

Hunter Education Session

Comparing Hunting Accidents in States with Mandatory and Voluntary Programs

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Abstract: This paper qualitatively analyzes the variables affecting accidents to determine the impacts of mandatory hunter education. The similarities and differences in the 2 study states, Alabama and Arkansas, were determined as were the factors influencing accidents in these states. It was found that problem areas must be pinpointed and hunter education programs be modified to address these areas.

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Fish and wildlife policies and the enforcement regulations they proliferate are seldom evaluated to assess their affects on the public, agency, or resource. Administrators assume the policy works unless the public complains. Mandatory hunter education is an example of a policy implemented in many states to reduce hunting accidents.

Most state hunter education programs are legally mandatory for hunters. Program coordinators agree the mandatory requirement has reduced accidents. However, no published work exists that qualitatively analyzes the variables affecting accidents to determine the impacts of mandatory hunter education. We assume benefits result from hunter education programs. The questions posed in this paper are: (1) What are the similarities and differences in hunting accidents in Alabama and Arkansas? (2) What factors influence hunting accidents? (3) What changes in hunter education programs are needed to further reduce hunting accidents? and (4) What experimental design is needed to evaluate recommended program changes in the future?

When compared to the number of participants, the number of hunting accidents are low. State fish and wildlife agencies, firearm and ammunition manufacturers, conservation organizations, and the general public over the past several years have contributed to the safety standards displayed by hunters today. Further reduction in the number of accidents will require organized, planned efforts.

Several studies provide groundwork to analyze hunting accidents and to evaluate hunter education programs. Kantola and Gasaway (1987) evaluated Alabama hunting accidents and made 9 recommendations to improve data collection and analysis. Langenau et al. (1985), Bromley and Hampton (1981), and Kerrick et al. (1978) provided insight into accident characteristics and difficulties faced in evaluating them.

Methods

Data were obtained from hunting accident reports completed in Alabama and Arkansas from 1 September 1976 to 31 August 1987. License sales information was taken from the United States Fish and Wildlife Service Annual Statistical Summaries for Fish and Wildlife Restoration. Numbers of hunter education students were taken from Alabama and Arkansas agency files.

Each hunting season was defined in this paper as 1 September–31 August to include all conventional hunting seasons. Each season was referenced by its beginning year. A hunting accident is defined here as injury or death from a firearm or bow and arrow while involved in the activity of hunting. This definition does not include falls from trees or tree stands where injury from a discharge of a firearm or point of an arrow did not occur, because these accidents are not thought to have been reported consistently in the data.

Causal information was placed in categories similar to those of Langenau et al. (1985) and the Uniform Casualty Report Form. Specific causes were placed into 4 categories: (1) intentional discharge of a firearm or bow (termed "hunter's judgment" on the Casualty Report Form), (2) errors of skill and aptitude, (3) violations of law or safety rules, and (4) mechanical failure with an "other" listing in each category.

Results

Trends in license sales, total days hunted, and average number of days per hunter were similar for both states (Fig. 1). Total number of accidents during the study period were 419 in Alabama compared to 422 in Arkansas. Accidents in Arkansas showed a general downward trend since 1978 where Alabama had an upward trend (Fig. 2). Hunting accidents increased during the day in Arkansas and basically conformed to patterns reported in previously cited literature (Kantola and Gasaway 1987). Hunting accidents occurred earlier in the year in Arkansas than in Alabama.

When these data are examined by cause, type of equipment, and game pursued, variations were evident between states (Table 1). Intentional discharge accidents were the most prevalent in both states. More shotgun accidents occurred while deer hunting in Alabama than in Arkansas. Arkansas had more intentional discharge while hunting small game accidents than Alabama. Because the data in Table 1 were collected over an 11-year period, only the higher accident numbers should be con-

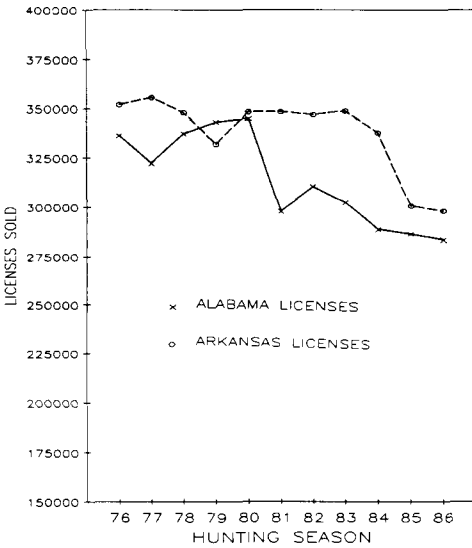


Figure 1. Trends in hunting license sales in Alabama and Arkansas from the 1976 through 1986 hunting seasons.

sidered meaningful. Most intentional discharge accidents occurred within 45 m of the shooter in both states.

The decline since 1978 in safety-related accidents in Arkansas may be a result of hunter education training (Fig. 3). The decline in intentional discharge accidents began with the beginning with the 1982 hunting season. No apparent trend existed in skill-related accidents in Arkansas (Fig. 3).

Alabama showed an increase in safety-related accidents from 1978 through 1983 with a trend change and decline beginning with the 1984 hunting season. In-

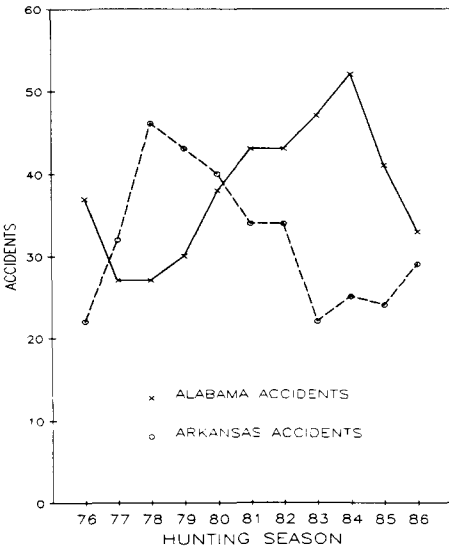


Figure 2. Trends in hunting accidents per 100,000 licenses sold in Alabama and Arkansas for the 1976 through 1986 hunting seasons.

Table 1. Hunting accidents by cause, type of equipment, and game pursued.

Game and equipment	Intentional discharge		Skill		Safety		Mechanical failure	
	Alabama	Arkansas	Alabama	Arkansas	Alabama	Arkansas	Alabama	Arkansas
Deer								
Shotgun	119	34	11	13	23	18	2	0
Rifle	32	28	22	13	19	20	2	1
Handgun	1	0	0	2	1	0	3	0
Archery	2	0	1	0	0	0	0	0
Primitive	0	2	0	0	1	0	0	0
Turkey								
Shotgun	33	52	0	2	1	3	0	0
Rifle	1	1	0	0	0	0	0	0
Archery	0	1	0	0	0	0	0	0
Squirrel and rabbit								
Shotgun	26	51	7	17	11	20	3	1
Rifle	7	6	7	9	6	9	1	0
Handgun	0	2	1	6	0	4	0	1
Dove and quail								
Shotgun	18	13	8	4	7	5	3	0
Duck								
Shotgun	1	6	2	7	0	6	0	4
Total	240	196	61	72	60	88	11	7

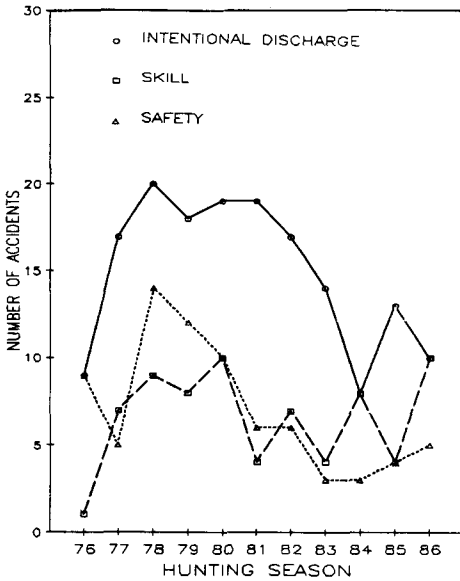


Figure 3. Trends in causal factors in Arkansas hunting accidents for the 1976 through 1986 hunting seasons.

tentional discharge accidents increased from 1978 through 1984, but a sharp decline occurred in the 1985 and 1986 hunting seasons (Fig. 4).

Accidents by Completion of Hunter Education

From 1976 to 1987, Alabama trained 41,248 hunters compared to 152,011 for Arkansas. When total number of students (all ages) were plotted with accidents caused by hunters under 18 who had not taken a hunter education course in Alabama (Fig. 5), a similar trend was observed but was not evident with the trend by hunters under 18 who took a hunter education course. These trends were not evident in

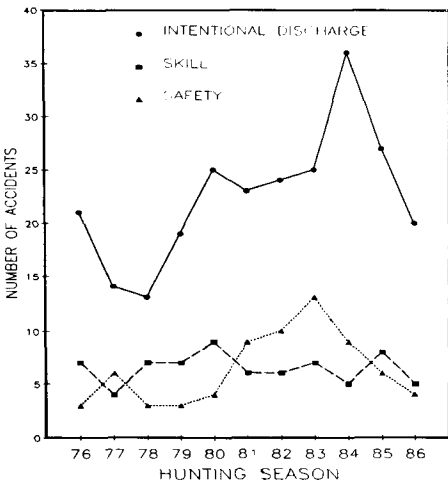


Figure 4. Trends in causal factors in Alabama hunting accidents for the 1976 through 1986 hunting seasons.

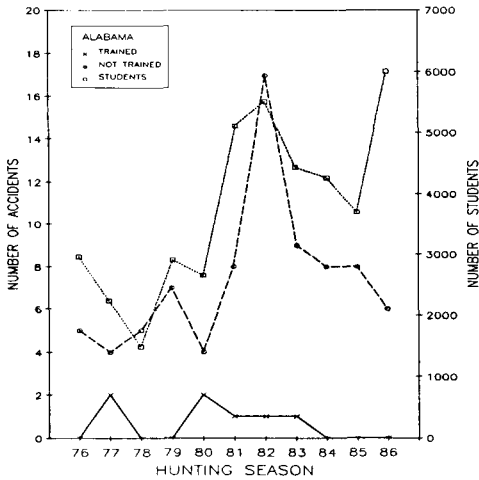


Figure 5. Accidents in Alabama for not-trained and total students taught for the 1976 through 1986 hunting seasons.

Arkansas (Fig. 6). Accidents associated with Arkansas hunters under 18 who had not taken a hunter education course declined while number of students trained increased exponentially (Fig. 6). Data available for the 1987 hunting season for Arkansas were added to illustrate a marked change in accidents caused by hunters under 18 who had taken a hunter education course (Fig. 6). At some point in time, the majority of hunters under 18 years of age will have completed a hunter education course. This may partially explain the sharp rise in accidents by trained students in the 1987 hunting season (Fig. 6). The corresponding decline in number of students trained would tend to support the assumption that many of those required to have the training have completed the course (Fig. 6). If that assumption is true, then non-trained hunters under 18 will represent an increasingly smaller part of the popula-

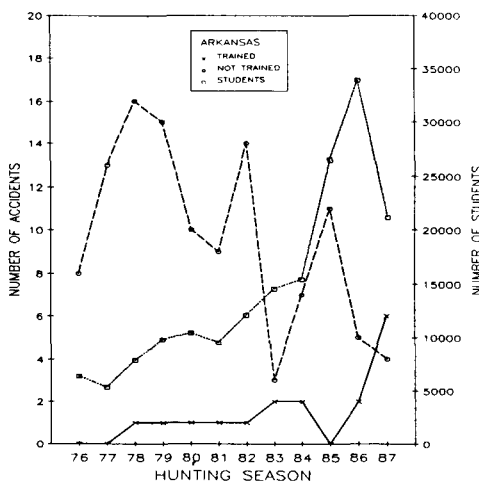


Figure 6. Accidents in Arkansas for not-trained and total students taught for the 1976 through 1986 hunting seasons.

tion. Also, the percent of trained hunters in the total population could have contributed to the decline in accidents shown in Figure 6.

Total hunting accidents for hunters under 18 years of age averaged less per year for Alabama (8) than Arkansas (12) over the study period even though more than 3 times as many students were trained in Arkansas. Data for Arkansas do not support the conclusion that hunter education training will reduce hunting accidents among hunters under 18 years of age. Arkansas has a more aggressive hunter education program than Alabama as indicated by the number of students trained; but the accidents among hunters under 18 years of age are similar between the states.

Discussion and Conclusions

Hunting accidents in both states were not random events, but instead appear biased towards certain factors. For example, the distribution of accidents within the states showed "hot" areas which probably are related to game densities and/or habitat types. Southeastern Cooperative Wildlife Disease Study maps for deer and turkey populations indicate high densities in the southwest quarter of Alabama which corresponds to the higher hunting accident area. Most accidents occurred while deer hunting, and intentional discharge of shotguns while deer hunting accounted for a particularly high proportion of Alabama's hunting accidents. Turkey populations and turkey hunting are increasing in the Southeast. Data show a strong increasing trend in intentional discharge accidents occurring while turkey hunting. This trend is likely to continue unless specific actions are taken.

Shotguns were associated with most accidents and were prominent in intentional discharge accidents while rifles dominated accidents when loading or unloading the firearm. Some rifles may be more difficult to load and unload than shotguns, and/or some hunters may be less skillful with rifles.

Hunters under 18 were involved in a high percentage of accidents in both states. Either this age group hunted disproportionately more than other age groups examined or the data suggests a strong bias in accidents caused by these ages.

Most of the broad impacts of hunter education on accidents probably are reflected in the data currently being collected in most states. Now the task is to pinpoint the problem areas, modify hunter education programs to directly address the areas and evaluate results in terms of changes in hunter behavior. Accomplishing this task will require a more sophisticated data collection and analysis scheme than is currently in use. The greatest weakness in current data is that they are interpreted from statistics created by accidents rather than based on the entire hunter population for a given state or province (Kerrick et al. 1978). Baseline accident information is essential to draw a conclusion about a population of hunters; however, few states collect such data on an annual basis.

To be more effective in reducing hunting accidents, hunter education programs must improve information provided to the hunting public concerning intentional discharge accidents while deer hunting and turkey hunting with shotguns. Most per-

sons involved in these accidents have not taken a hunter education course. An intensive program aimed at all hunters is needed to attack this problem. Timely, localized education efforts should be stressed in geographic accident "hot spots." A concise brochure, leaflet, and/or public service announcement targeting deer and turkey hunters and specifically describing conditions under which most accidents occur (times, locations, activities, etc.) should be shown to every hunter.

The prevalence of intentional discharge accidents mandates hunter education courses to stress that before shooting, hunters should be sure of their targets and think about where shots will stop. Courses should stress safety to prevent all types of hunting accidents, particularly intentional discharge. Where possible, instructors should add realism to their courses through simulated field situations and hunting activities. Special attention should be paid to safe loading and unloading of rifles, as well as shotguns, and students should be provided experience with both. Special emphasis should be placed on reducing the occurrence and severity of turkey hunting accidents. Research should be conducted on the reactions of turkeys to bright colors such as hunter orange and on the use of bullet-resistant cloth in face masks or veils. Special turkey hunting courses should stress the high rate of accidents caused by intentional firearm discharge and the importance of being sure of the target and impact zone.

The difficult part in any analysis of program impacts is to get some measure of what would have happened without a program. The hunter education program in Alabama had some impact on hunting accidents (Kantola and Gasaway 1987). The question here is "Has the more elaborate, mandatory program in Arkansas had more impact?" Clearly, accidents have increased in Alabama during a period when they have declined in Arkansas. Most of the increase was in intentional discharge accidents. When we compare the 2 jurisdictions, the data suggests hunters were less likely to have a hunting accident in Arkansas.

The decline in accidents involving students not trained in hunter education programs in Arkansas suggests factors other than hunter education training could be operating in the hunter population. The reduction in "not trained" individuals, hunter orange regulations, and peer pressure are some of the possibilities. Many program impacts are symbolic and involve the perception that the public has about agency actions. If the hunting public views the accident situation as a serious matter that the fish and wildlife agency is trying to correct, the increased awareness could contribute to a decline in accidents. Since 1980, this "climate" and a combination of other factors in Arkansas may have helped to reduce hunting accidents.

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