

# **Anatomy of ATV injuries in Central Illinois: Using the Haddon Matrix to Further our Knowledge**

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**American Public Health Association Conference**

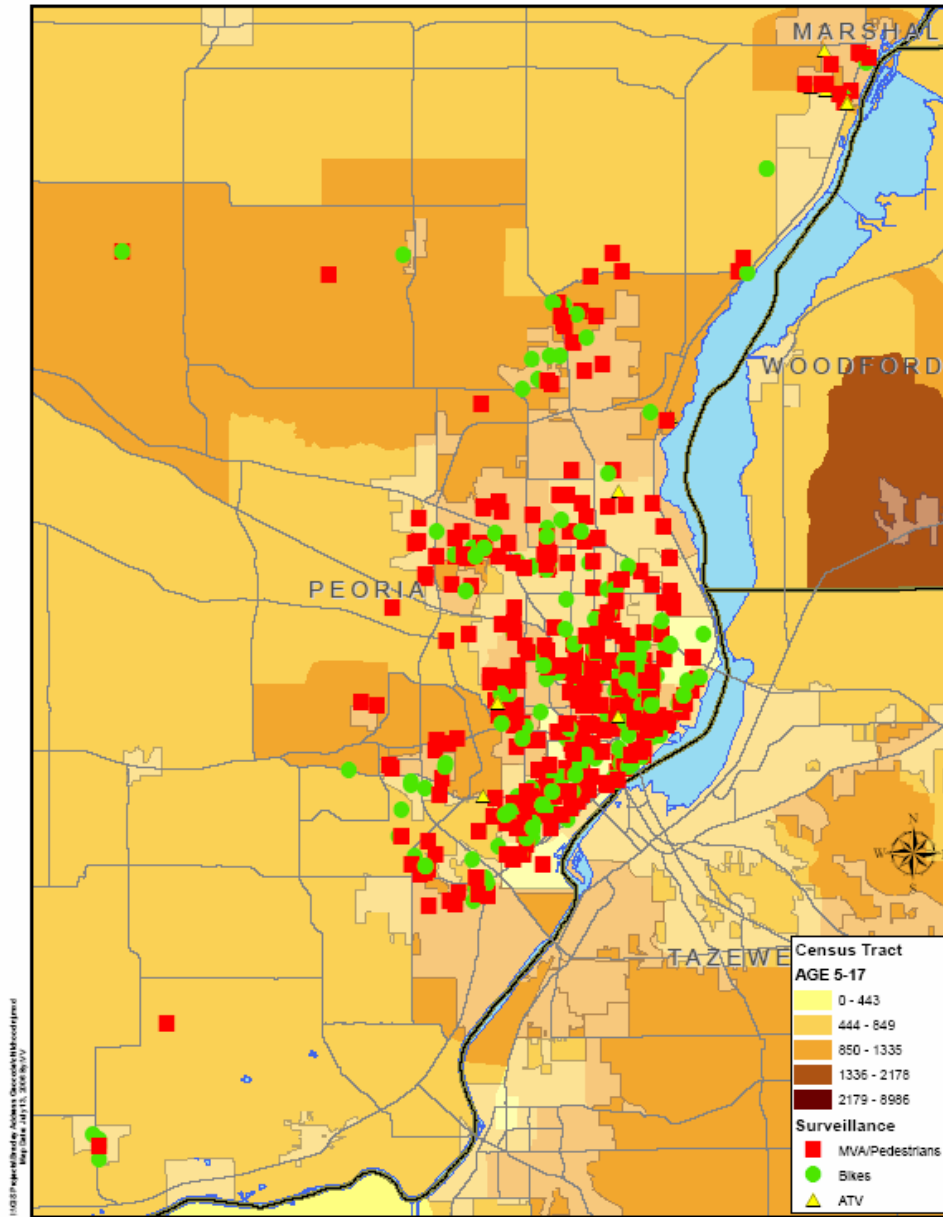
**Washington, DC**

**November, 2007**

## ATV Injuries in Central Illinois

- 1. Participants will be able to correctly identify components of accidental injury analysis provided by the Haddon Matrix and relate these to the public health prevention continuum.**
- 2. Participants will better appreciate collection and interpretation of novel sources of data to better clarify a community health problem.**
- 3. Participants will apply knowledge learned through Objectives 1 and 2 to develop other feasible research studies to complete the Haddon Matrix analysis.**

### Childhood Injuries 2006



GIS: Peoria, Illinois, Census, Microcomputer  
Map Date: 12/11/2006 10:21 AM

## ATV Injuries in Central Illinois

The Haddon Matrix is used by injury epidemiologists and presents a concise way to describe/understand components of an injury event.

The matrix consists of 3 rows representing time phases (before, during and after an incident) intersecting 3 columns representing characteristics of the agent/vector, person and physical/social environment.

# Haddon Matrix

<b>Phase/ Factor</b>	<b>Host</b>	<b>Agent</b>	<b>Physical Environment</b>	<b>Social/ Cultural Environment</b>
Pre- Event				
Event				
Post- Event				

ATV Injuries in Central Illinois

# ATV Point of Sale Study

## ATV Injuries in Central Illinois

### **ATV Point of Sale Study**

**Purpose: This study sought to document compliance by all-terrain vehicle (ATV) dealers in Illinois with established Consumer Product Safety Commission (CPSC) safety practices voluntarily accepted by all major ATV manufacturers in 1998.**

## ATV Injuries in Central Illinois

### **Method:**

- 1. Telephone survey of all licensed motorcycle dealers in Illinois**
- 2. Trained investigators, using aliases and posing as a parent of a 13 year-old teenager, spoke with dealership personnel.**
- 3. Investigators indicated they wished to purchase an ATV with the dealership, but had no knowledge of ATV use or safety issues.**



Illinois All Terrain Vehicle (ATV) Point of Sale Research Study  
University of Illinois College of Medicine at Peoria  
Bradley University Department of Psychology

Dealership ID Number: \_\_\_\_\_

Illinois County: \_\_\_\_\_ Zip Code of Dealership: \_\_\_\_\_

Date of Interview: \_\_\_\_/\_\_\_\_/\_\_\_\_

Time started: \_\_\_\_\_ Time Ended: \_\_\_\_\_

Interviewed: Salesperson      Manager      No ID      Other

***Scenario:** You are portraying a parent inquiring about ATVs. This should be a bit of an impulse purchase. You have relatives in the immediate area that you often visit and own an ATV. You have a 13-year-old son (average size) who often plays with the relatives and they have an ATV (adult sized ATV, unsure of make and model), and he wants to have an ATV to ride as well. You openly admit you know nothing of the machines and ask for advice on which ATV to purchase. You also inquire at some point about safety (are these vehicles safe?) the dealership recommendations. Mention that you will be in the area next week and would like to purchase the vehicle locally and keep it at your relative's house. You are asking for specific model and price quotes so that you can comparison shop a bit before coming to the area. If asked, no one else plans to ride the vehicle*

Dealership does not sell ATVs      **STOP survey**

Salesperson refuses to speak in any detail on telephone      **STOP survey**

## ATV Injuries in Central Illinois

- 4. Specific responses from the salesperson, models and brands of ATVs, price quotes, engine sizes, and safety information/recommendations were recorded on a standard survey instrument.**
- 5. After study completion, a standardized letter was sent to each dealership surveyed disclosing the study.**

## ATV Injuries in Central Illinois

### Results

- 1. Of the 589 motorcycle dealers surveyed, 127 completed the survey (81 dealers out of business, 375 did not sell ATVs and 6 non-participants).**
- 2. A salesperson most often fielded the telephone interview (124/127).**

## ATV Injuries in Central Illinois

- 3. Telephone interviews by male investigators lasted longer than those by female interviewers (5 min 37 sec vs. 3 min 51 sec;  $p=0.001$ ).**
- 4. Respondents recommended appropriate engine-sized ATVs (<90 cc) during 70.3% of the calls.**
- 5. Nearly all respondents recommended helmet use (108/127).**

## Table 1 Form of Protection Recommended

Safety Measure	Percent
Helmet	85.0%
Boots	49.6%
Gloves	48.0%
Goggles	39.4%
Chest protector	33.8%
Long pants	17.3%
Adult supervision of child rider	7.1%
Buddy system of ATV riding	0%
Single rider on vehicle	0%

## ATV Injuries in Central Illinois

**6.1 out of 6 respondents (16.5%) did not believe that rider training was necessary.**

**7. When pressed about training, about half (49.6%) indicated that training could be arranged *through a dealership course.***



## ATV Injuries in Central Illinois

**8. Between 1/3 and 2/3 of respondents spontaneously mentioned CPSC guidelines for the use of ATV by a child rider:**

- **36.2% mentioned the age/engine size recommendation;**
- **66.9% mentioned that guidelines recommend vehicles with an engine size of 90cc or smaller for the child being shopped for; and,**
- **69.3% provided information on size of vehicle best suited for a child.**

## ATV Injuries in Central Illinois

**9. Fewer than 5 percent of persons interviewed (4.7%) stated that ATVs were dangerous.**

**10. Others believed the vehicles to be safe or safe with caveats such as smaller size or use of safety equipment.**





## ATV Injuries in Central Illinois

- **Injury prevention efforts targeting ATV dealers may serve only to reinforce what these sales persons already do.**
- **However, consistent and frequently delivered safety messages, given orally and in writing may help to reduce ATV injury rates and prevent needless deaths of children who ride these vehicles.**

ATV Injuries in Central Illinois

# **ATV Use and Safety Survey**

## ATV Injuries in Central Illinois

### **ATV Use and Safety Survey**

- **Survey to characterized the use and safety patterns of rural youth for ATV riding**
  - **Much known about injured driver's use patterns**
  - **What is the typical user pattern for youth**
- **Partnership with Injury Free Coalition for Kids of Little Rock (survey development)**
- **Partnership with 4-H clubs of America**
  - **Survey of all 4-H participants in 4 rural Central Illinois Counties**

# ATV Injuries in Central Illinois

## Method

**Correlational research strategy using a cross-sectional survey design employing a 42 question self-administered, anonymous, mailed questionnaire**

- **4-H participants in 4 Central Illinois Counties (Woodford, Tazewell, Fulton, Peoria), 8-18 years old**
- **Driven or ridden an ATV in the last 6 months**

## ATV Injuries in Central Illinois

### **42 multiple choice, Likert and short answer questions**

- **Questions focused on 3 areas:**
  - **ATV riding/driving history**
  - **Safety practices and knowledge**
  - **ATV injuries**
- **1850 surveys distributed in two mailings**
- **\$1 McDonald's coupon in one mailing, entered into a bike raffle if questionnaire sent back**

## ATV Injuries in Central Illinois

- **Six-hundred thirty-four (634) of 1850 surveys were returned completed**
  - **34% response rate**
- **Of the completed surveys, 280 participations indicated they had ridden or driven an ATV over the past 6 months**
  - **44% of respondents**



## ATV Injuries in Central Illinois

<b>Gender</b>	
<b>Female</b>	127 (45.4%)
<b>Male</b>	145 (51.8%)
<b>Unknown</b>	8 (2.8%)
<b>Median Age</b>	12 years (range: 6 – 19 years)
<b>Median School Grade</b>	7 (range: 1 <sup>st</sup> – early college)
<b>Location of Residence</b>	
<b>City</b>	2 (0.7%)
<b>Medium Town</b>	12 (4.3%)
<b>Small Town</b>	49 (17.5%)
<b>Rural</b>	57 (20.4%)
<b>Farm</b>	156 (55.7%)
<b>Unknown</b>	4 (1.4%)
<b>Mean Height</b>	62.3 inches (range: 48-76 inches)
<b>Mean Weight</b>	113.7 lbs (range: 35 – 265 lbs)

## ATV Injuries in Central Illinois

<b>ATV Activities</b>	<b>Responses n=619, (Percent)</b>
<b>Hunting/Fishing</b>	<b>46 (7.4%)</b>
<b>Trail Riding</b>	<b>81 (13.1%)</b>
<b>Joy Riding/Recreation</b>	<b>223 (36%)</b>
<b>Work</b>	<b>140 (22.6%)</b>
<b>Transportation</b>	<b>95 (15.3%)</b>
<b>Farm Duties</b>	<b>9 (1.5%)</b>
<b>Other</b>	<b>25 (4.0%)</b>



## ATV Injuries in Central Illinois

Locations	Responses n=775, (Percent)
Designated ATV course	7 (0.9%)
Trails in the woods	112 (14.5%)
<b>On a farm</b>	<b>210 (27.1%)</b>
On a paved road	74 (9.5%)
On a dirt road	63 (8.1%)
On a gravel road	92 (11.9%)
<b>On family property</b>	<b>204 (26.3%)</b>
Other	13 (1.7%)

## ATV Injuries in Central Illinois

Equipment	Always	Occasionally	Sometimes	Almost Never	Never
Helmet - face Shield	32	23	25	20	159
Helmet - no face shield	46	26	22	20	145
Leather gloves	15	22	30	24	171
Goggles	20	15	25	21	181
Boots	53	40	46	15	108
Long pants	155	48	45	5	16

## ATV Injuries in Central Illinois

Practice	Always	Occasionally	Sometimes	Almost Never	Never
Riding after dark	4	38	46	56	125
Adult supervision	121	39	42	32	37
Riding with a buddy	73	64	53	31	52

## ATV Injuries in Central Illinois

- **67% stated they had a crash on an ATV**
  - **44% of those reported an injury**
- **Most (56%) were driving during the crash**
- **Most occurred on family property or a farm**
- **93.3% of respondents were using an adult sized ATV (>90 cc)**
- **Few children (7.2%) stated they had experienced a rollover**

## ATV Injuries in Central Illinois

- **Children undergoing some form of safety training were less likely to experience a crash**
- **Children who more frequently rode after dark and did not use adult supervision were more likely to be injured**

## ATV Injuries in Central Illinois

<b>Factor</b>	<b>Responses n=44, (Percent)</b>
<b>Lack of experience</b>	<b>4 (9.1%)</b>
<b>Lack of strength/unable to control</b>	<b>5 (11.4%)</b>
<b>Driver distracted</b>	<b>7 (15.9%)</b>
<b>Poor visibility</b>	<b>4 (9.1%)</b>
<b>Poor weather/environmental conditions</b>	<b>9 (20.5%)</b>
<b>Excessive speed</b>	<b>2 (4.5%)</b>
<b>Other</b>	<b>13 (29.5%)</b>

## ATV Injuries in Central Illinois

Source	Responses n=176, (Percent)
Newspaper article	44 (25%)
Brochure	17 (9.7%)
Family doctor	7 (4.0%)
Radio	12 (6.8%)
Television	45 (25.6%)
Billboard	6 (3.4%)
Family/friends	27 (15.3%)
Other	18 (10.2%)