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## Awareness and Intended Compliance of Beef Cattle Exhibitors in the National Animal Identification System

Keisha Patent  
*Ohio State University*

Brian Roe  
*Ohio State University, roe.30@osu.edu*

Francis Fluharty  
*Ohio State University, luharty.1@osu.edu*



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## Awareness and Intended Compliance of Beef Cattle Exhibitors in the National Animal Identification System

### Abstract

The National Animal Identification System (NAIS) will soon require compliance from all cattle producers. Using data gathered in Ohio and Kentucky, we analyzed awareness of and intended compliance with the NAIS by a producer segment posing significant disease risk--beef cattle exhibitors. Participants with larger show strings and extensive show-related travel are more aware of the NAIS. Heightened respondent awareness and use of computerized records are positively correlated with intended compliance. Respondents who attend multiple shows and expect additional record keeping under the NAIS report lower intended compliance. The potential role of youth organizations in promoting NAIS compliance is discussed.

### Keisha Patent

Masters Student  
Department of Agricultural, Environmental and Development Economics  
Columbus, Ohio

### Brian Roe

Associate Professor  
Department of Agricultural, Environmental and Development Economics  
Columbus, Ohio  
[roe.30@osu.edu](mailto:roe.30@osu.edu)

### Francis Fluharty

Research Scientist and Ohio Beef Industry Center Coordinator  
Department of Animal Sciences and the Ohio Agricultural Research and Development Center  
Wooster, Ohio  
[fluharty.1@osu.edu](mailto:fluharty.1@osu.edu)

Ohio State University

## Introduction

The U.S. beef industry will soon experience major changes in production practices and costs due to the National Animal Identification System (NAIS), which has been mandated by the United States Department of Agriculture (USDA) for nationwide compulsory implementation by January 2009. The program's main goal is to enable USDA officials to trace any animal's movements within 48 hours (Gray, 2004). The NAIS implementation plan was motivated, in part, by the discovery of Bovine Spongiform Encephalopathy (BSE) in the United States in late 2003 (Umberger & Bailey, 2004) and by other animal disease threats.

The NAIS will require producers to register the location of their farm/ranch (premises identification) and to identify every animal they raise, so the movement of these animals can be monitored though out the animal's life. Full compliance with the NAIS is crucial for meeting the goals of the system, but will also increase producers' current record keeping burden and production costs.

In this article we analyze the current awareness of and the intended compliance with the NAIS for a crucial segment of producers: youth beef exhibitors. We analyze survey data gathered at beef shows held in Ohio and Kentucky to better understand the factors that drive youth exhibitor awareness and intended compliance. This group poses a great risk of spreading disease due to frequent travel and commingling of show animals from different herds.

# Implications of the NAIS for Livestock Exhibitors

The NAIS has three primary information mandates: (1) assign premises ID numbers to domestic plots of land that might house livestock, (2) assign identification numbers to all domestic livestock, and (3) enter all animal location and movement information into a national database. These mandates have several implications for youth livestock exhibitors.

The NAIS will require youth exhibitors to register their farms under the premises identification portion of the NAIS and to place NAIS compatible tags in each exhibited animal's ear. Livestock shows will be responsible for scanning each tag and entering related data in the NAIS database to record the location and length of stay of all animals at the show. After the event, each cattle owner must record the return trip for each animal they took to the show. If an animal is sold at an event, the cattle buyer (new owner) must have a registered premises number and record the new location of each purchased animal.

Nationally, nearly 300,000 4-H members enroll in beef projects (nearly 10,000 alone in Ohio and Kentucky), and a large percent exhibit cattle at county, state, or regional events, while national enrollment in FFA is approximately 475,000. Although not all 4-H and FFA members exhibit their beef animals, those who do will be affected by the implementation of NAIS.

Show cattle are an important component in the NAIS for several reasons. First, exhibited cattle have extensive contact with other animals at each show, which dramatically increases the risk of spreading disease. Furthermore, exhibited animals travel more extensively than non-exhibited animals. For example, Patent (2005) documents that 50% of the exhibitors in the two Midwestern cattle shows discussed in this research planned to attend at least nine different shows during the next 12-month period.

While the risk of diseases being contracted at a show is greatly reduced by the requirement of certificates of veterinary inspection at most shows, considerable risk remains. According to Wilson (G. Wilson, personal communication, May 5, 2005.), two of the largest animal disease outbreaks, Avian Influenza in Texas in 2004 and Newcastle Disease in California in 2002-2003, were traced back to flocks of chickens that had commingled at shows. Finally, nearly 1% of animals entering the food chain comes from youth livestock auctions (National Institute for Animal Agriculture, 2003). This provides a direct link between disease control efforts at exhibitions and human health.

A challenge with NAIS compliance among cattle exhibitors involves the existing record-keeping technology. Rusk (2002) reports that tests at county fairs found electronic tags, recommended for the NAIS, were difficult for 4-H members to read, which led to confusion as to which animals should be in each class of competition. Therefore, electronic ID tags that satisfy the NAIS may need to be supplemented with visually identifiable tags, which further increases compliance costs. In addition, the inexperience of minors may contribute to incomplete or inaccurate information. Therefore, the process of adding NAIS-related information should be supervised by a program leader. For all these reasons, compliance with NAIS regulations among youth exhibitors may be of great concern for public health.

Information management is not foreign to youth exhibitors. Both 4-H and FFA require formal record keeping. Youth participants often record information such as age, health status, and financial outcomes for each animal. Most 4-H and FFA livestock shows require verification of each animal's identity, including age and breed. In order to promote compliance with the NAIS, we contend that 4-H and FFA exhibitors should be required to include location information in their record-keeping programs.

Next we outline the methods we used to achieve the objective of our study, i.e., to assess and explain youth exhibitors' awareness of and intended compliance with the NAIS.

## Methodology

### Data Collection Instrument

To better understand the awareness of and the likely compliance with the NAIS, the authors designed and administered a survey to a sample group of youth cattle exhibitors. The survey included questions about individual demographics and about exhibitor awareness of and opinions about the NAIS. Prior to administering the survey, several individuals knowledgeable with survey composition and livestock exhibitions reviewed the survey for clarity and content.

### Data Collection Methods and Sample

To collect data from youth beef exhibitors, we decided to survey participants of two shows. The Eighth Annual Scarlet and Gray Alpha Gamma Sigma Midwest Showdown (hereafter, AGS), a beef show and sale held on January 8-9, 2005, in Columbus, Ohio, and the Eighteenth Annual Kentucky Beef Expo (hereafter, KBE), a beef show, sale, and associated trade exposition held in Louisville, Kentucky, on March 4-6, 2005, were selected because the events historically feature large numbers of youth exhibitors.

KBE exhibitors included 4-H and FFA members, ages eight to 20, as well as adults (only youth

exhibitors were surveyed). AGS featured exclusively youth exhibitors. Overall, 235 survey responses representing 54.5% of the cattle at the two shows were collected and analyzed. Response rates, expressed in terms of the percent of all show exhibitors, are not presented because show officials did not provide information concerning the number of exhibitors.

## Dependent Variables and Statistical Approach

The dependent variables are the exhibitors' ratings of (a) awareness of the NAIS and (b) intended compliance with the NAIS. Awareness ratings available to survey respondents include 1 ("never heard of it"), 2 ("somewhat familiar"), and 3 ("very familiar"). The awareness question was: "How aware are you of the National Animal Identification System that is being developed by the U.S. Department of Agriculture?" The intended compliance rating was given after the following prompt: "Suppose the government requires you to keep records on location changes and medical history of all your show cattle. How likely are you to comply with the National Animal ID System?" Five possible responses ranged from 1 ("very unlikely") to 5 ("very likely"). We note that medical history is not currently part of the information slated for collection as part of the NAIS; hence the survey question may pose a more onerous degree of compliance than will the NAIS.

We first present the distribution of responses to each question and then present estimates from a logistic regression model. The regression model helps identify if an exhibitor's awareness of and intended compliance with the NAIS is correlated with that exhibitor's characteristics (e.g., herd size and record keeping habits). Responses from exhibitors at the AGS and KBE shows were pooled into a single data set because statistical tests found no systematic differences between responses provided by exhibitors from the two shows.

## Results

### Awareness and Intended Compliance

The most common response to the awareness question was "somewhat familiar." Sixty percent chose this option, and the average response was 2.06 (Table 1, column two). Twenty-three percent of respondents responded with "very familiar" with the NAIS, while 17% had "never heard of it."

**Table 1.**  
Overall Likelihood of NAIS Compliance by Ohio and Kentucky Participants

Rating	% Respondents Providing This Rating	
	Awareness N = 235	Intended Compliance N = 220
1	17	7
2	60	9
3	23	30
4	NA	26
5	NA	28
Average Rating	2.06	3.40

The average likelihood of compliance with NAIS was 3.4. The most common response (30%) was a '3,' which is the middle response for the five-point scale. Unlike the responses to the awareness question, however, the responses were skewed upwards, with the '4' and '5' categories receiving 26% and 28% of the responses, respectively. The average response of 3.4 reflects a moderately high intended compliance rate.

### Regression Results

The regression model of the NAIS awareness rating is presented in column two of Table 2. The model fits the data well--the model predicts the awareness level of 68.9% of the respondents correctly.

**Table 2.**  
Estimated Awareness of Intended Compliance Logistic Regression Models

<b>VARIABLE</b>	<b>Awareness Rating</b>	<b>Intended Compliance Rating</b>
Herd Size	0.0035**	0.0004
# States Traveled--Last 12 Months	-0.10	-0.17**
Expected Record Keeping w/ NAIS	0.20	-0.16**
Records Birth Date	-0.0058	-1.85**
Records Birth Weight	1.76**	0.22
Awareness Level	NA	0.55**
Number of observations	235	220
Correct In-sample Predictions	68.9%	69.5%
Notes: ** denotes statistical significance at the 5% level.		

Two characteristics predict an exhibitor's level of awareness of the NAIS. The first characteristic is the size of the exhibitor's cattle herd (not just the show string). Exhibitors with larger herds tend to have higher awareness. The second variable that helps predict exhibitor awareness is the exhibitor's record-keeping behavior. Exhibitors who record the birth weight of their cattle tend to have higher awareness.

The regression model of the NAIS awareness rating also fits the data well--the model predicts the intended compliance level of 69.5% of the respondents correctly. The estimated model is presented in column three of Table 2.

Four variables have significant predictive power: the number of states to which the respondent traveled in the last year to exhibit their cattle, the additional record-keeping time the respondent expects when complying with NAIS, a variable indicating the respondent keeps records of each animal's birth date, and the respondent's NAIS awareness level. The first three variables have negative coefficients in this model, which means that respondents who: exhibit cattle in multiple states, expect high amounts of record keeping with the NAIS, and keep records on the birth dates of their show cattle, have a lower rate of expected compliance. The coefficient for the awareness variable is positive, meaning respondents familiar with the program are more likely to comply.

The fact that exhibitors who travel extensively with their cattle and expect high costs of compliance are less likely to comply is understandable; those facing higher burdens to comply are less likely to comply. It points to a segment of youth exhibitors that may require extra attention from Extension professionals who interact with youth exhibitors and their advisors and parents. The fact that heightened awareness of the NAIS predicts greater intended compliance is encouraging. It points to an educational pathway that Extension professionals can use to improve compliance with the NAIS among youth exhibitors, i.e., a pathway involving educational materials and programs that heighten awareness among youth exhibitors.

## **Conclusions and Recommendations**

Overall, compliance with the NAIS among livestock exhibitors is of utmost importance to the successful implementation of this program, which is expected to improve the ability of the United States to respond to animal disease threats, including possible agro-terrorism events. From the results of this study, awareness of the impending regulation is vital to increasing compliance. In

addition, expectations of the magnitude of record keeping required for the NAIS affects intended compliance levels as well.

We propose that 4-H, FFA, and beef cattle associations sponsoring cattle shows integrate NAIS information into their promotional materials for all shows. We also recommend that 4-H and FFA programs require NAIS compliant records as part of their record-keeping requirements to maximize the safety of the U.S. cattle herd and food supply.

Implementation of these recommendations will require the development additional educational materials related specifically to the NAIS. The results of our study suggest that increased awareness, which may be achieved through circulation of appropriate educational materials, may be one way to increase intended compliance with the NAIS. Hence, materials explaining the basic motivations and tenets of the NAIS should be developed and made available to Extension professionals who interact with youth livestock exhibitors and their parents/advisors.

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