S. residents. Additionally, telephone surveys, relative to mail or Internet surveys, allow for more scientific sampling and data collection, provide higher quality data, obtain higher response rates, are more timely, and are more cost-effective. Telephone surveys also have fewer negative effects on the environment than do mail surveys because of reduced use of paper and reduced energy consumption for delivering and returning the questionnaires.

Because the main objective of the survey was to determine national participation levels in the shooting sports, a strategy was devised in the survey questioning to avoid bias that would arise from the tendency for those who do *not* shoot to refuse to participate in a survey about shooting. Therefore, three introduction questions were asked that were designed to be of general interest so that non-shooters would be likely to participate in the survey. In this way, shooters and non-shooters would be equally likely to complete the survey.

The sampling methodology entailed random digit dialing, which ensures that all telephone numbers have an equal chance of being called. The sample was purchased from Survey Sampling International (www.surveysampling.com), a company specializing in providing scientific telephone samples. Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday from noon to 5:00 p.m., and Sunday from 5:00 p.m. to 9:00 p.m., local time. The survey was conducted in January and February 2010. Responsive Management obtained a total of 8,204 completed interviews.

The software used for data collection was Questionnaire Programming Language. The analysis of data was performed using Statistical Package for the Social Sciences as well as proprietary software developed by Responsive Management. Throughout this report, findings of the telephone survey are reported at a 95% confidence interval (or higher). For the entire sample of 8,204 U.S. residents, the sampling error is at most plus or minus 1.08 percentage points.

PARTICIPATION IN TARGET AND SPORT SHOOTING

The survey found that 15% of the U.S. population participated in any type of target or sport shooting. This represents 34.4 million people nationwide.

The most popular types are target shooting with a rifle (11% participation rate; 24.0 million participants) and target shooting with a handgun (10% participation rate; 22.2 million participants). These two types were followed by shooting with a modern sporting rifle (4% participation rate; 8.9 million participants), sporting clays (4% participation rate; 8.4 million participants), trap shooting (3% participation rate; 7.6 million participants), and skeet shooting (3% participation rate; 7.0 million participants).

A regional participation breakdown shows the following participation rates: Northeast—11%, which represents 4.7 million participants; South—16%, 13.2 million participants; Midwest—18%, 9.2 million participants; and West—14%, 7.5 million participants.

The survey also asked about the days of participation in each type of target or sport shooting. The tabulation below shows the mean days spent in 2009 in the various shooting activities, among those who participated. Nationally and in each region, shooting with a modern sporting rifle is the activity with the highest mean days of participation. Nationally, this is followed by target shooting with a rifle and target shooting with a handgun. For convenience, the above results are tabulated below, including a breakdown by type of shooting.

Activity	Percent of Overall U.S. Population (ages 18 years and older)	Estimated Total Participants in U.S. (ages 18 years and older)	Mean Days of Participation
National			
Any target shooting or sport shooting	15.1	34,382,566	NA
Target shoot with rifle	10.6	24,045,795	17.3
Target shoot with handgun	9.7	22,169,700	16.7
Trap shoot	3.3	7,582,479	14.8
Skeet shoot	3.1	6,979,680	15.5
Shoot sporting clays	3.7	8,399,989	13.7
Shoot with a modern sporting rifle	3.9	8,868,085	22.9
Northeast Region			
Any target shooting or sport shooting	11.0	4,652,930	NA
Target shoot with rifle	9.0	3,803,092	13.2
Target shoot with handgun	6.6	2,783,692	14.6
Trap shoot	2.1	895,346	13.2
Skeet shoot	1.6	683,042	16.0
Shoot sporting clays	2.1	890,847	18.4
Shoot with a modern sporting rifle	2.2	937,113	20.0
South Region			
Any target shooting or sport shooting	15.9	13,150,116	NA
Target shoot with rifle	10.7	8,847,901	19.9
Target shoot with handgun	10.3	8,535,671	19.7
Trap shoot	2.8	2,302,359	25.9
Skeet shoot	3.6	2,995,315	21.6
Shoot sporting clays	3.9	3,242,454	19.1
Shoot with a modern sporting rifle	4.2	3,486,156	29.6
Midwest Region			
Any target shooting or sport shooting	18.4	9,219,559	NA
Target shoot with rifle	12.7	6,356,633	14.0
Target shoot with handgun	11.7	5,887,462	13.6
Trap shoot	5.5	2,759,134	9.9
Skeet shoot	3.7	1,831,631	9.7
Shoot sporting clays	4.5	2,244,763	8.5
Shoot with a modern sporting rifle	4.1	2,041,366	15.5
West Region			
Any target shooting or sport shooting	14.4	7,515,837	NA
Target shoot with rifle	9.8	5,126,538	20.0
Target shoot with handgun	9.7	5,050,685	16.8
Trap shoot	3.2	1,658,404	9.2
Skeet shoot	2.9	1,521,980	11.1
Shoot sporting clays	3.9	2,047,716	9.6
Shoot with a modern sporting rifle	4.6	2,401,225	21.1

do shooters *not* within that age group, Midwest Region shooters have a higher rate of participation than do shooters *not* living in the Midwest Region, shooters living in a rural area on a farm/ranch or in a small city/town have a higher rate of participation in trap shooting than do shooters *not* living in those areas, and shooters with an education level of a bachelor's degree have a higher rate of participation in trap shooting than do those not in this educational bracket.

There are correlations found in the Shooters Nonparametric Analysis between participation in skeet shooting and several demographic characteristics. Shooters who are from 25 to 44 years old have a higher rate of participation in skeet shooting than do shooters outside of that age bracket, male shooters have a higher rate of participation in skeet shooting than do female shooters, shooters from a rural area on a farm/ranch have a higher rate of participation in skeet shooting than do shooters *not* from that area, and shooters with a graduate or professional degree have a higher rate of participation in skeet shooting than do shooters *not* in this education bracket.

The Shooters Nonparametric Analysis found that shooters who are 18 to 44 years old participate in sporting clays at a higher rate than do shooters older than 44 years old. Also, shooters who live in a rural area on a farm/ranch have a higher rate of participation in sporting clays than do shooters *not* from that type of area, male shooters have a higher rate of participation in sporting clays than do female shooters, and white/Caucasian shooters have a higher rate of participation in sporting clays than do non-white shooters.

Finally, the Shooters Nonparametric Analysis found that male shooters are more likely than are female shooters to participate in shooting a modern sporting rifle. Also, shooters from the West Region have a higher rate of participation in shooting a modern sporting rifle than do shooters *not* from the West Region, shooters with an education level of a bachelor's degree have a higher rate of participation in shooting a modern sporting rifle than do those not in this educational bracket, and shooters who are from 35 to 44 years old have a higher rate of participation in skeet shooting than do shooters outside of that age bracket.

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INTRODUCTION AND METHODOLOGY

This study was conducted for the National Shooting Sports Foundation (NSSF) to determine the national participation rates for target shooting and sport shooting. The study entailed a telephone survey of 8,204 U.S. residents ages 18 years old and older. Specific aspects of the research methodology are discussed below.

For the survey, telephones were selected as the preferred sampling medium because of the almost universal ownership of telephones among U.S. residents (both landlines and cell phones were called in their proper proportions relative to all telephones owned in the general population). Additionally, telephone surveys, relative to mail or Internet surveys, allow for more scientific sampling and data collection, provide higher quality data, obtain higher response rates, are more timely, and are more cost-effective. Telephone surveys also have fewer negative effects on the environment than do mail surveys because of reduced use of paper and reduced energy consumption for delivering and returning the questionnaires.

A central polling site at the Responsive Management office allowed for rigorous quality control over the interviews and data collection. Responsive Management maintains its own in-house telephone interviewing facilities. These facilities are staffed by interviewers with experience conducting computer-assisted telephone interviews on the subjects of natural resources and outdoor recreation.

The telephone survey questionnaire was developed cooperatively by Responsive Management and the National Shooting Sports Foundation. Responsive Management conducted a pre-test of the questionnaire to ensure proper wording, flow, and logic in the survey. Because the main objective of the survey was to determine national participation levels in the shooting sports, a strategy was devised in the survey questioning to avoid bias that would arise from the tendency for those who do *not* shoot to refuse to participate in a survey about shooting. Therefore, three introductory questions were asked that were designed to be of general interest so that non-shooters would be likely to participate in the survey. In this way, shooters and non-shooters would be equally likely to complete the survey. These introductory questions are listed below. After these three questions, survey respondents were then asked about their shooting sport participation.

The three introductory questions were:

- In general, do you think the country is on the right track or the wrong track?
- Did you watch a movie at the theater in 2009, that is, in the past 12 months?
- Did you use a swimming pool in 2009?

To ensure the integrity of the telephone survey data, Responsive Management has interviewers who have been trained according to the standards established by the Council of American Survey Research Organizations. Methods of instruction included lecture and role-playing. The Survey Center Managers and other professional staff conducted project briefings with the interviewers prior to the administration of this survey. Interviewers were instructed on type of study, study goals and objectives, handling of survey questions, interview length, termination points and qualifiers for participation, interviewer instructions within the survey instrument, reading of the survey instrument, skip patterns, and probing and clarifying techniques necessary for specific questions on the survey instrument. The Survey Center Managers and statisticians monitored the

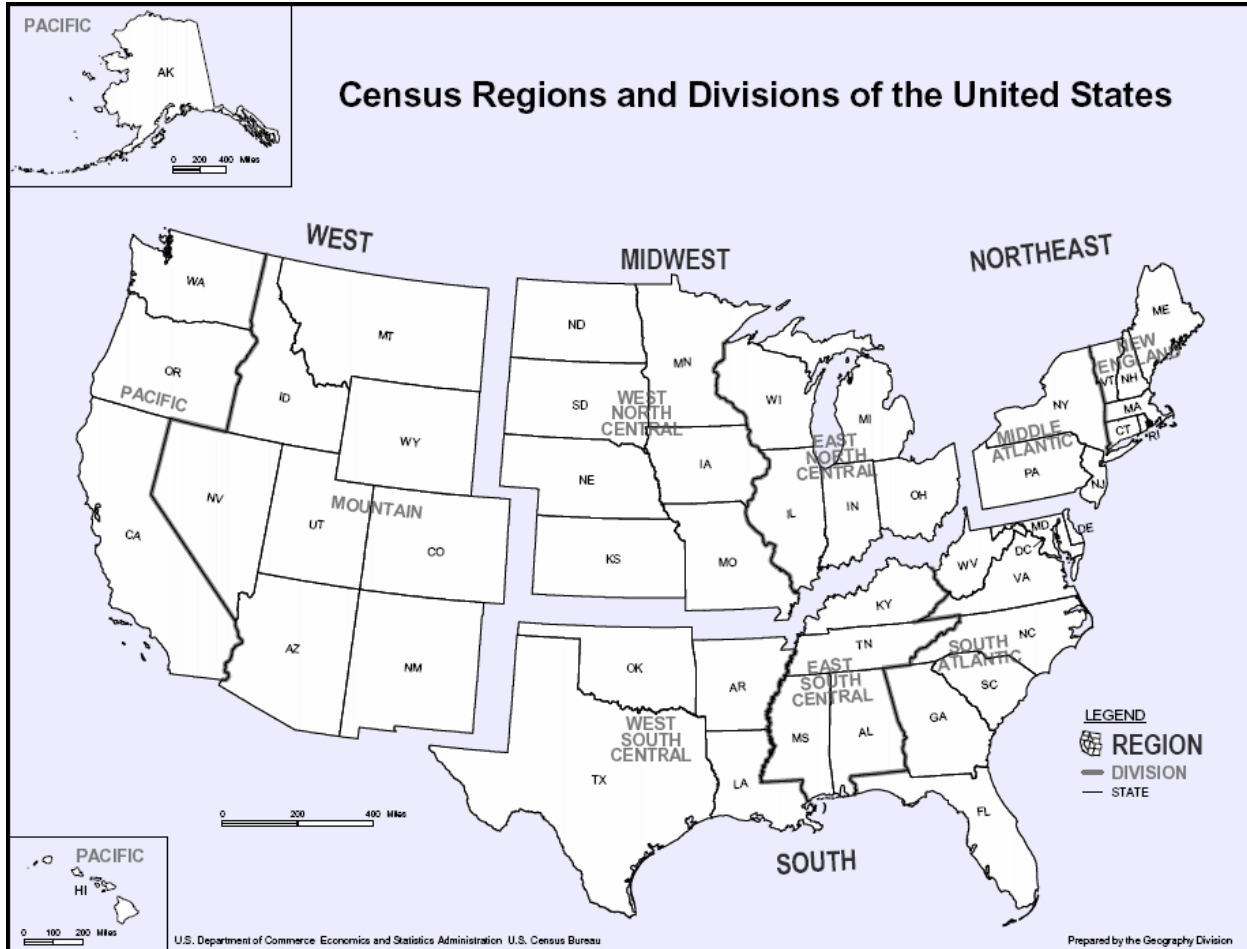
data collection, including monitoring of the actual telephone interviews without the interviewers' knowledge, to evaluate the performance of each interviewer and ensure the integrity of the data. After the surveys were obtained by the interviewers, the Survey Center Managers and/or statisticians checked each completed survey to ensure clarity and completeness.

The sampling methodology entailed random digit dialing, which ensures that all telephone numbers have an equal chance of being called. The sample was purchased from Survey Sampling International (www.surveysampling.com), a company specializing in providing scientific telephone samples. Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday from noon to 5:00 p.m., and Sunday from 5:00 p.m. to 9:00 p.m., local time. A five-callback design was used to maintain the representativeness of the sample, to avoid bias toward people easy to reach by telephone, and to provide an equal opportunity for all to participate. When a respondent could not be reached on the first call, subsequent calls were placed on different days of the week and at different times of the day. The survey was conducted in January and February 2010. Responsive Management obtained a total of 8,204 completed interviews.

The software used for data collection was Questionnaire Programming Language (QPL). The survey data were entered into the computer as each interview was being conducted, eliminating manual data entry after the completion of the survey and the concomitant data entry errors that may occur with manual data entry. The survey instrument was programmed so that QPL branched, coded, and substituted phrases in the survey based on previous responses to ensure the integrity and consistency of the data collection. The analysis of data was performed using Statistical Package for the Social Sciences as well as proprietary software developed by Responsive Management. The results were weighted slightly by age and gender to be exactly proportional to the total population of the United States. Additionally, each state was sampled proportionately to preserve proper distribution within the sample as a whole. The number of completed interviews from each state is shown in the tabulation below:

State of Residence	Completed Interviews	State of Residence	Completed Interviews	State of Residence	Completed Interviews
Alabama	125	Louisiana	118	Ohio	301
Alaska	18	Maine	39	Oklahoma	101
Arizona	179	Maryland	150	Oregon	104
Arkansas	82	Massachusetts	173	Pennsylvania	334
California	983	Michigan	268	Rhode Island	39
Colorado	132	Minnesota	143	South Carolina	120
Connecticut	93	Mississippi	83	South Dakota	22
Delaware	23	Missouri	161	Tennessee	176
Florida	497	Montana	28	Texas	644
Georgia	259	Nebraska	49	Utah	71
Hawaii	35	Nevada	70	Vermont	19
Idaho	42	New Hampshire	39	Virginia	208
Illinois	345	New Jersey	232	Washington	174
Indiana	174	New Mexico	53	West Virginia	56
Iowa	82	New York	514	Wisconsin	151
Kansas	83	North Carolina	244	Wyoming	14
Kentucky	117	North Dakota	21	Washington D.C.	16
				TOTAL	8,204

The states were also grouped into regions to aid in comparison and analysis. Four regions were used that followed U.S. Census Bureau standards. The following map from the U.S. Census Bureau website shows each region:



For this report, nonparametric analyses examined how the various responses related to behavioral, participatory, and demographic characteristics. Responses for selected questions were tested by means of z-scores for relationships to behavioral, participatory, and demographic characteristics.

Two different nonparametric analyses were conducted. The first looked at the entire sample of 8,204 respondents—both shooters *and* non-shooters—to explore the correlations in responses among everyone in the survey. (Hereinafter, this first nonparametric analysis will be referred to as the Overall Nonparametric Analysis.) The second nonparametric analysis was conducted just among the 989 target and sport shooters to explore correlations within that select group. (Hereinafter, this second nonparametric analysis will be referred to as the Shooters Nonparametric Analysis.)

DEMOGRAPHIC MAKEUP OF SHOOTERS

Shooters are predominantly rural or from a small city/town. A majority of them do not have a bachelor's degree (although some of that majority have an associate's degree or trade school degree). The overwhelming majority of shooters are white. Their ages are widely distributed. They are predominantly male.

The nonparametric analyses conducted for this study examined how some responses to questions on the survey correlated to other responses. An obvious one is that those who participate in shooting (i.e., answering "yes" to the shooting participation question) are correlated to being male (i.e., being identified as male on the gender question in the survey)—in other words, those two responses to survey questions are positively correlated. To put this simply, among the entire sample overall, males participate in shooting at a higher rate than do females.

There were two nonparametric analyses conducted. The first was conducted on the overall sample, which includes shooters *and* non-shooters. This is referred to as the Overall Nonparametric Analysis. The second nonparametric analysis was conducted on a smaller sample: just the shooters. This is referred to as the Shooters Nonparametric Analysis. This latter analysis examines the responses that are correlated to other responses just among the pool of shooters. (The methodology in the body of the report fully explains how nonparametric analyses are conducted and how to interpret them.)

The Overall Nonparametric Analysis suggests that males are more likely than are females to participate in shooting. It also shows that people who live in the Midwest Region participate at a higher rate than do people who do *not* live there. Furthermore, compared to those *not* in the given age groups, two age groups are associated with higher participation rates: people younger than 35 and people from 45 to 54 years old.

The Shooters Nonparametric Analysis suggests that male shooters are more likely than are female shooters to target shoot with a rifle. The analysis also suggests that white/Caucasian shooters have a higher rate of participation in target shooting with a rifle than do non-white shooters, that shooters living in a rural area have a higher rate of participation than do shooters *not* living in a rural area, that Northeast Region shooters have a higher rate of participation than do shooters *not* living in the Northeast Region, and that shooters who are from 25 to 34 years old have a higher rate of participation in target shooting with a rifle than do shooters *not* within that age group.

The Shooters Nonparametric Analysis suggests several correlations to target shooting with a handgun. Shooters with an education level of a bachelor's degree have a higher rate of participation in target shooting with a handgun than do those not in this educational bracket. The analysis also suggests that shooters from a suburban area have a higher rate of participation in target shooting with a handgun than do shooters *not* from a suburban area. Finally, white shooters have a higher rate of participation in target shooting with a handgun than do non-white shooters.

The Shooters Nonparametric Analysis suggests several correlations to participation in trap shooting. Male shooters are more likely than are female shooters to trap shoot. Additionally, shooters who are from 35 to 44 years old have a higher rate of participation in trap shooting than

The Overall Nonparametric Analysis examined 32 variables regarding characteristics of the respondents. The Shooters Nonparametric Analysis examined all of the same variables with the exception of “Respondent participates in any target or sport shooting,” because all of the shooters in the second nonparametric analysis had done that.

A positive z-score means that the response and characteristic are positively related. The z-score shows the strength of the relationship between the characteristic and the response to the question. Those z-scores that have an absolute value of 3.30 or greater indicate a relationship that is so strong that it would happen by chance only 1 out of 1,000 times ($p \leq 0.001$). Those z-scores that have an absolute value of 2.58 to 3.29 indicate a relationship that is so strong that it would happen by chance only 1 out of 100 times ($p \leq 0.01$). Finally, those z-scores that have an absolute value of 1.96 to 2.57 indicate a relationship that is so strong that it would happen by chance only 5 out of 100 times ($p \leq 0.05$).

The z-scores were calculated as shown in the formula below. The p-values displayed are based on these z-scores.

$$z = \frac{(p_1 - p_2)}{\sqrt{p(1-p) \left[\frac{1}{n_1} + \frac{1}{n_2} \right]}}$$

where:

- n_1 represents the number of observations in Group 1.
- n_2 represents the number of observations in Group 2.
- $p_1 = a/(a + b) = a/n_1$ and represents the proportion of observations in Group 1 that falls in Cell a . It is employed to estimate the population proportion Π_1 (% of Group 1 who had specific characteristic).
- $p_2 = c/(c + d) = c/n_2$ and represents the proportion of observations in Group 2 that falls in Cell c . It is employed to estimate the population proportion Π_2 (% of Group 2 who had specific characteristic).
- $p = (a + c)/(n_1 + n_2) = (a + c)/n$ and is a pooled estimate of the proportion of respondents who had specific characteristic in the underlying population.

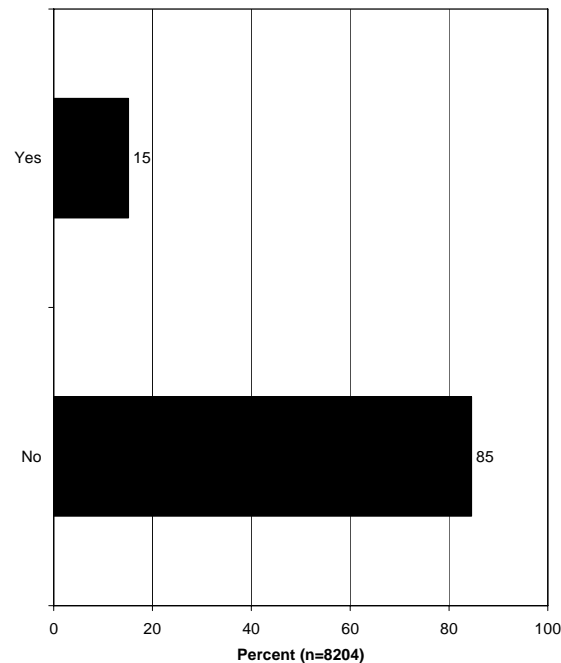
(Equation from *Handbook of Parametric and Nonparametric Statistical Procedures, 2nd Edition* by David J. Sheskin. © 2000, Chapman & Hall/CRC, Boca Raton, FL.)

The characteristics examined in the nonparametric analyses include:

Variables Analyzed in the Nonparametric Analysis	Overall Analysis	Shooters Analysis
Respondent lives in the Northeast Region	x	x
Respondent lives in the South Region	x	x
Respondent lives in the Midwest Region	x	x
Respondent lives in the West Region	x	x
Respondent participates in any target or sport shooting	x	
Respondent is 65 years old or older	x	x
Respondent is 55-64 years old	x	x
Respondent is 45-54 years old	x	x
Respondent is 35-44 years old	x	x
Respondent is 25-34 years old	x	x
Respondent is 18-24 years old	x	x
Respondent is male	x	x
Respondent is female	x	x
Respondent lives in large city or urban area	x	x
Respondent lives in suburban area	x	x
Respondent lives in small city or town	x	x
Respondent lives in rural area on a farm or ranch	x	x
Respondent lives in rural area not on a farm or ranch	x	x
Respondent is not a high school graduate	x	x
Respondent is high school graduate or equivalent	x	x
Respondent has some college or trade school, no higher than an associate's degree or trade school degree	x	x
Respondent has bachelor's degree, but no higher degree	x	x
Respondent has graduate or professional degree	x	x
Respondent is white or Caucasian	x	x
Respondent is black or African-American	x	x
Respondent is Hispanic or Latino	x	x
Respondent target shoots with rifle	x	x
Respondent target shoots with handgun	x	x
Respondent participates in trap shooting	x	x
Respondent participates in skeet shooting	x	x
Respondent participates in sporting clays	x	x
Respondent shoots with modern sporting rifle	x	x

The following explains how to interpret the nonparametric analyses results. On the following page is the graph from the report regarding participation in any target or sport shooting. It shows that 15% of the entire sample of U.S. residents have participated in shooting in the past 12 months. The z-score analysis provides information regarding the differences in having participated in shooting among various mutually exclusive groups that make up the sample, such as the difference between males and females and the difference between those who live in the South Region and those who do *not* live in the South Region.

Q13. Did you do any target shooting or sport shooting, including any informal target shooting on your own property, in 2009, that is, in the past 12 months?



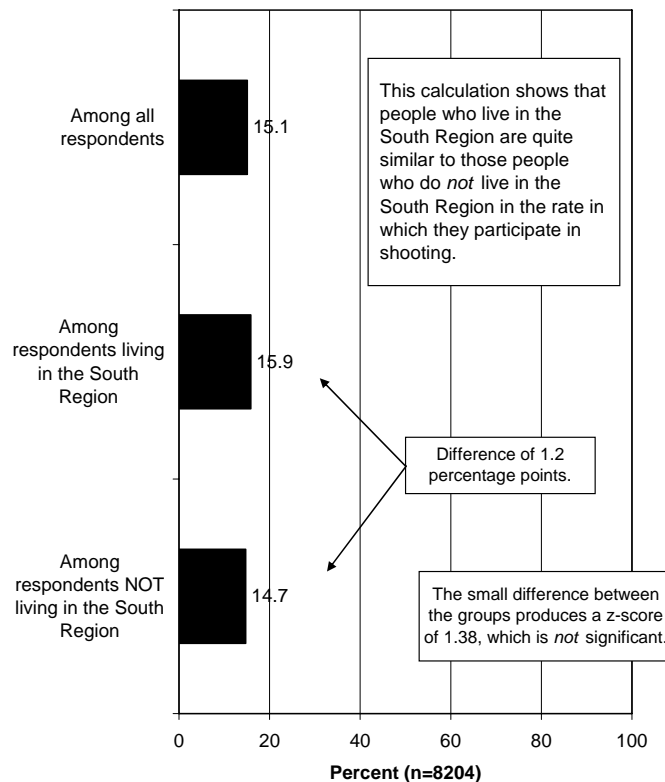
The table below shows the characteristics (i.e., responses to other questions) that are positively correlated with those 15% who participated in target or sport shooting in the past 12 months. For example, males are much more likely to have participated in target or sport shooting in the past 12 months than are females. (This row is in bold in the table below; it is in the table because the difference between the groups is statistically significant.) Note, however, that this does not mean that *all* males have participated in target or sport shooting in the past 12 months (in fact, a majority of males did *not* participate); it simply means that males are more likely to have participated in target or sport shooting in the past 12 months than are females. On the other hand, those who live in the South Region are *not* more likely to have participated in target or sport shooting in the past 12 months than are those who do *not* live in the South Region—the likelihood of participating is about the same in those two groups. (There is no row for this because the table shows only statistically significant correlations, and this variable has no statistically significant correlation associated with it.)

Respondent participates in any target or sport shooting	Z-SCORE
Respondent is male ($p \leq 0.001$)	20.34***
Respondent lives in the Midwest Region ($p \leq 0.001$)	4.26***
Respondent is 18-24 years old ($p \leq 0.001$)	4.16***
Respondent is 25-34 years old ($p \leq 0.001$)	3.5***
Respondent is 45-54 years old ($p \leq 0.01$)	2.7**
INSIGNIFICANT AND NEGATIVE Z-SCORES OMITTED	

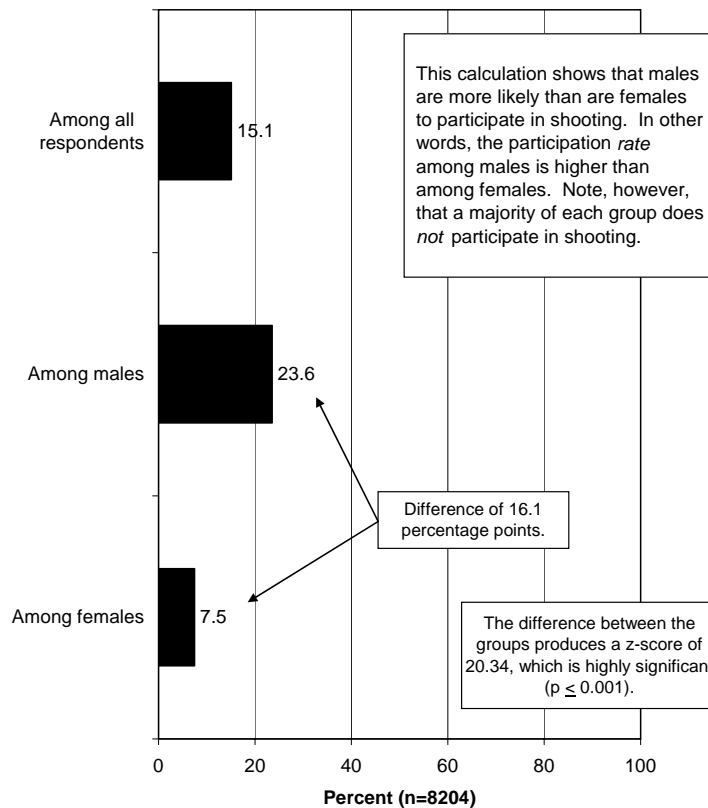
Two graphs follow that show specifically what the z-score calculations consider. These graphs show the percentages of various subgroups who participated in target or sport shooting in the past 12 months. The first graph illustrates a non-significant z-score finding (lives in the South Region versus does *not* live in the South Region); the second graph illustrates a significant z-score finding (male versus female). Note that “Lives in the South Region” is *not* on the z-score table previously shown because it does *not* have a significant correlation to having participated in target or sport shooting in the past 12 months; however, “Is male” is on the z-score table because that characteristic has a significant correlation to having participated in target or sport shooting in the past 12 months.

On the graphs, the first bar simply shows the percentage among all respondents who participated in target or sport shooting in the past 12 months. Below the top bar are two bars for the percentage of various subgroups (on the first graph, “Lives in the South Region” versus “Does not live in the South Region”; on the second graph, “Is male” versus “Is female”) who have participated in target or sport shooting in the past 12 months. A text box shows the differences in these two latter bars. Note that there is not much difference in participation levels between those who live in the South Region and those who do not live there, but there is a large difference according to gender in having participated in target or sport shooting in the past 12 months.

Q13. Did you do any target shooting or sport shooting, including any informal target shooting on your own property, in 2009, that is, in the past 12 months?



Q13. Did you do any target shooting or sport shooting, including any informal target shooting on your own property, in 2009, that is, in the past 12 months?



Below is a table that shows all of the significant positive z-scores associated with having participated in target or sport shooting in the past 12 months, with the percentages of each subgroup who have done so and the differences between them. (The bolded row corresponds with one of the two graphs on the previous pages.) This shows, for example, that 24% of males have participated in target or sport shooting in the past 12 months, but only 7% of females have participated in target or sport shooting in the past 12 months.

Respondent participates in sport shooting activities	Percent of those who participated (among those who are in the group named in the row)	Percent of those who participated (among those who are <i>not</i> in the group named in the row)	Percent Difference	z-score
Respondent is male ($p \leq 0.001$)	24	7	16*	20.34
Lives in the Midwest ($p \leq 0.001$)	18	14	4	4.26
Respondent is 18-24 years old ($p \leq 0.001$)	20	15	5	4.16
Respondent is 25-34 years old ($p \leq 0.001$)	18	15	3	3.5
Respondent is 45-54 years old ($p \leq 0.01$)	17	15	2	2.7
INSIGNIFICANT AND NEGATIVE Z-SCORES OMITTED				

*Rounding causes apparent 1 percentage point discrepancy in difference.

The z-score results are presented in the text; instead of showing the raw z-score, the write-up shows the statistical significance expressed as a p value, as discussed previously: either $p \leq 0.05$, $p \leq 0.01$, or $p \leq 0.001$. In the first instance ($p \leq 0.05$), the correlation would happen by chance only 5 out of 100 times. A statistical significance of $p \leq 0.01$ means the correlation would happen by chance only 1 out of 100 times. Finally, a statistical significance of $p \leq 0.001$ means the correlation would happen by chance only 1 out of 1,000 times.

Throughout this report, findings of the telephone survey are reported at a 95% confidence interval (or higher). For the entire sample of 8,204 U.S. residents, the sampling error is at most plus or minus 1.08 percentage points. This means that if the survey were conducted 100 times on different samples that were selected in the same way, the findings of 95 out of the 100 surveys would fall within plus or minus 1.08 percentage points of each other. Sampling error was calculated using the formula described below, with a sample size of 8,204 and a population size of 227,431,128 U.S. residents ages 18 years old and over.

Sampling Error Equation

$$B = \left(\sqrt{\frac{N_p(.25) - .25}{N_s}} \right) (1.96)$$

Where: B = maximum sampling error (as decimal)
 N_p = population size (i.e., total number who could be surveyed)
 N_s = sample size (i.e., total number of respondents surveyed)

Derived from formula: p. 206 in Dillman, D. A. 2000. *Mail and Internet Surveys*. John Wiley & Sons, NY.

Note: This is a simplified version of the formula that calculates the maximum sampling error using a 50:50 split (the most conservative calculation because a 50:50 split would give maximum variation).

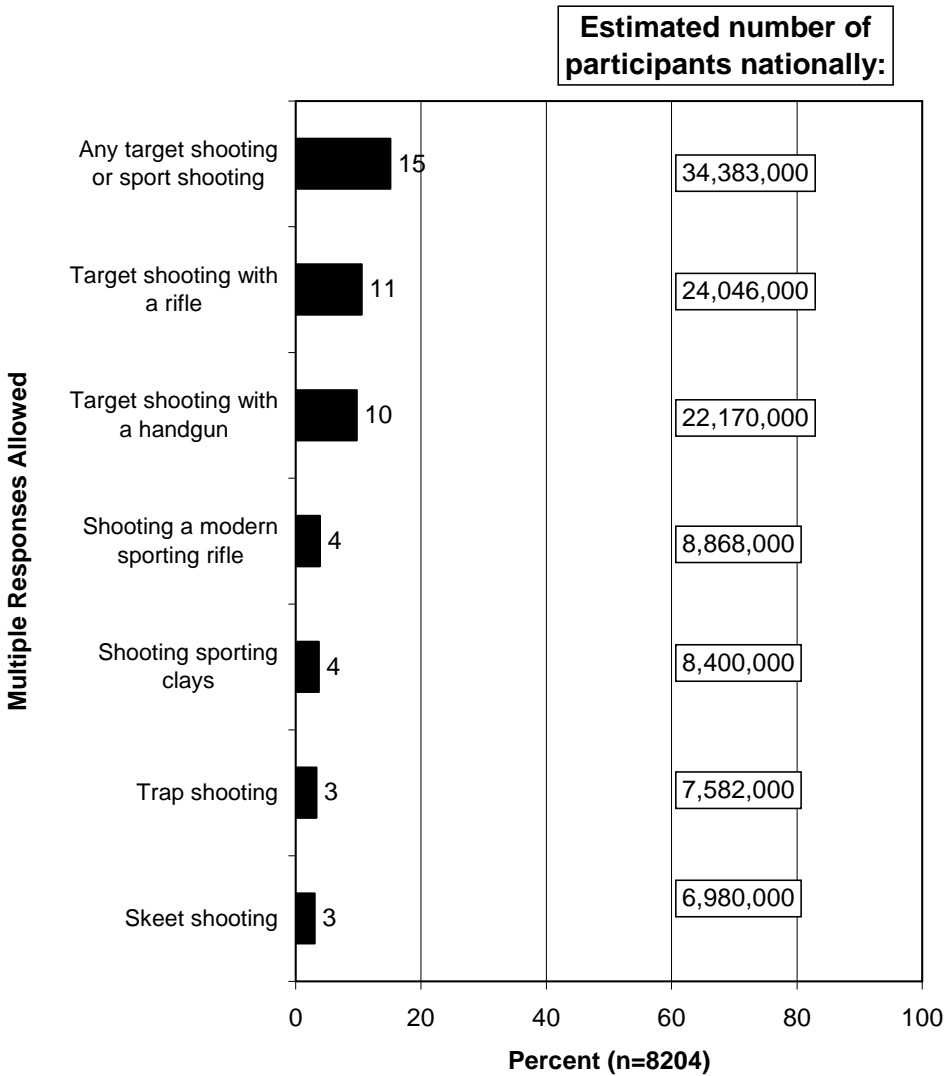
SURVEY RESULTS

PARTICIPATION IN TARGET AND SPORT SHOOTING

The survey found that 15% of the U.S. population participated in any type of target or sport shooting. The most popular types are target shooting with a rifle (11% participated) and target shooting with a handgun (10%). The percentage of various types of shooters just among shooters is also shown. A regional breakdown follows this national graph.

PARTICIPATION IN VARIOUS TYPES OF TARGET AND SPORT SHOOTING NATIONALLY

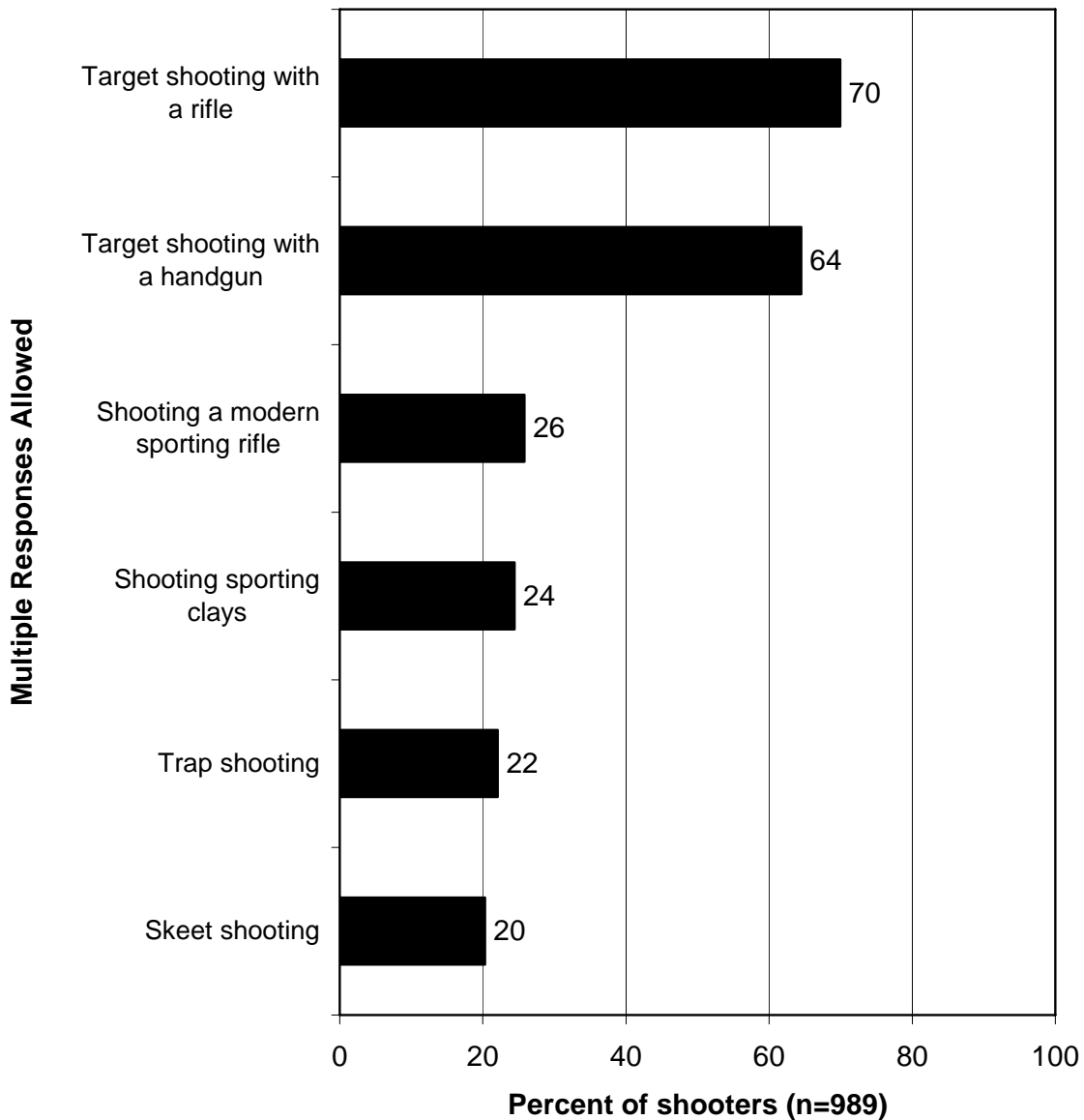
Q16. Please tell me if you personally participated in each of following specific shooting activities in 2009. Did you participate in...(LIST WAS READ TO RESPONDENTS)? (Estimated number of participants are based on the U.S. Census Bureau population estimate (ages 18 years old and older) for July 2008.)



PARTICIPATION IN VARIOUS TYPES OF TARGET AND SPORT SHOOTING AMONG SHOOTERS NATIONALLY

Q16. Please tell me if you personally participated in each of following specific shooting activities in 2009. Did you participate in...(LIST WAS READ TO RESPONDENTS)?

(GRAPH SHOWS PERCENTAGES OUT OF SHOOTERS ONLY; ALL NON-SHOOTERS HAVE BEEN EXCLUDED.)



CORRELATIONS FOUND IN THE OVERALL NONPARAMETRIC ANALYSIS REGARDING PARTICIPATION

The methodology section of this report includes a full explanation of how the nonparametric analyses are conducted and how to interpret the findings. Below is a quick explanation of how to interpret these results.

In the first set of bulleted findings below, one of the correlations to participation in target or sport shooting is being male. This means that males are more likely than are females to participate in target or sport shooting. This does not mean that all males participate, or that even a majority participate (actually, only 24% of males participate). Nor does it mean that *no* females participate (because 7% of them do). Rather, it simply means that males are more likely than are females to participate in target or sport shooting (or in other words, that males' participation rate is higher than that of females).

Likewise, those from the Midwest Region are more likely to participate in target or sport shooting than are those who do *not* live in the Midwest Region. This, again, does not mean that most target/sport shooters are Midwest residents (actually, only 26% of target/sport shooters live in the Midwest Region); rather, the rate of participation is simply higher among Midwest Region residents than among those who are *not* Midwest Region residents.

The Overall Nonparametric Analysis found that the following responses are correlated with participating in target shooting or sport shooting, including informal target practice in 2009:

- Respondent is male ($p \leq 0.001$)
- Respondent lives in the Midwest Region ($p \leq 0.001$)
- Respondent is 18-24 ($p \leq 0.001$)
- Respondent is 25-34 ($p \leq 0.001$)
- Respondent is 45-54 ($p \leq 0.01$)

The Overall Nonparametric Analysis found that the following responses are correlated with participating in target shooting with a rifle in 2009:

- Respondent is male ($p \leq 0.001$)
- Lives in the Midwest ($p \leq 0.01$)
- Respondent is 25-34 years old ($p \leq 0.001$)
- Respondent is white or Caucasian ($p \leq 0.001$)
- Respondent lives in rural area on a farm or ranch ($p \leq 0.001$)
- Respondent lives in rural area not on a farm or ranch ($p \leq 0.01$)
- Respondent is high school graduate or equivalent ($p \leq 0.001$)

The Overall Nonparametric Analysis found that the following responses are correlated with participating in target shooting with a handgun in 2009:

- Respondent is male ($p \leq 0.001$)
- Lives in the Midwest ($p \leq 0.01$)
- Respondent is 18-24 years old ($p \leq 0.05$)
- Respondent is 25-34 years old ($p \leq 0.001$)
- Respondent is 45-54 years old ($p \leq 0.01$)
- Respondent is white or Caucasian ($p \leq 0.05$)
- Respondent has bachelor's degree ($p \leq 0.001$)
- Respondent lives in suburban area ($p \leq 0.001$)

The Overall Nonparametric Analysis found that the following responses are correlated with participating in trap shooting in 2009:

- Respondent is male ($p \leq 0.001$)
- Lives in the Midwest ($p \leq 0.001$)
- Respondent is 25-34 years old ($p \leq 0.01$)
- Respondent is 35-44 years old ($p \leq 0.001$)
- Respondent has bachelor's degree ($p \leq 0.05$)
- Respondent lives in small city or town ($p \leq 0.05$)
- Respondent lives in rural area on a farm or ranch ($p \leq 0.05$)

The Overall Nonparametric Analysis found that the following responses are correlated with participating in skeet shooting in 2009:

- Respondent is male ($p \leq 0.001$)
- Lives in the South ($p \leq 0.05$)
- Respondent is 25-34 years old ($p \leq 0.001$)
- Respondent is 35-44 years old ($p \leq 0.001$)
- Respondent has graduate or professional degree ($p \leq 0.05$)
- Respondent lives in rural area on a farm or ranch ($p \leq 0.01$)

The Overall Nonparametric Analysis found that the following responses are correlated with participating in sporting clays in 2009:

- Respondent is male ($p \leq 0.001$)
- Respondent is 18-24 years old ($p \leq 0.001$)
- Respondent is 25-34 years old ($p \leq 0.001$)
- Respondent is 35-44 years old ($p \leq 0.01$)
- Respondent is white or Caucasian ($p \leq 0.05$)
- Respondent lives in rural area on a farm or ranch ($p \leq 0.01$)

The Overall Nonparametric Analysis found that the following responses are correlated with participating in shooting with a modern sporting rifle in 2009:

- Respondent is male ($p \leq 0.001$)
- Respondent is 25-34 years old ($p \leq 0.001$)
- Respondent is 35-44 years old ($p \leq 0.01$)
- Respondent has bachelor's degree ($p \leq 0.05$)

CORRELATIONS FOUND IN THE SHOOTERS NONPARAMETRIC ANALYSIS REGARDING PARTICIPATION

The methodology section of this report includes a full explanation of how the nonparametric analyses are conducted and how to interpret the findings. Below is a quick explanation of how to interpret these results.

In the first set of bulleted findings below, one of the correlations (within just the group of shooters) to participation in target shooting with a rifle is being male. This means that male shooters are more likely than are female shooters to participate in target shooting with a rifle. This does not mean that all male shooters participate (although 74% do). Nor does it mean that *no* female shooters participate (because 58% of them do). Rather, it simply means that male shooters are more likely than are female shooters to participate in target shooting with a rifle (or in other words, that, among shooters, males' participation rate in target shooting with a rifle is higher than that of females).

Likewise, shooters who are 25 to 34 years old are more likely to participate in target shooting with a rifle than are shooters who are *not* in that age group. This, again, does not mean that most shooters who target shoot with a rifle are from 25 to 34 years old (actually, only 22% of shooters who target shoot with a rifle are 25 to 34 years old); rather, the rate of participation is simply higher among this age group than among those who are *not* in that age group.

The Shooters Nonparametric Analysis found that the following responses are correlated with participating in target shooting with a rifle in 2009:

- Respondent shoots with modern sporting rifle ($p < 0.001$)
- Respondent is male ($p < 0.001$)
- Respondent participates in sporting clays ($p < 0.001$)
- Respondent participates in trap shooting ($p < 0.001$)
- Respondent participates in skeet shooting ($p < 0.001$)

The Shooters Nonparametric Analysis found that the following responses are correlated with participating in target shooting with a handgun in 2009:

- Respondent shoots with modern sporting rifle ($p < 0.001$)

The Shooters Nonparametric Analysis found that the following responses are correlated with participating in trap shooting in 2009:

- Respondent participates in skeet shooting ($p \leq 0.001$)
- Respondent participates in sporting clays ($p \leq 0.001$)
- Respondent target shoots with modern sporting rifle ($p \leq 0.001$)

The Shooters Nonparametric Analysis found that the following responses are correlated with participating in skeet shooting in 2009:

- Respondent participates in trap shooting ($p < 0.001$)
- Respondent participates in sporting clays ($p < 0.001$)
- Respondent shoots with modern sporting rifle ($p < 0.001$)

The Shooters Nonparametric Analysis found that the following responses are correlated with participating in sporting clays in 2009:

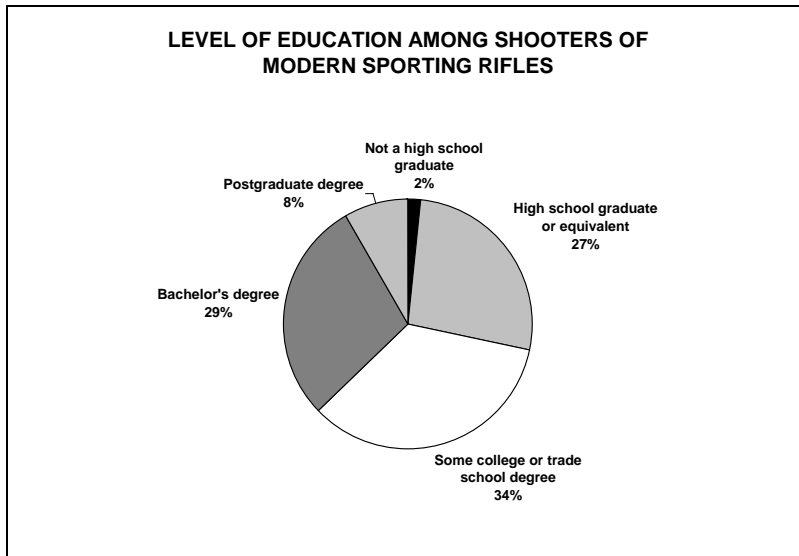
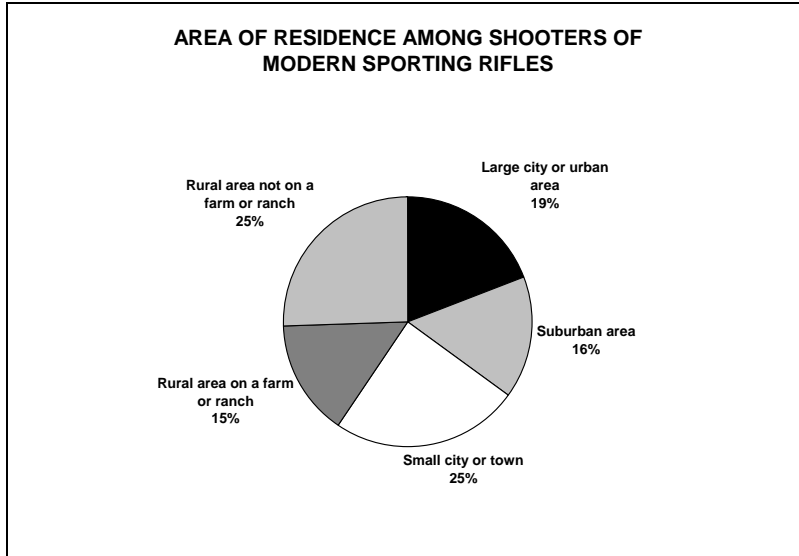
- Respondent participates in trap shooting ($p < 0.001$)
- Respondent participates in skeet shooting ($p < 0.001$)
- Respondent shoots with modern sporting rifle ($p < 0.001$)
- Respondent target shoots with rifle ($p < 0.001$)

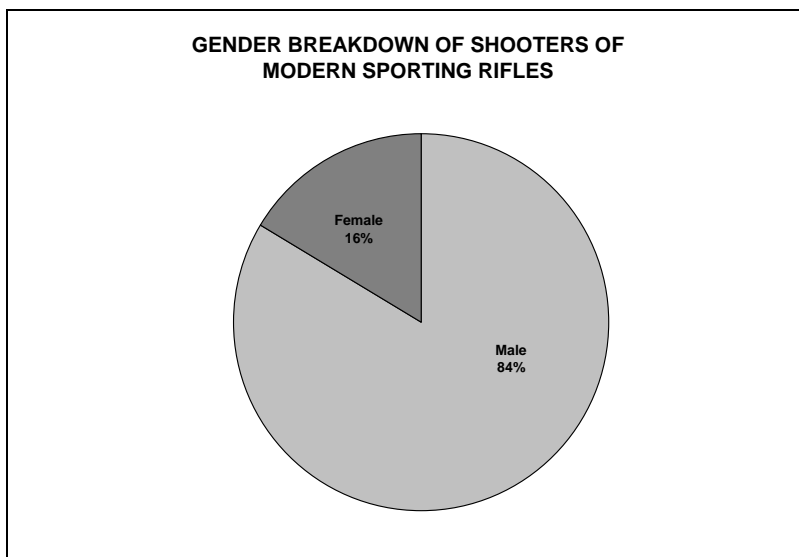
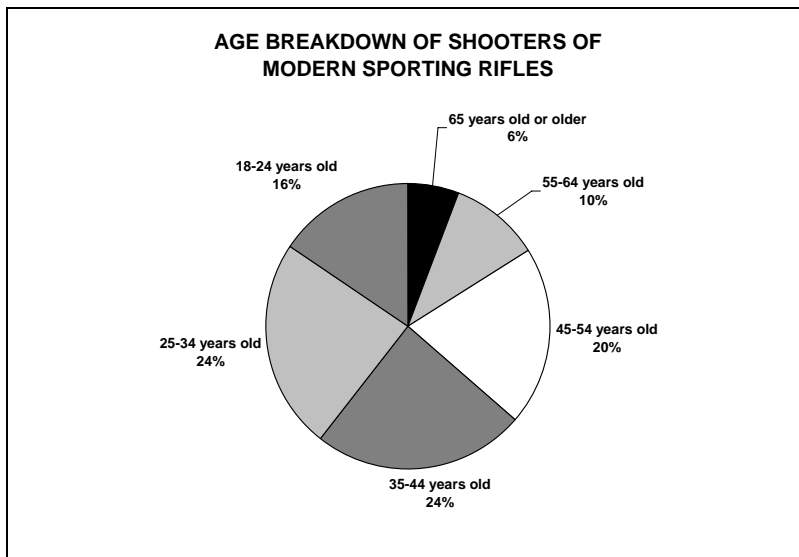
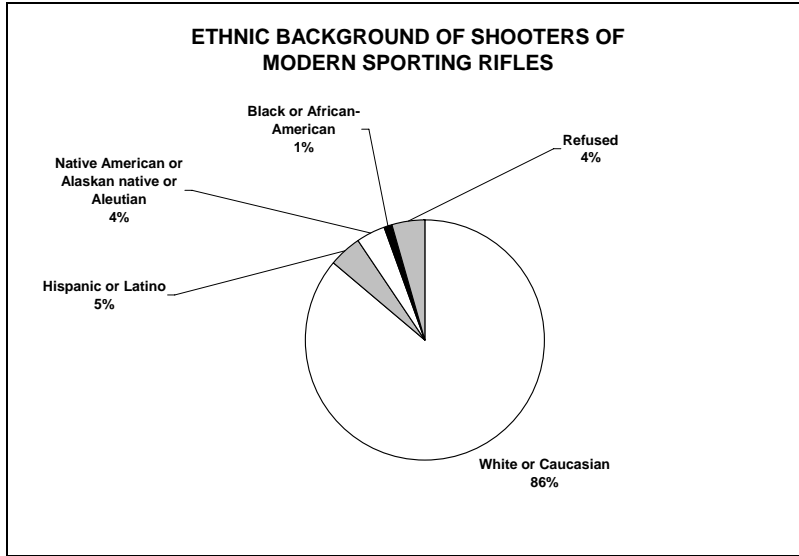
The Shooters Nonparametric Analysis found that the following responses are correlated with participating in shooting with a modern sporting rifle in 2009:

- Respondent target shoots with rifle ($p \leq 0.001$)
- Respondent participates in trap shooting ($p \leq 0.001$)
- Respondent participates in skeet shooting ($p \leq 0.001$)
- Respondent participates in sporting clays ($p \leq 0.001$)
- Respondent target shoots with handgun ($p \leq 0.001$)
- Respondent is male ($p \leq 0.001$)
- Respondent lives in the West ($p \leq 0.01$)
- Respondent has bachelor's degree ($p \leq 0.05$)
- Respondent is 35-44 years old ($p \leq 0.05$)

DEMOGRAPHIC MAKEUP OF MODERN SPORTING RIFLE SHOOTERS

The research team was particularly interested in the demographic makeup of those who shoot with a modern sporting rifle, such as an AR-15 or Armalite-15 rifle, but *not* a traditional sporting rifle. Crosstabulations showing the demographic breakdown of those who shoot with a modern sporting rifle are shown below and on the following page:





REVIEW OF PREVIOUS RESEARCH REGARDING PARTICIPATION IN SHOOTING

In addition to the above analyses, the researchers examined results of other research on participation in target and sport shooting. Several studies on shooting sport participation have been released in the past 5 years. Study to study, participation rates and study methodologies vary. This confuses the issue and makes it unclear which study should be relied on most. In preparing to administer this survey, Responsive Management reviewed three studies and compared their estimates of shooting sport participation in the United States.

Gallup conducted a telephone survey in October 2009.¹ The poll surveyed 1,012 adults ages 18 years and over with a margin of error of +/- 3% for questions asked of all respondents. Gallup found that 30% of respondents personally own a gun, and an additional 12% had a household member who owned a gun. Of the respondents who personally own a gun, 66% said that they used the gun for target shooting. This corresponds to a total percent of 20% of U.S. residents ages 18 years and over. One subtle difference of this question is that there is no time frame given in this question. Each gun owner was asked *in general* if they had used his/her gun for target shooting. This is likely to increase the percentage of participants, as gun owners would respond regarding any target shooting beyond the time frame of 1 year.

The National Sporting Goods Association (NSGA) surveyed households in 2007 and estimated that 19 million U.S. residents participate in shooting sports. The age group in the NSGA survey included everyone ages 7 years and older and, therefore, represents almost all Americans. However, to qualify as being a participant for the study, the respondent had to participate in the sport *more than once during that year*.² This eliminates more casual sport shooters who may only go once with a friend.

Finally, the Sporting Goods Manufacturers Association (SGMA) released a study in 2005 from data purchased from American Sports Data, Inc. The population included in the sample was anyone ages 6 years and older. Participants in the survey were asked about participation in the sport the previous year.³ The SGMA found the following participation:

- 13.8 million U.S. residents target shoot with a rifle
- 10.7 million U.S. residents target shoot with a handgun
- 4.0 million trap or skeet shoot
- 3.0 million shoot sporting clays

While the estimates referred to in each study help create a context for Responsive Management's survey, they do not necessarily replace or contradict the results of Responsive Management's survey. In each case, a different survey methodology was used, slightly different questions were asked, and slightly different populations were polled.

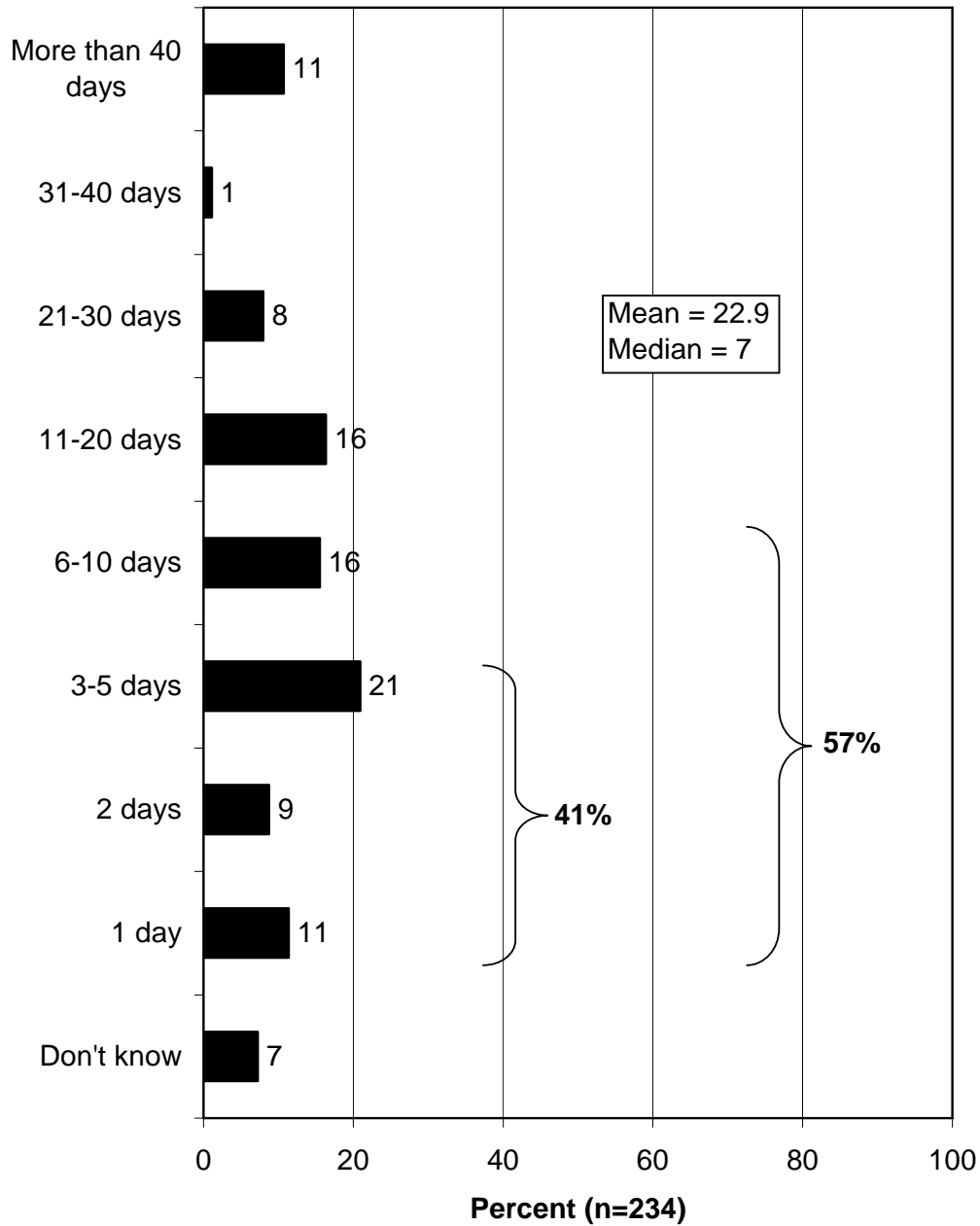
¹ Gun Ownership and Use in America. <http://www.gallup.com/poll/20098/gun-ownership-use-america.aspx>

² Duda, M.D., Jones, M.F., and Criscione, A. (in press). *The Sportsman's Voice: Hunting and Fishing in America*, Ch. 4. State College, PA: Venture Publishing.

³ *Ibid.*

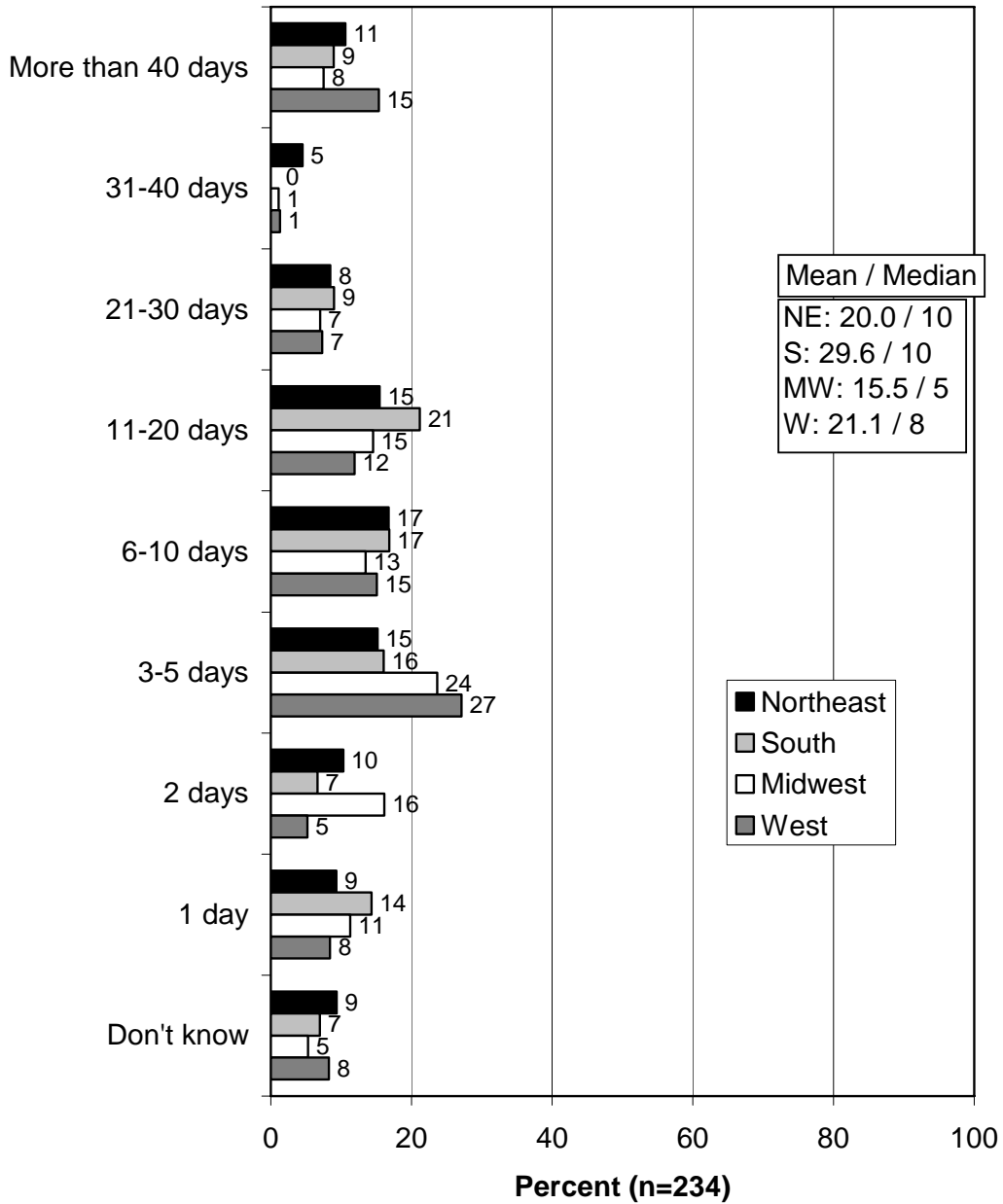
DAYS OF PARTICIPATION IN SHOOTING WITH A MODERN SPORTING RIFLE NATIONALLY

Q39. How many days did you shoot with a modern sporting rifle in 2009? (Asked of respondents who participated in shooting with a modern sporting rifle.)



DAYS OF PARTICIPATION IN SHOOTING WITH A MODERN SPORTING RIFLE BY REGION

Q39. How many days did you shoot with a modern sporting rifle in 2009? (Asked of respondents who participated in shooting with a modern sporting rifle.)
(Crosstabulated by region of residency.)



CORRELATIONS FOUND IN THE OVERALL NONPARAMETRIC ANALYSIS REGARDING LEVEL OF EDUCATION

The methodology section of this report includes a full explanation of how the nonparametric analyses are conducted and how to interpret the findings. Below is a quick explanation of how to interpret these results.

In the first set of bulleted findings below, no statistically significant correlations between not having a high school diploma and participation were found. However, in the second set of bulleted findings, the one correlation to having an education level of high school graduate (but no college) is participation in target shooting with a rifle. This means that those at the education level of high school diploma but no college are more likely than are those *not* in that education group to participate in target shooting with a rifle.

The following are [*some of*] the correlations of education that were found in the Overall Nonparametric Analysis.

The Overall Nonparametric Analysis found that the following responses are correlated with having a bachelor's degree:

- Respondent shoots with modern sporting rifle ($p < 0.05$)

CORRELATIONS FOUND IN THE SHOOTERS NONPARAMETRIC ANALYSIS REGARDING LEVEL OF EDUCATION

The methodology section of this report includes a full explanation of how the nonparametric analyses are conducted and how to interpret the findings. Below is a quick explanation of how to interpret these results.

In the first set of bulleted findings below, no statistically significant correlations between not having a high school diploma and participation were found. However, in the second set of bulleted findings, the one correlation among shooters to having an education level of high school graduate (but no college) is participation in target shooting with a rifle. This means that shooters at the education level of high school diploma but no college are more likely than are shooters *not* in that education group to participate in target shooting with a rifle.

The following are [*some of*] the correlations of education that were found in the Shooters Nonparametric Analysis.

The Shooters Nonparametric Analysis found that the following responses are correlated with having a bachelor's degree:

- Respondent shoots with modern sporting rifle ($p < 0.05$)

CORRELATIONS FOUND IN THE OVERALL NONPARAMETRIC ANALYSIS REGARDING AGE

The methodology section of this report includes a full explanation of how the nonparametric analyses are conducted and how to interpret the findings. Below is a quick explanation of how to interpret these results.

In the first set of bulleted findings, one of the correlations to being 18 to 24 years old is participation in any target or sport shooting. This means that those who are 18 to 24 years old are more likely than are those *not* in that age group to participate in any target or sport shooting. Again, this does not mean that all people from 18 to 24 years old participate in any target or sport shooting; nor does it mean that all target/sport shooters are 18 to 24 years old. It simply indicates that the *rate* of participation in target/sport shooting is higher among this age group than among those not in that age group.

The following are [*some of*] the correlations of age that were found in the Overall Nonparametric Analysis.

The Overall Nonparametric Analysis found that the following responses are correlated with being age 25-34 years old:

—
—

- Respondent shoots with modern sporting rifle (p < 0.001)

The Overall Nonparametric Analysis found that the following responses are correlated with being age 35-44 years old:

—
—

- Respondent shoots with modern sporting rifle (p < 0.01)

ABOUT RESPONSIVE MANAGEMENT

Responsive Management is a nationally recognized public opinion and attitude survey research firm specializing in natural resource and outdoor recreation issues. Its mission is to help natural resource and outdoor recreation agencies and organizations better understand and work with their constituents, customers, and the public.

Utilizing its in-house, full-service, computer-assisted telephone and mail survey center with 45 professional interviewers, Responsive Management has conducted more than 1,000 telephone surveys, mail surveys, personal interviews, and focus groups, as well as numerous marketing and communications plans, need assessments, and program evaluations on natural resource and outdoor recreation issues.

Clients include most of the federal and state natural resource, outdoor recreation, and environmental agencies, and most of the top conservation organizations. Responsive Management also collects attitude and opinion data for many of the nation's top universities, including the University of Southern California, Virginia Tech, Colorado State University, Auburn, Texas Tech, the University of California-Davis, Michigan State University, the University of Florida, North Carolina State University, Penn State, West Virginia University, and others.

Among the wide range of work Responsive Management has completed during the past 20 years are studies on how the general population values natural resources and outdoor recreation, and their opinions on and attitudes toward an array of natural resource-related issues. Responsive Management has conducted dozens of studies of selected groups of outdoor recreationists, including anglers, boaters, hunters, wildlife watchers, birdwatchers, park visitors, historic site visitors, hikers, and campers, as well as selected groups within the general population, such as landowners, farmers, urban and rural residents, women, senior citizens, children, Hispanics, Asians, and African-Americans. Responsive Management has conducted studies on environmental education, endangered species, waterfowl, wetlands, water quality, and the reintroduction of numerous species such as wolves, grizzly bears, the California condor, and the Florida panther.

Responsive Management has conducted research on numerous natural resource ballot initiatives and referenda and helped agencies and organizations find alternative funding and increase their memberships and donations. Responsive Management has conducted major agency and organizational program needs assessments and helped develop more effective programs based upon a solid foundation of fact. Responsive Management has developed websites for natural resource organizations, conducted training workshops on the human dimensions of natural resources, and presented numerous studies each year in presentations and as keynote speakers at major natural resource, outdoor recreation, conservation, and environmental conferences and meetings.

Responsive Management has conducted research on public attitudes toward natural resources and outdoor recreation in almost every state in the United States, as well as in Canada, Australia, the United Kingdom, France, Germany, and Japan. Responsive Management routinely conducts surveys in Spanish and has also conducted surveys and focus groups in Chinese, Korean, Japanese, and Vietnamese.

Responsive Management's research has been featured in most of the nation's major media, including CNN, ESPN, *The Washington Times*, *The New York Times*, *Newsweek*, *The Wall Street Journal*, and on the front pages of *The Washington Post* and *USA Today*.

Visit the Responsive Management website at:

www.responsivemanagement.com