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**RESEARCH PROJECT TITLE**

An Assessment of Traffic Safety in Urban  
Deer Herd Management Zones in Iowa

**SPONSORS**

Iowa Department of Transportation  
(InTrans Project 08-328)

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# Assessing Traffic Safety in Iowa's Urban Deer Herd Management Zones

tech transfer summary

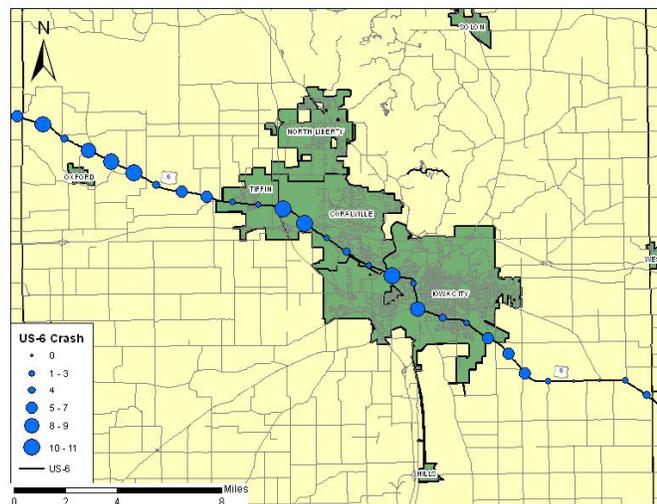
Urban deer management plans may help maintain deer populations while minimizing deer-vehicle crashes and improving traffic safety.

## Objectives

- Investigate the relationship between deer-vehicle collisions, deer density, and land use in three urban deer management zones in Iowa from 2002 to 2007.
- Determine and understand the factors that affect the frequency of deer-vehicle crashes and the corresponding severity outcomes.

## Problem Statement

Iowa is among the top five states in which drivers are most likely to be involved in deer-vehicle crashes, and in 2008 these incidents accounted for 12% of the state's reported crashes. Because of increasing traffic, higher deer populations, and human encroachment into deer habitats, deer-vehicle crashes have become a growing problem for urban areas.

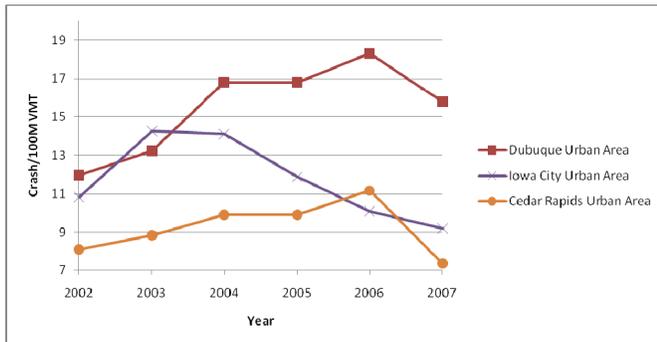


*Deer-vehicle crashes on US 6 through Johnson County, 2002 to 2007, indicating the growing problem in urban areas*

Different countermeasures have been tried with varied degrees of success, including annual deer hunts and special deer herd management plans. While these plans may reduce the deer population, the effects on traffic safety have not been fully assessed. Understanding the relationships between urban deer herd management and deer-vehicle crashes can indicate ways to maintain a sustainable deer population while maximizing public safety.

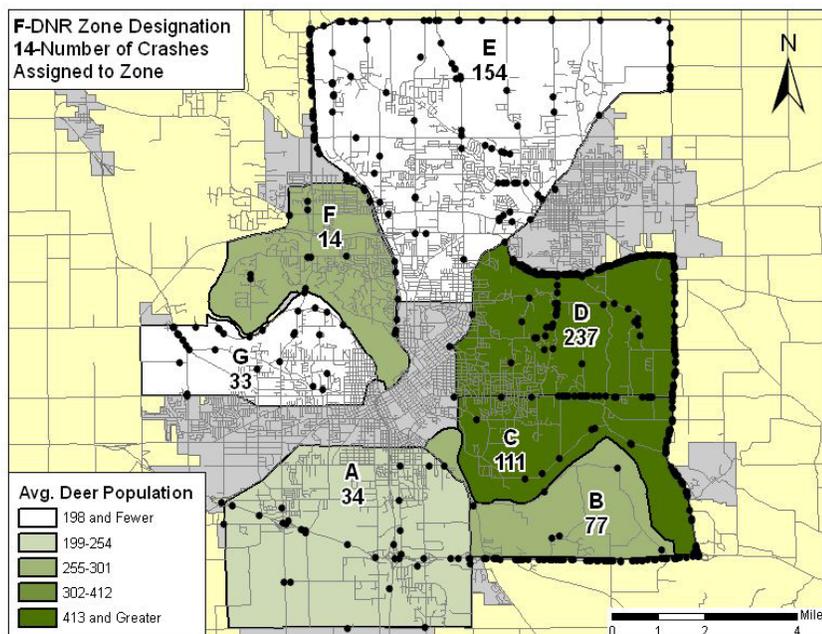
## Research Description

Three urban areas with deer management plans (Cedar Rapids, Dubuque, and Iowa City) were selected, and the Iowa Department of Natural Resources and Iowa Department of Transportation provided deer population counts (1997 to 2008), deer carcass counts, and deer-vehicle crash data (2002 to 2007).



*Descriptive analysis comparing the deer-vehicle crash rate per 100 million vehicle miles traveled for Cedar Rapids, Dubuque, and Iowa City*

For each urban area, each dataset was graphed. Descriptive and statistical analyses were then conducted to identify the major factors contributing to deer-vehicle crashes and to predict the frequency of deer-vehicle crashes in relation to those factors.



*Average deer population and number of deer-vehicle crashes for deer management zones in Cedar Rapids*

## Key Findings

- Special hunts appeared not to be keeping pace with deer population and traffic volume growth.
- High number of crashes on major routes with high traffic volumes are unreported.
- Deer density is a more significant predictor of deer-vehicle crash frequency in urban deer management zones than deer herd size.
- The frequency of deer-vehicle crashes was higher in zones with a higher percentage of residential and commercial acreage, which confirms the adverse impacts of human migration into deer habitats.
- The frequency of crashes was higher on undivided roads, on roads with a posted speed limit below 55 mph, on dry roads, and on roads with dark lighting conditions.
- The expected frequency of deer-vehicle injuries was lower on roads with wider shoulders.
- Crashes that occurred on roads with a posted speed limit below 55 mph were less likely to result in injury, most likely because of the lower impact speed.
- Half of the deer-vehicle crashes reported during the analysis period occurred during the rut (October, November, or December).

## Recommendations

- Identify countermeasures that will help reduce the deer density adjacent to roads and developed land.
  - Monitor countermeasures and properly document findings on the effectiveness of each countermeasure.
- Create a consistent system for reporting deer-vehicle crashes and deer carcasses on primary and secondary routes.
- Understand the impact of human development on deer habitats and account for interactions while planning.
- Conduct a comprehensive multidisciplinary study on all factors and measures of effectiveness to help assess deer management plans.

## Implementation Benefits

With the results of this study, traffic safety in urban deer herd management zones can be better assessed. In addition, locations on the transportation system that significantly impact deer species and safety can be identified, and appropriate mitigation countermeasures can be determined.