

## 2016 Bow Hunter Observation Survey Iowa Department of Natural Resources

Andrew S. Norton, Ph.D., Biometrician, Iowa DNR  
William R. Clark, Ph.D., Professor Emeritus, Iowa State University

The Iowa Department of Natural Resources (DNR) solicited responses from bow hunters for the annual Bow Hunter Observation Survey conducted from October 1 to December 2, 2016. This was the thirteenth year of the survey, which was designed jointly with William R. Clark, emeritus Professor at Iowa State University. The two primary objectives for this survey are to: 1) provide an independent supplement to other deer data collected by the DNR; and 2) develop a long-term database of selected species data for monitoring and evaluating relative species abundance. Bow hunters are a logical choice for observational-type surveys because the methods used while bow hunting deer are also ideal for viewing most wildlife species in their natural environment. In addition, bow hunters typically spend a large amount of time in bow stands: more than 40 hours/season is not uncommon. We believe avid bow hunters (defined as those purchasing a license three years in a row prior to the survey year) are the best hunters to select for participation in this survey because they not only hunt often, but they also have the most experience in selecting good stand locations, controlling or masking human scent, using camouflage, identifying animals correctly, and returning surveys.

Participants for the 2016 survey were selected either from a list of avid bow hunters that indicated interest in participating based on a pre-survey and respondents from at least one of the past two years, or from a list of bow hunters who had purchased a license for each of the 3 years prior to 2016. Our goal was to select approximately 999 bow hunters in each of Iowa's 9 climate regions. Each climate region contains approximately 11 counties, and approximately 91 bow hunters were selected per county in an effort to evenly distribute observations in each region. Selection of participants consisted of a 3-step process. In each county, participants were first randomly selected from a core group of avid bow hunters who had previously indicated an interest in participating in this survey. If fewer than 91 core group participants existed in a county, additional participants were randomly selected from a separate list of avid bow hunters who were not in the core group. Finally, if the number of "core group" and "randomly selected" participants in a county was less than 91, additional avid hunters were selected from other counties in the region to reach the regional goal of 999 participants. A total statewide sample of 8,992 bow hunters was selected for participation. Of surveys mailed, 183 were either returned due to USPS address issues or hunters indicated they did not hunt this year, making the final statewide sample 8,809.

Responses were obtained from 2,033 bow hunters who recorded their observations during 27,504 hunting trips, yielding 93,273 hours of total observation time ( $3.39 \pm 0.053$  hours/trip; mean  $\pm$  95% CL). Bow hunters reported a median of 12 trips during the 63-day season. Regionally, the number of bow hunting trips (and hours hunted) ranged from 1,897 (5,722 hours) in northwest Iowa (Region 1) to 4,389 (14,353 hours) in northeast Iowa (Region 3). The raw survey response rate was 23.1%, an 8% increase from last year, which increased confidence in the results. We kindly thank all bow hunters that participated in the survey efforts this year.

Observations were standardized for each of the 12 species to reflect the number of observations per 1,000 hours hunted in each of the 9 regions. In addition, 95% confidence limits were calculated for each estimate. There was high precision for total deer estimates, and confidence limits were within  $\pm 10\%$  of the mean estimate. Precision among estimates for other common species, such as wild turkeys, coyotes, and raccoons, was good: confidence limits were generally within  $\pm 20$  to 30% of the mean estimate. Less common or visible species, such as bobcat, house cat, opossum, red fox, and skunk, precision was lower, but still adequate for inference about annual trends. Precision and sightability for badger, grey fox, and river otter was likely too low to provide reliable annual estimates at the regional scale. However, long-term (e.g., 10 year) temporal trends may be inferred at the region level for these species.

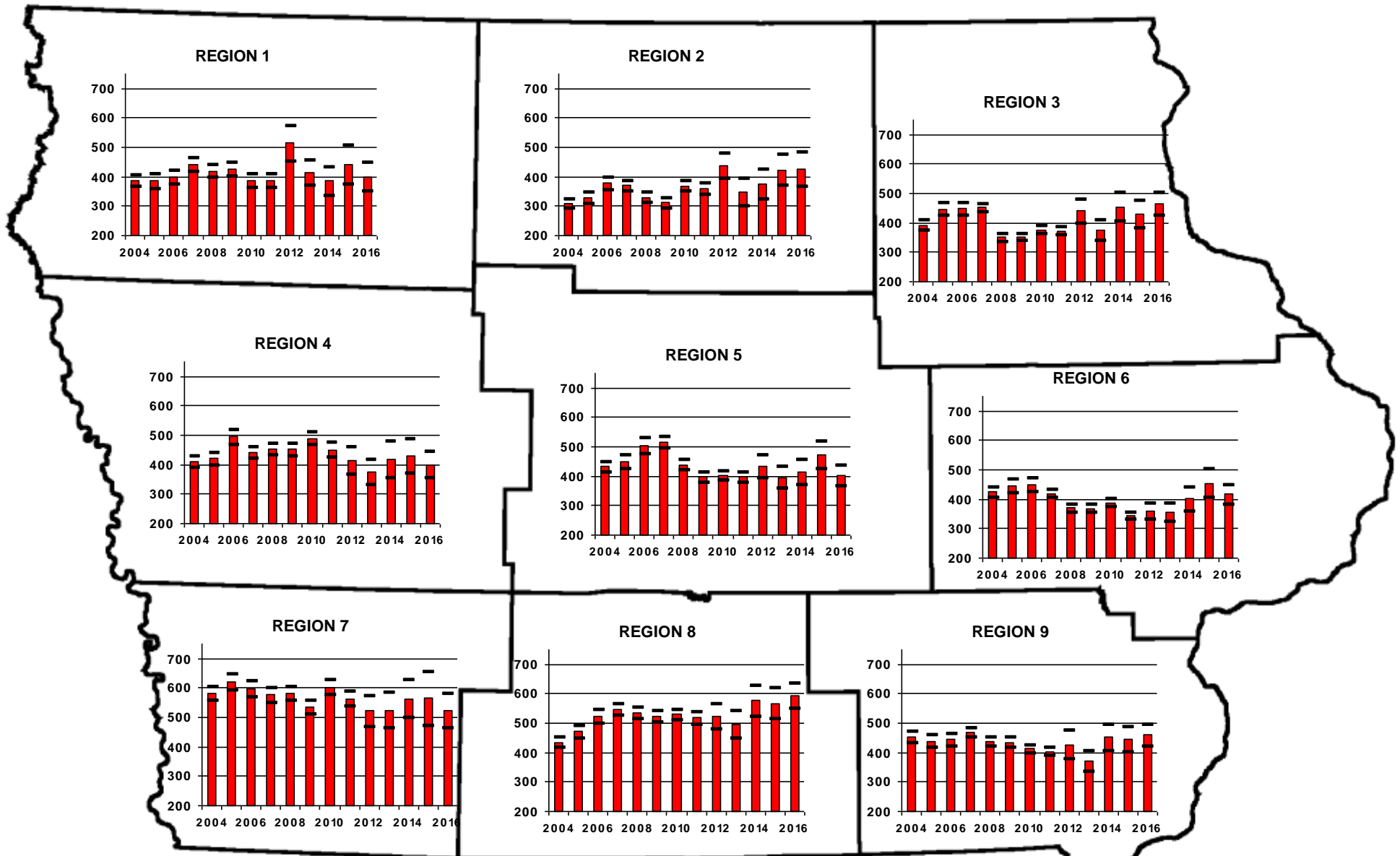
A comparison of results from 2005 to 2016 suggests that the number of total deer observed/1,000 hours has decreased or stayed the same across all nine regions of Iowa, except for the northcentral region where an increasing trend was observed, and the southcentral region where the trend was relatively stable. Turkey observations from 2005 to 2015 generally decreased across all southern, west central, and east central regions, and stayed the same for northern and central regions. Bobcat observations/1,000 hours remain very low in regions 2 and 3, while regions 7, 8, and 9 appear to have a consistent observation rate with previous years. Although observation rates were relatively low, it appears the bobcat range expanded northward from 2004 to 2016.

We at the DNR thank all participants in the 2016 Bow Hunter Observation Survey. The volume of information provided by bow hunters could never be duplicated by the staff of biologists, technicians, and conservation officers in the Iowa DNR. Iowa's bow hunters are the best group of hunters to provide this observational information, and their participation in this survey plays a critical role in the conservation of these and other wildlife species for the future.

***Any differences in observation rates between regions could be related to differences in many factors such as population size, habitat, topography, land use, or any other factor affecting the sightability of animals. For example, deer densities are likely greater in the southeast and northeast regions of Iowa, however, regional differences from the bow hunter survey do not reflect a similar trend.***

# Antlered Deer Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

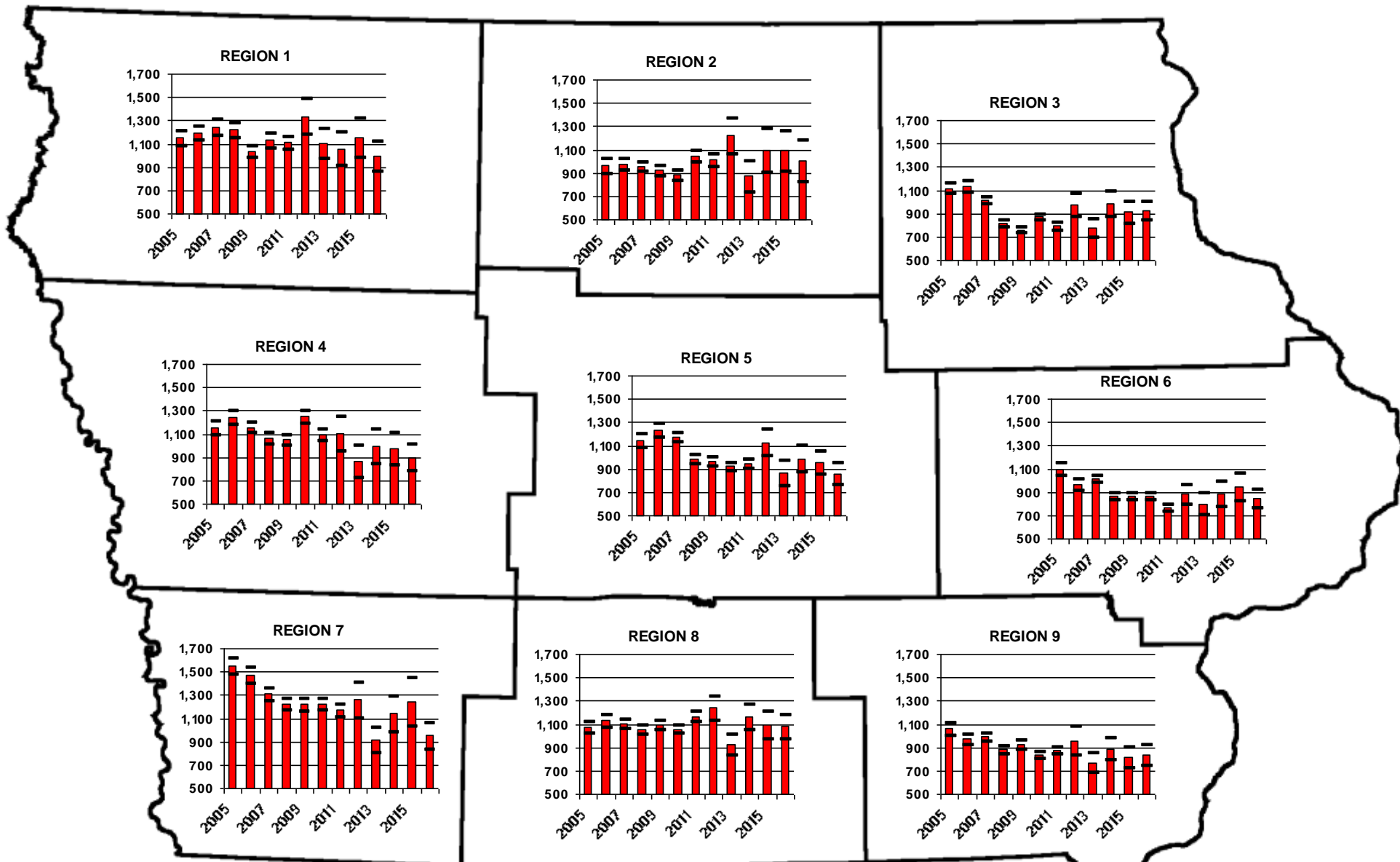


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Antlerless Deer Observations Per 1,000 Hours Hunted

Bowhunter Observation Survey, Iowa Dept. of Natural Resources

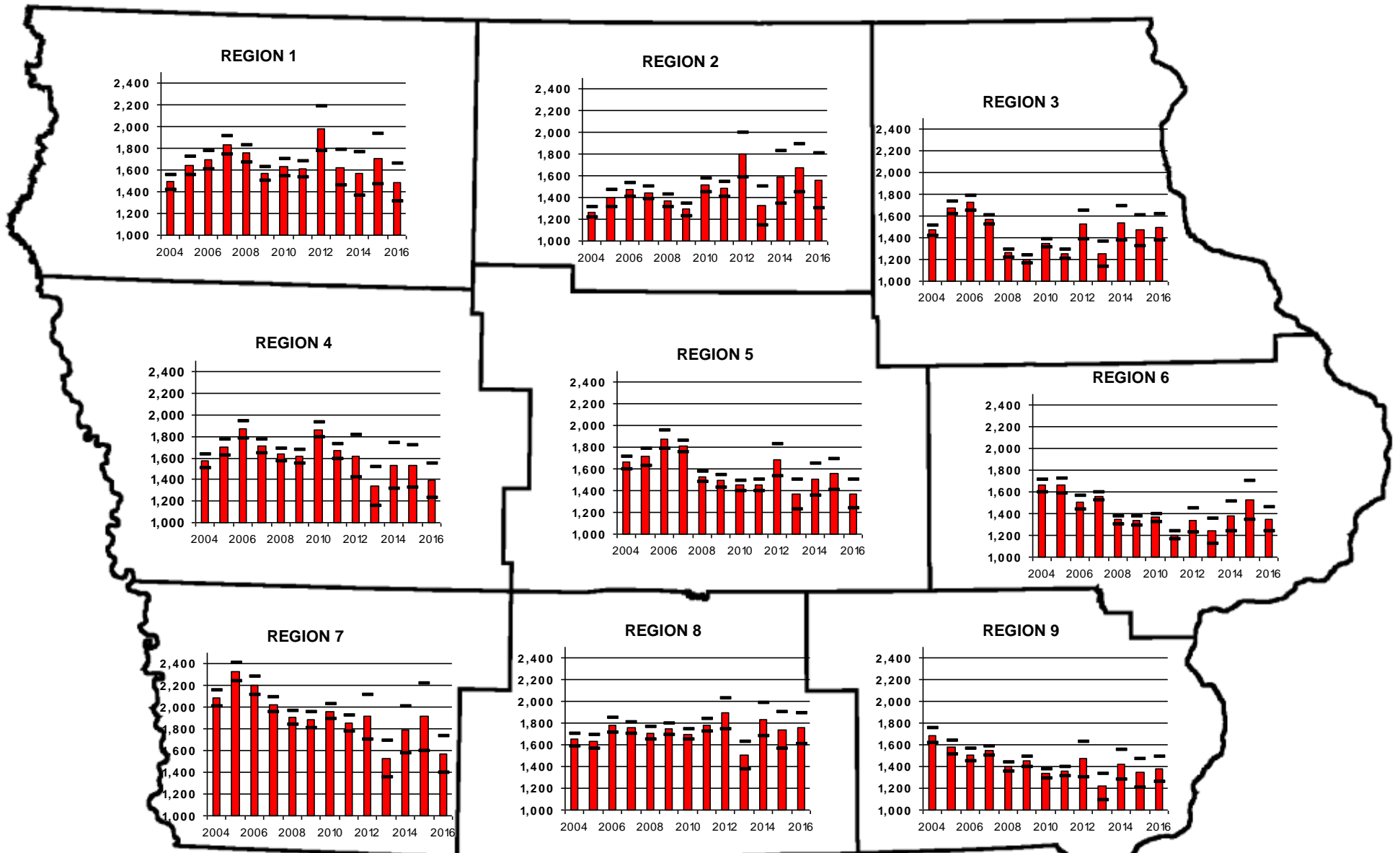


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Total Deer Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

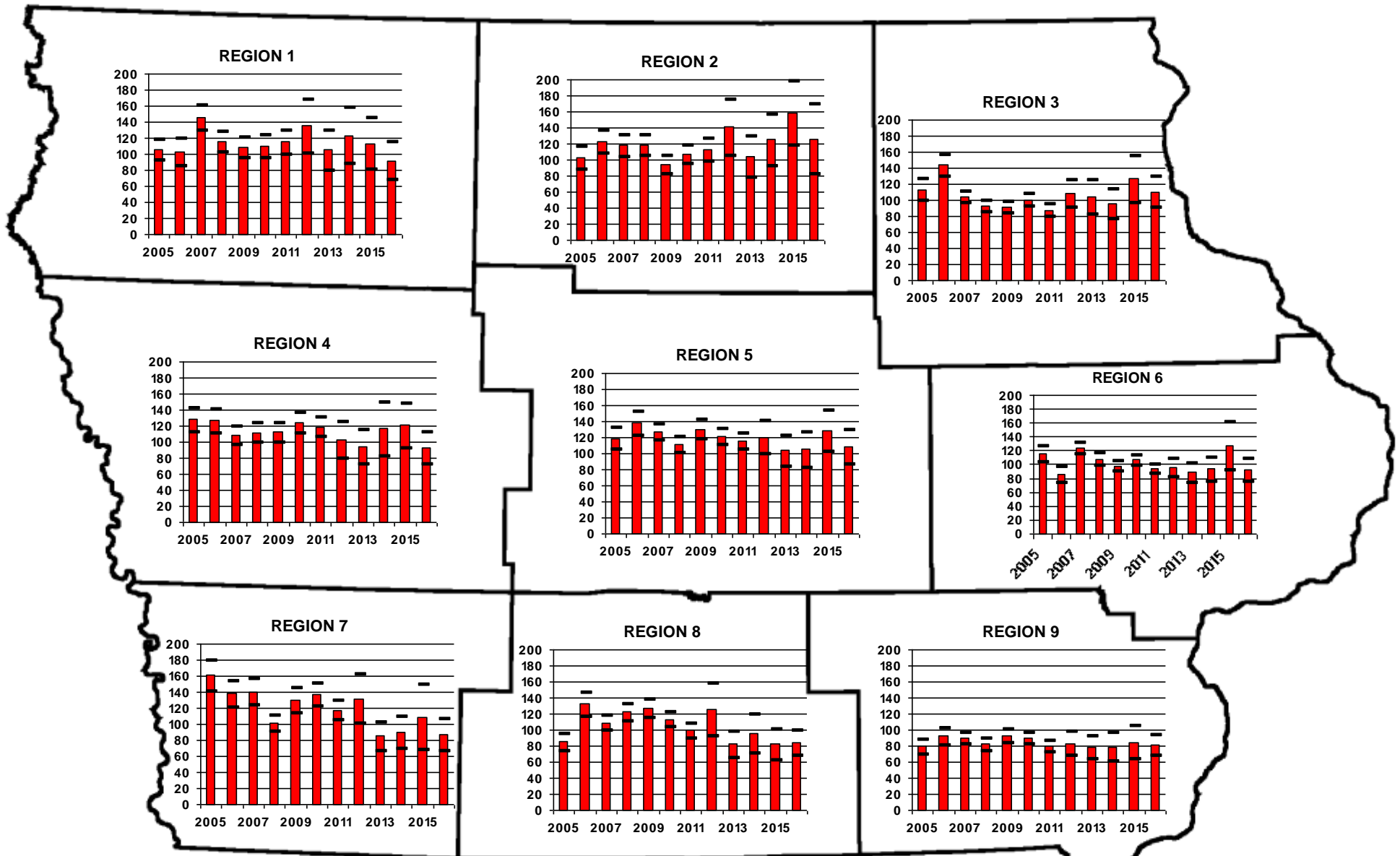


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Unknown Deer Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

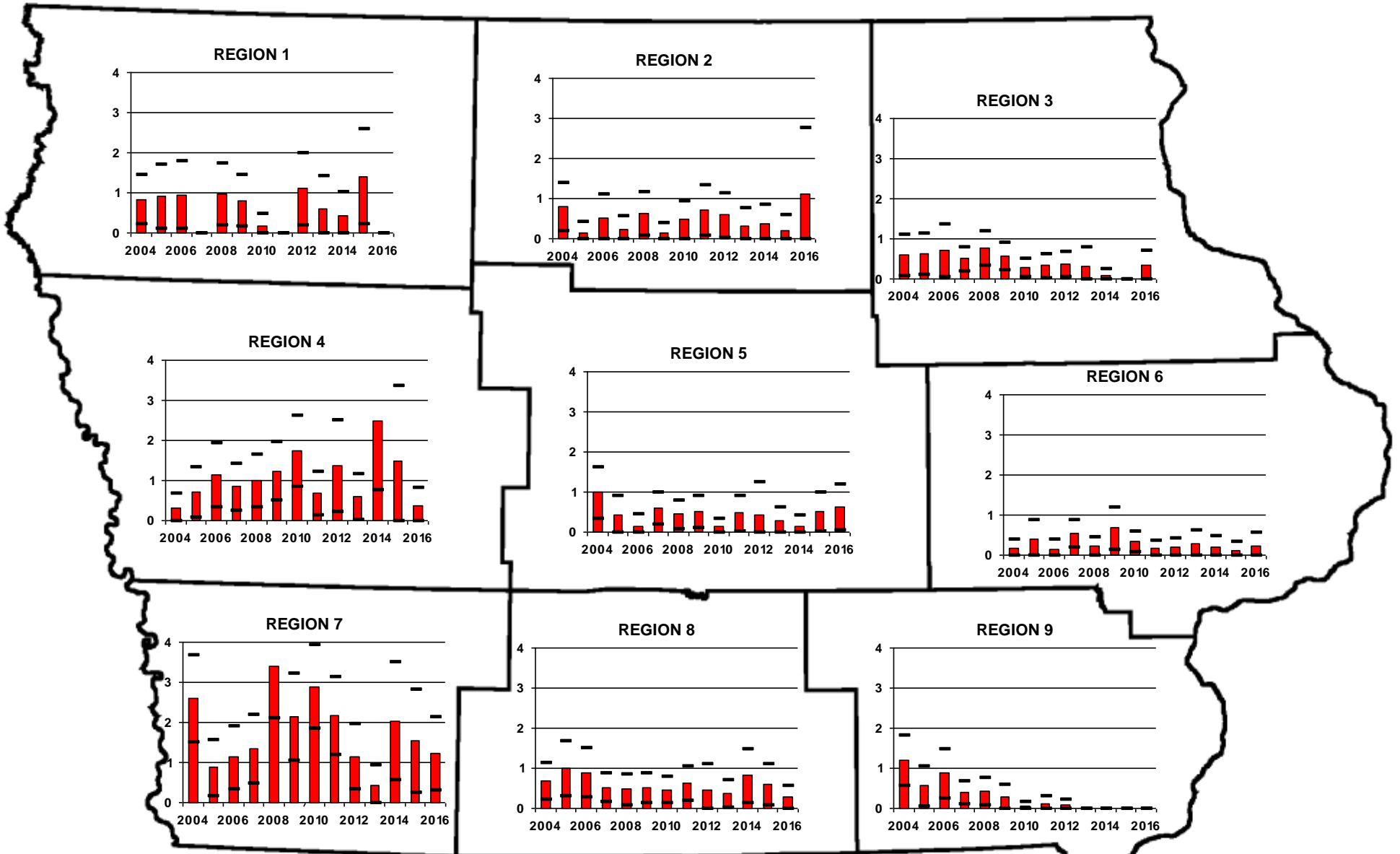


*Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.*



# Badger Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

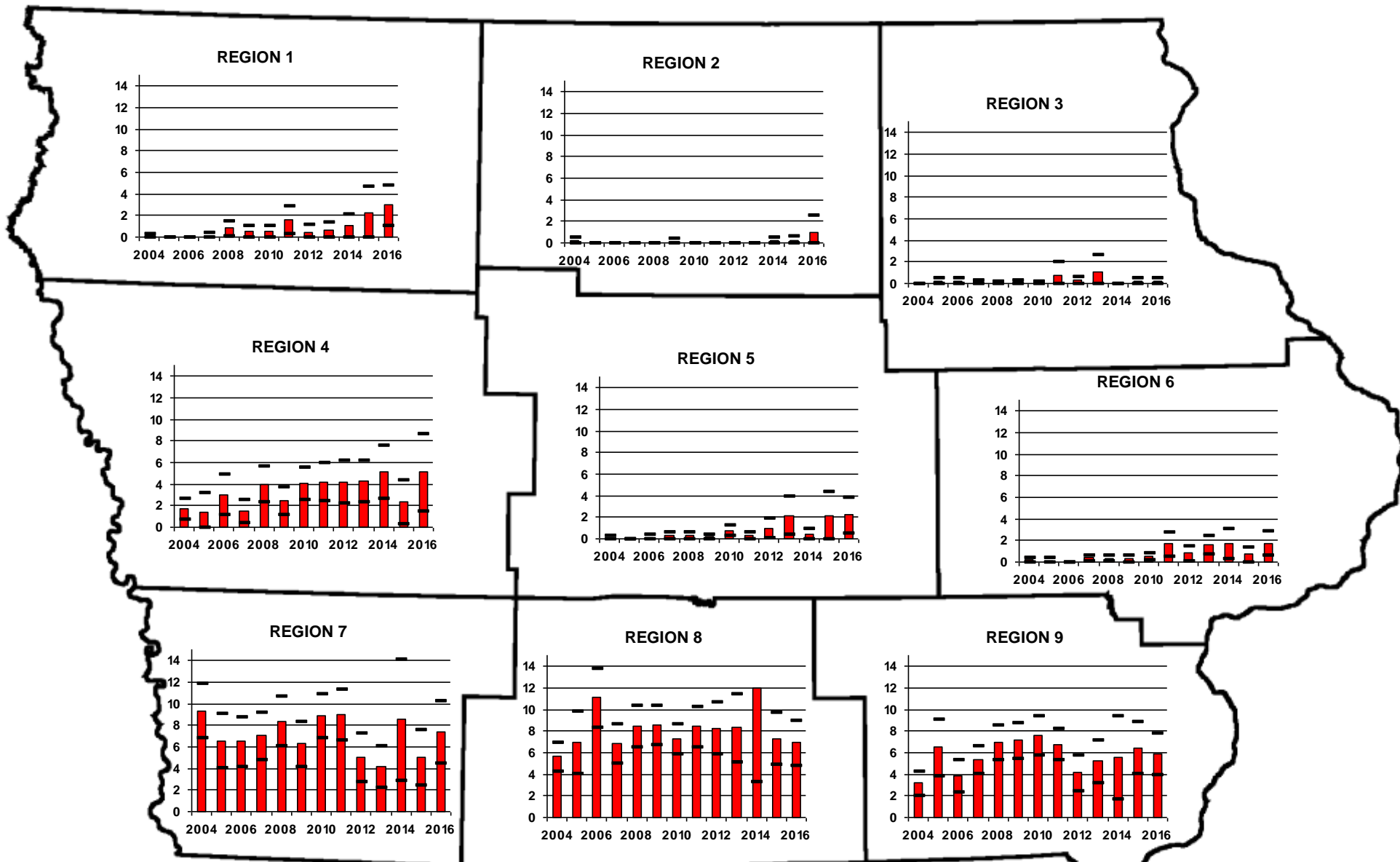


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Bobcat Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

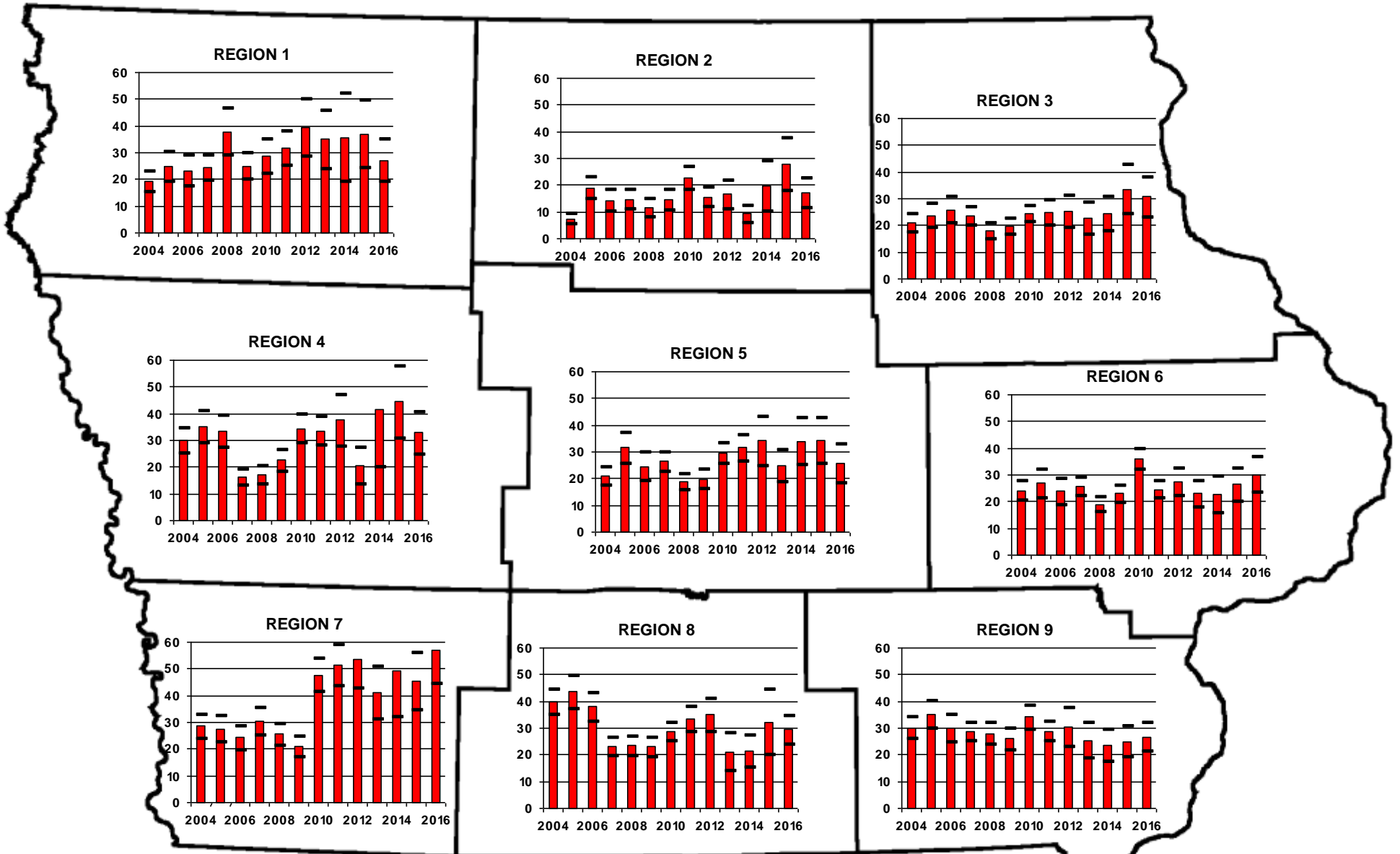


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Coyote Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources



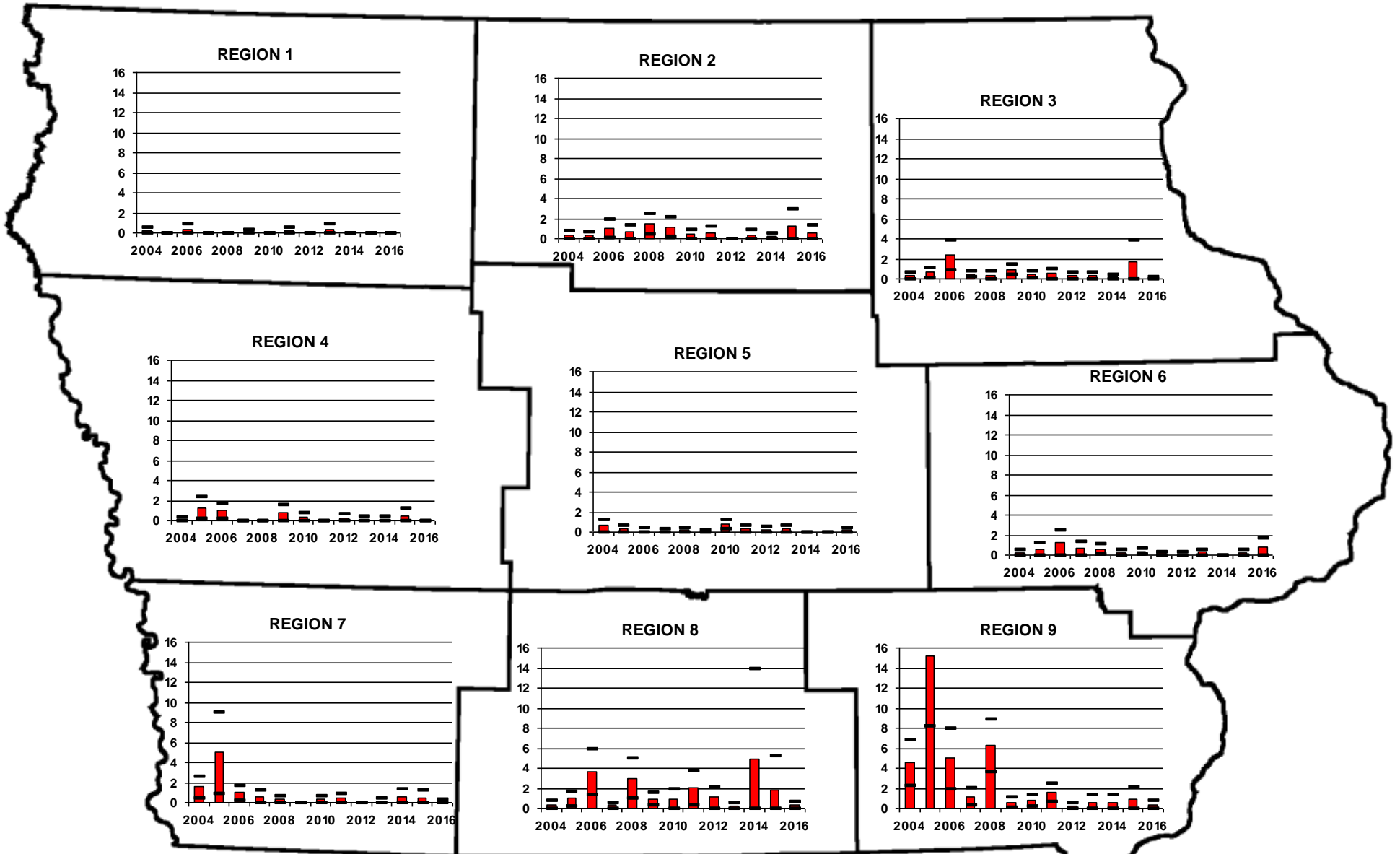
Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.





# Gray Fox Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

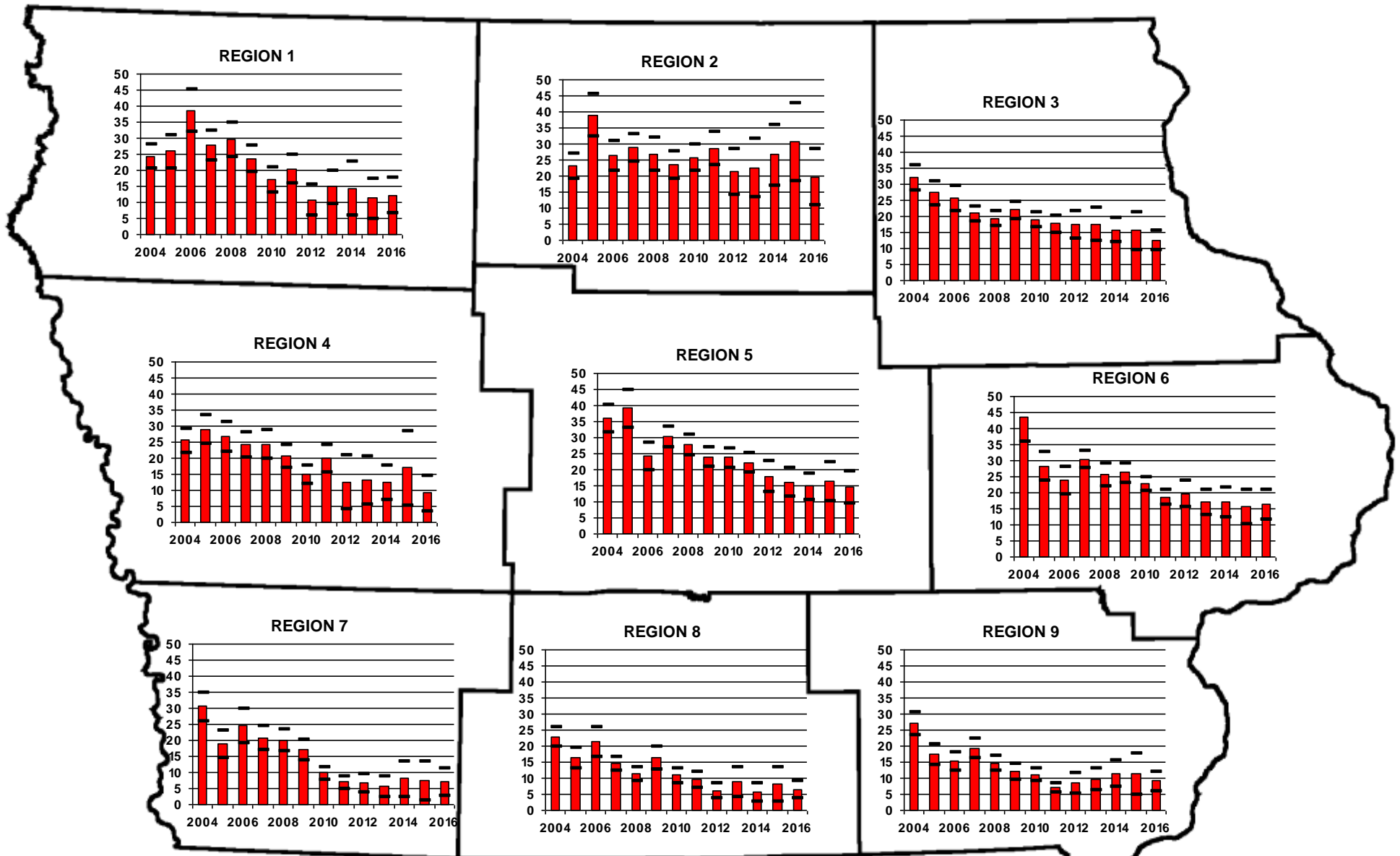


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# House Cat Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

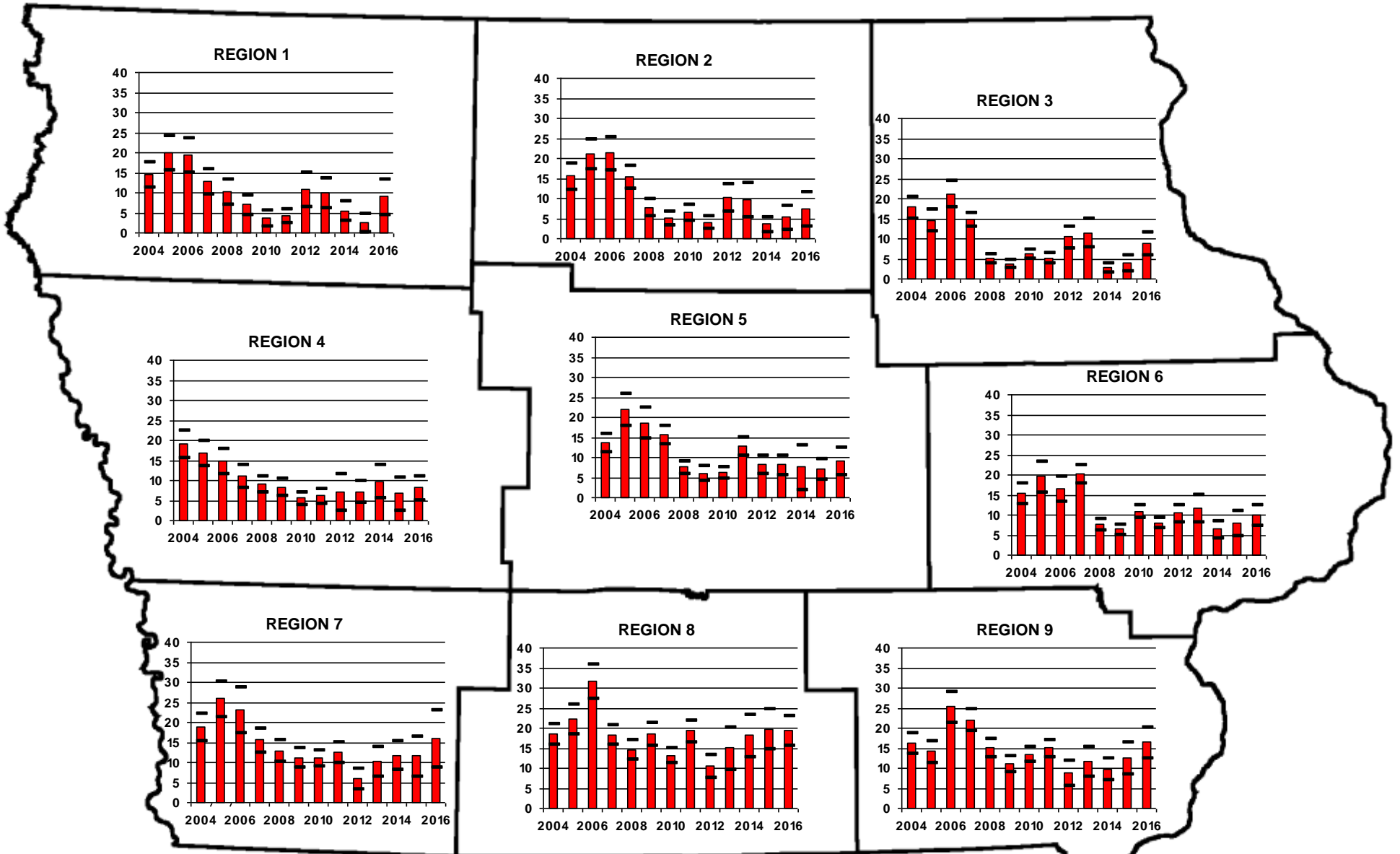


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Opossum Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

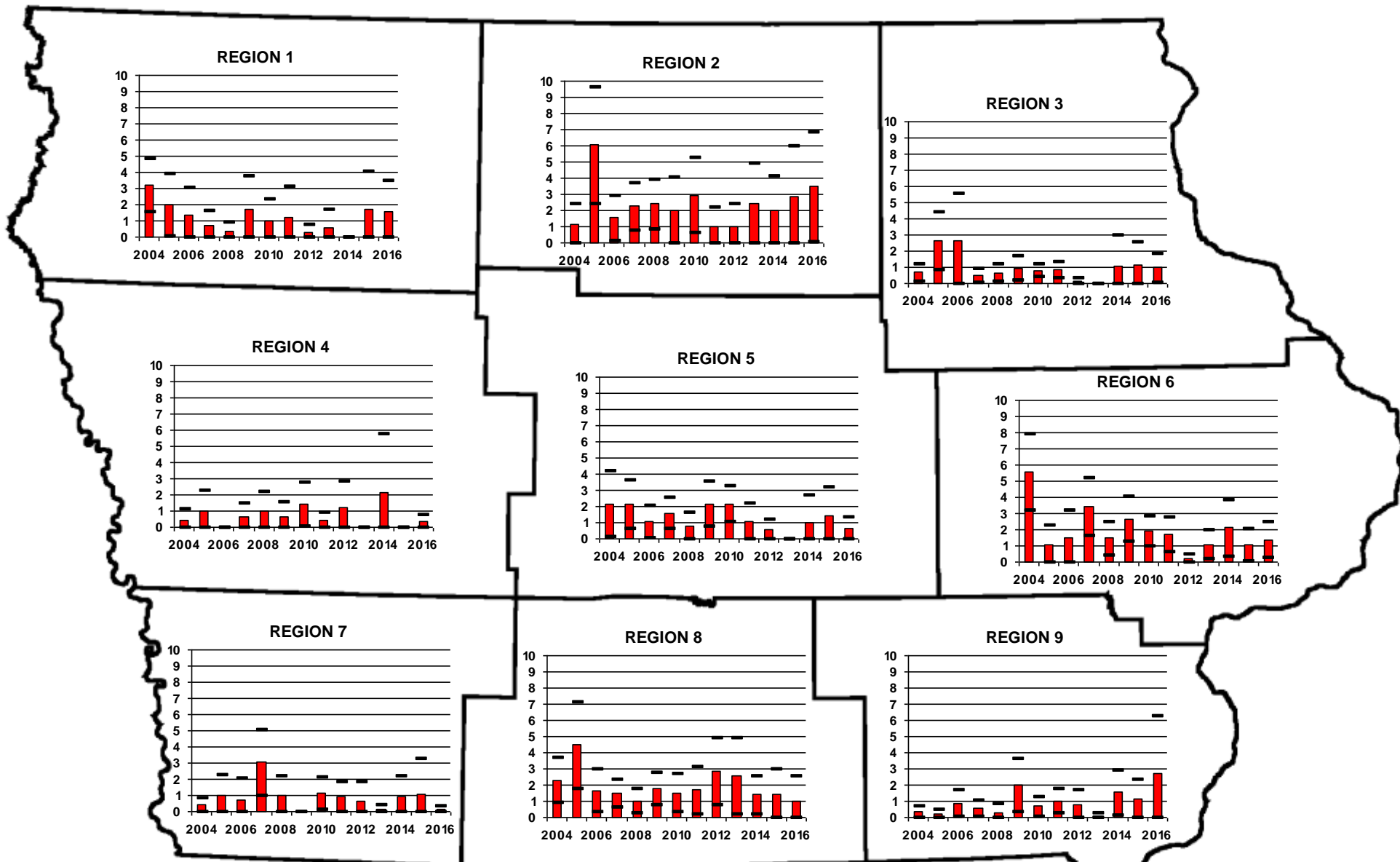


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# River Otter Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

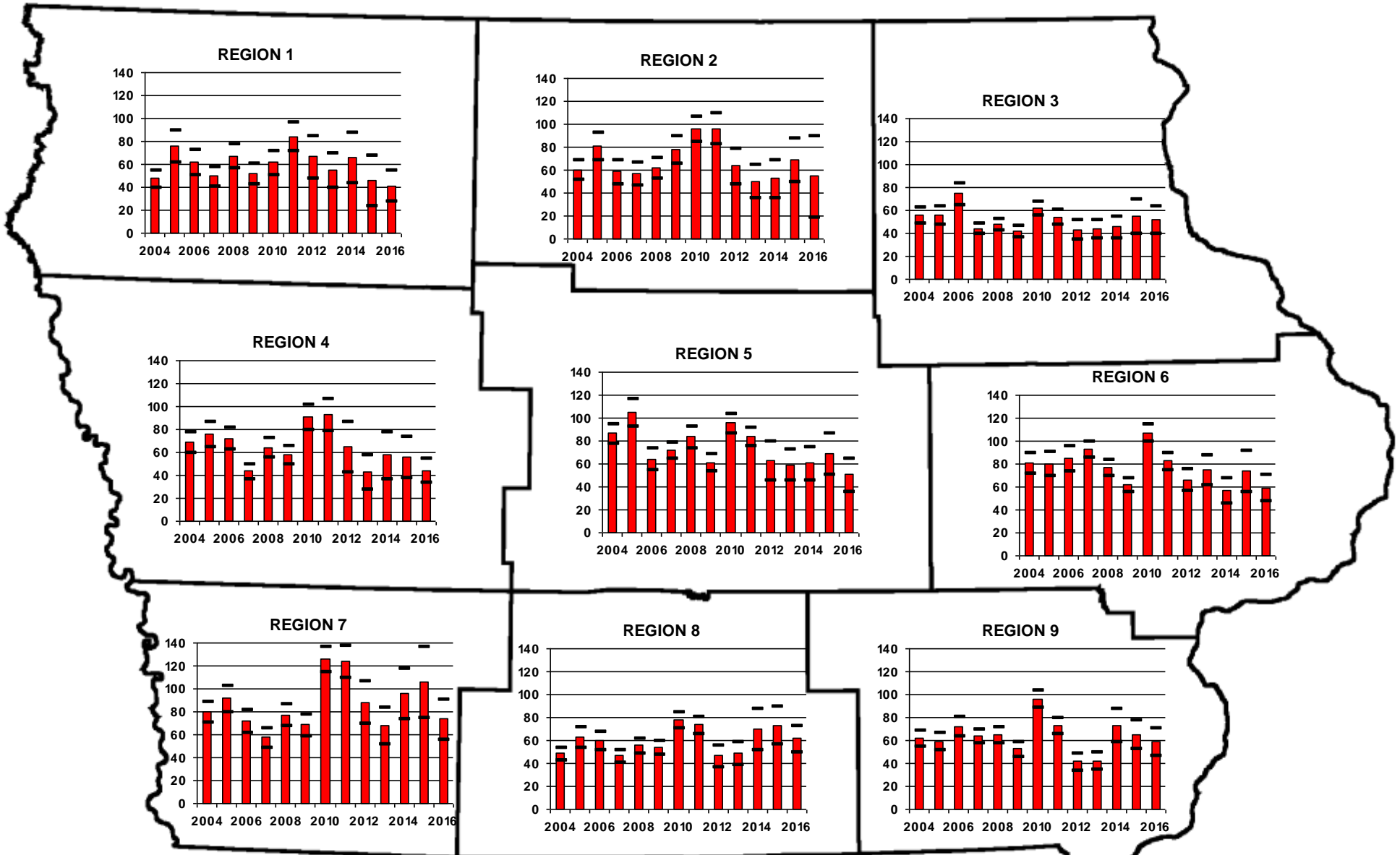


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Raccoon Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

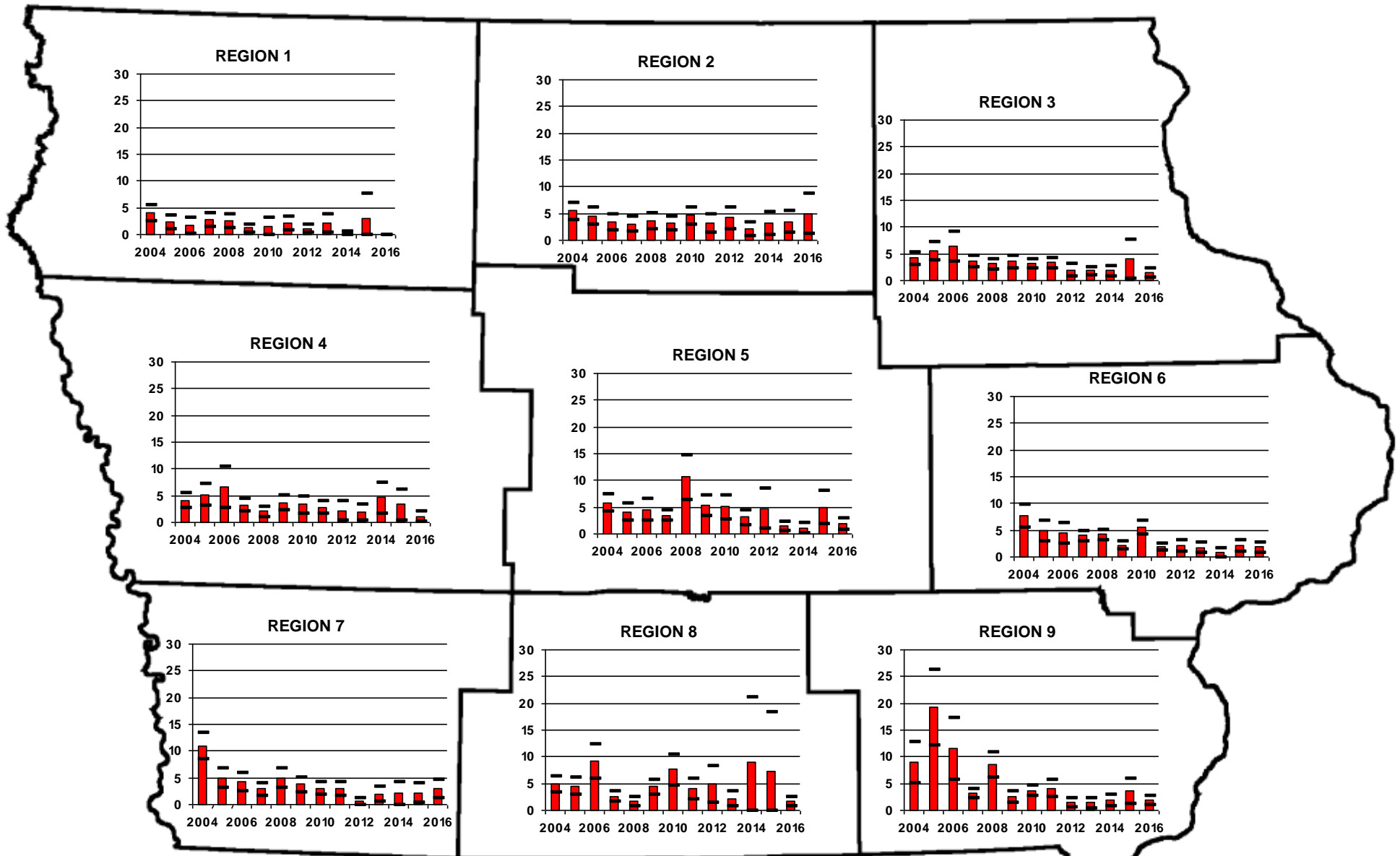


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Red Fox Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

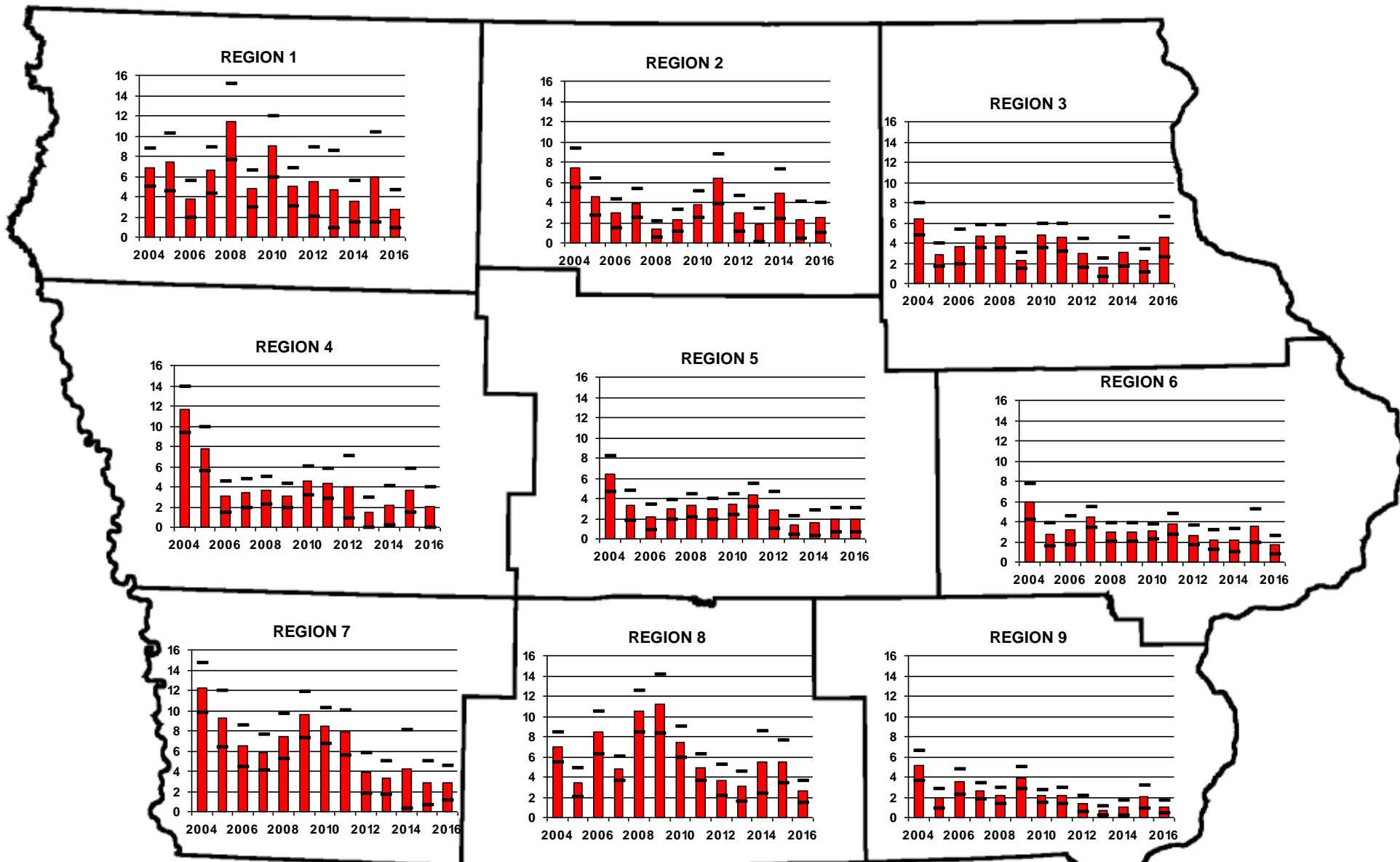


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Striped Skunk Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

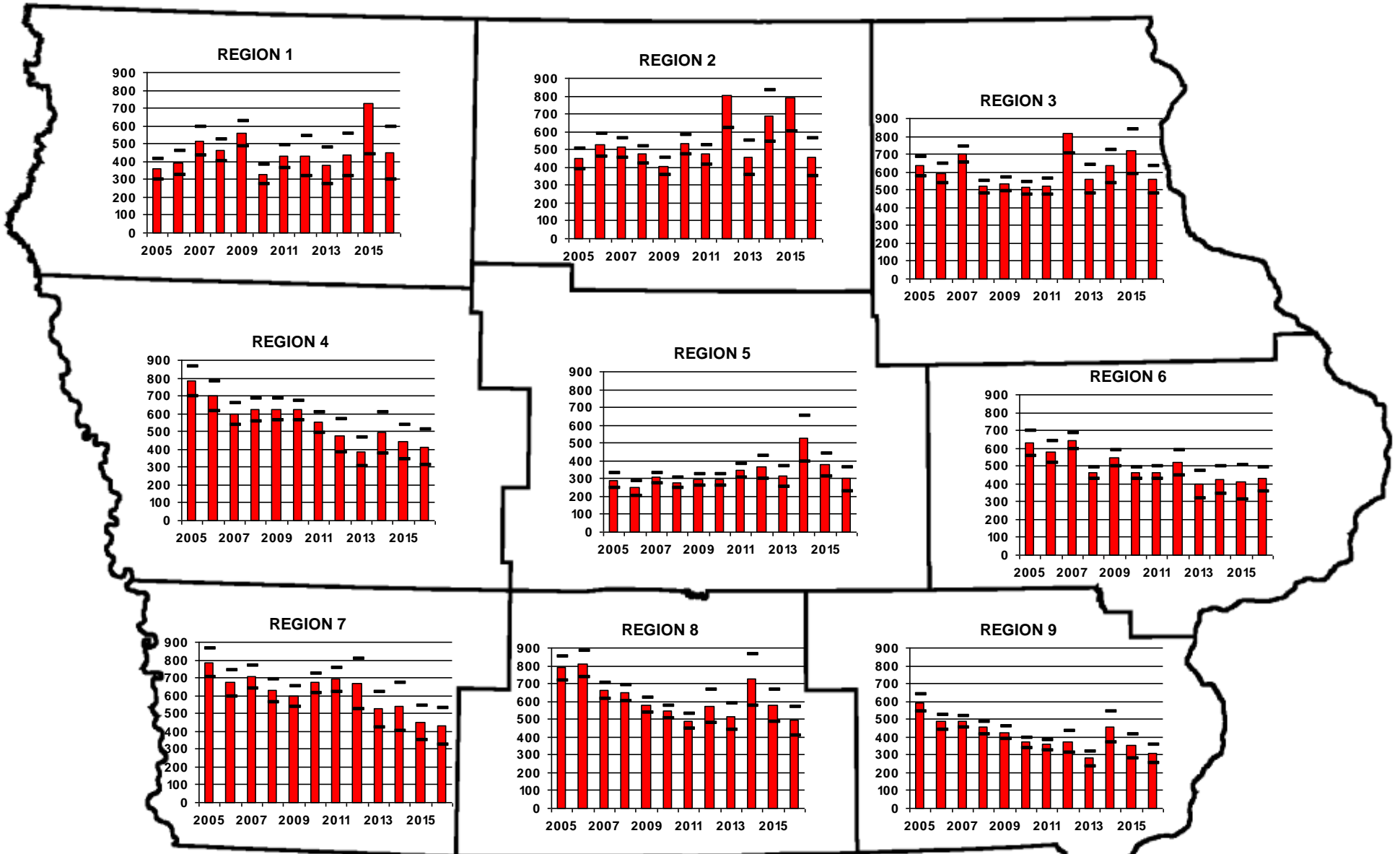


Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.



# Wild Turkey Observations Per 1,000 Hours Hunted

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources



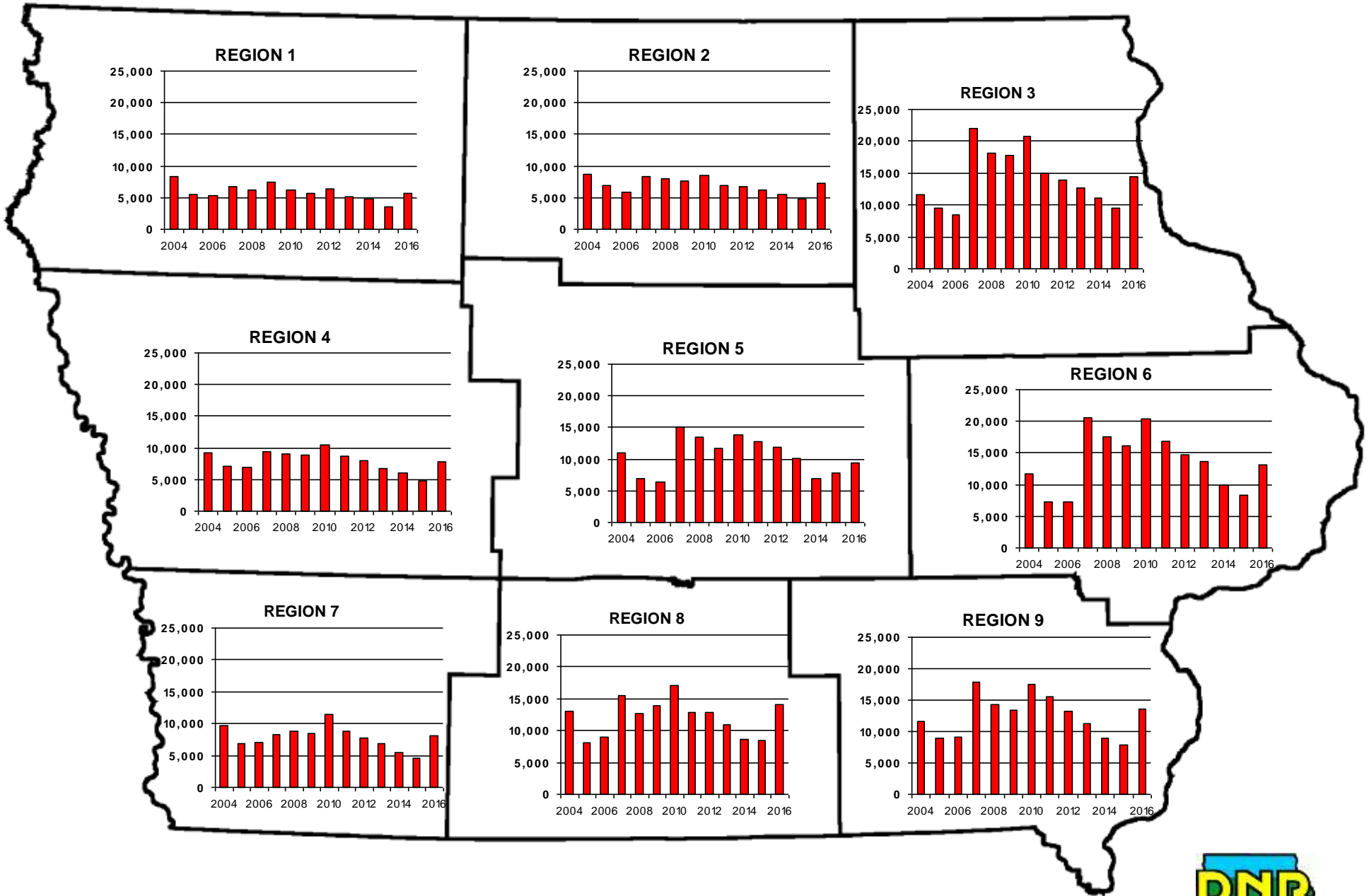
Many factors can influence the sightability of animals, such as population density, habitat characteristics, topography, land use, etc. As a result, differences between regions may NOT be attributed solely to population size/density.





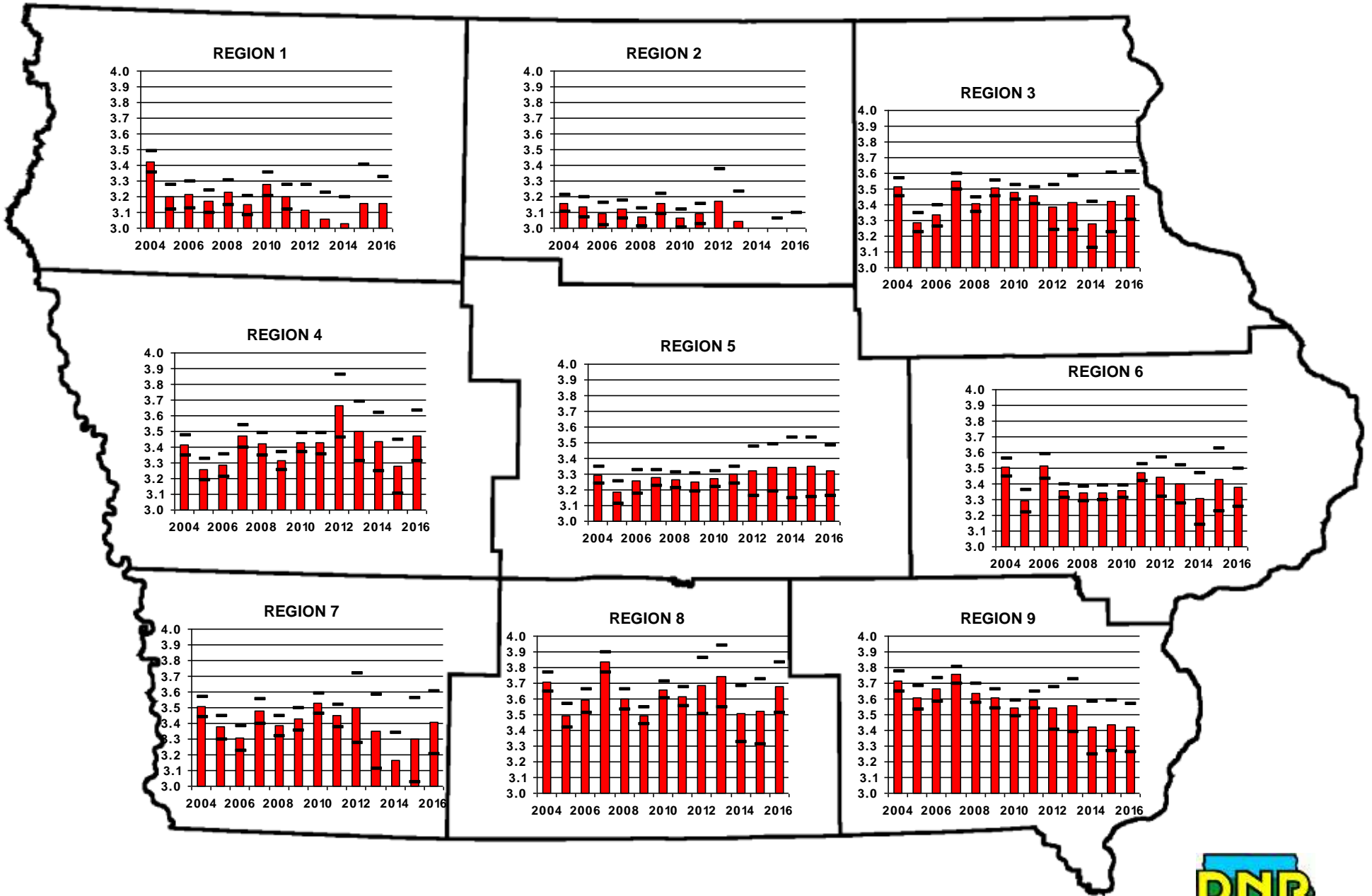
# Hours Hunted by Survey Participants

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources



# Average Hours Hunted/Bowhunting Trip

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources



# Bowhunting Trips by Survey Participants

## Bowhunter Observation Survey, Iowa Dept. of Natural Resources

