Survey of Driver Responses to the Wildlife Hazard Warning System (WildHAZ)

Photo: Dreamtime (copyright free)

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The Hazard

The Consequences to Drivers

Annual Impact (Canada/U.S.)

- >1 Million wildlife-vehicle collisions
- >$1.5 Billion collision-related costs
- Thousands of people injured
- >100 people killed

Photos: Washington State Patrol

Warning Drivers of Hazards

Warning Drivers of Hazards

Warning Drivers of Hazards

Typically, road hazard warning signs are static devices in fixed locations with fixed messages.


8%


FOR
1
km

Photo: Pennsylvania Department of Transportation

Photo: Washington Department of Transportation


NEXT 10 MILES


NEXT 10 MILES


BEST BUY
FORD
14
NORTH


MAXIMUM
60
km/h

Source: Andrew Vaughan/The Cana

Photo: Jimmy Emerson, DVM, Flickr

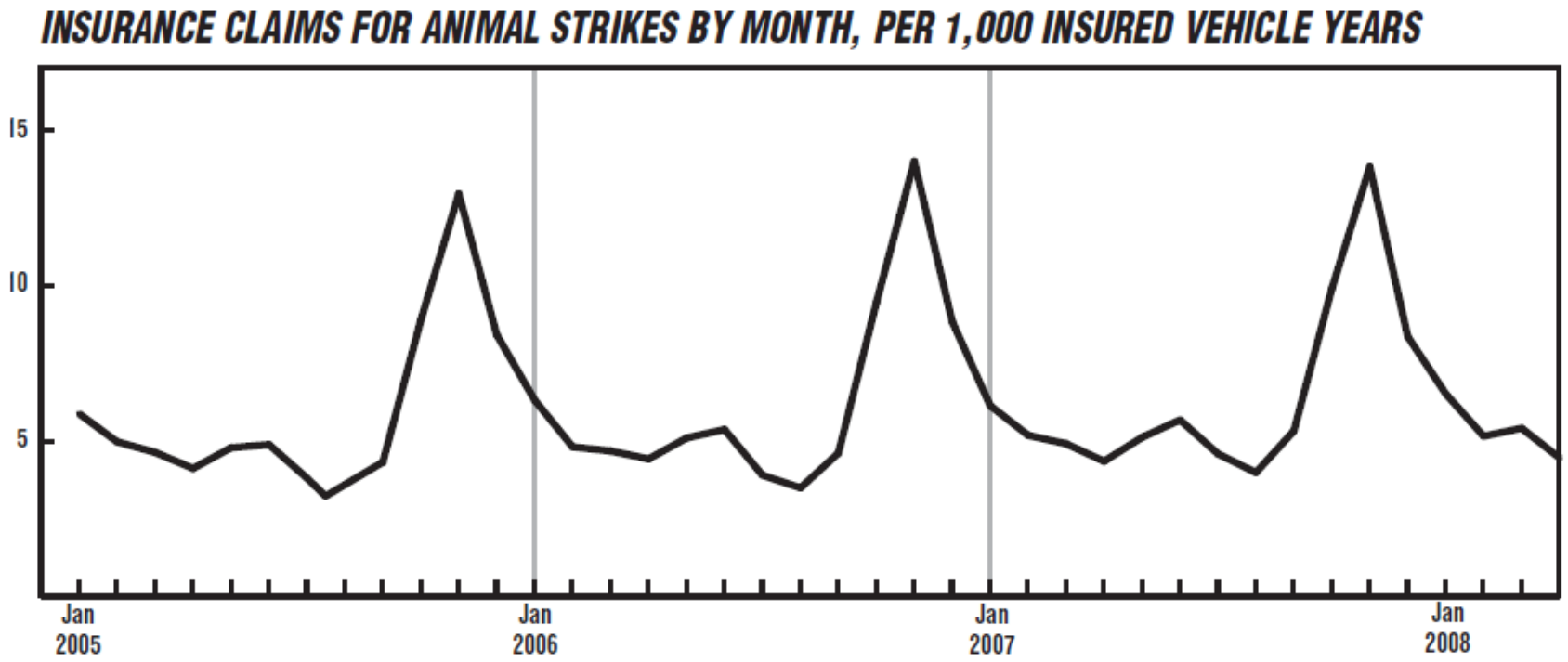

動物注意


NEXT
SUR
3 km


CAUTION
WILDLIFE
ON HIGHWAY


WILDLIFE
ANIMAUX SAUVAGES
HIGH COLLISION AREA
NEXT 2 KM
ZONE ÉLEVÉ D'ACCIDENTS
SUR 2 KM
70

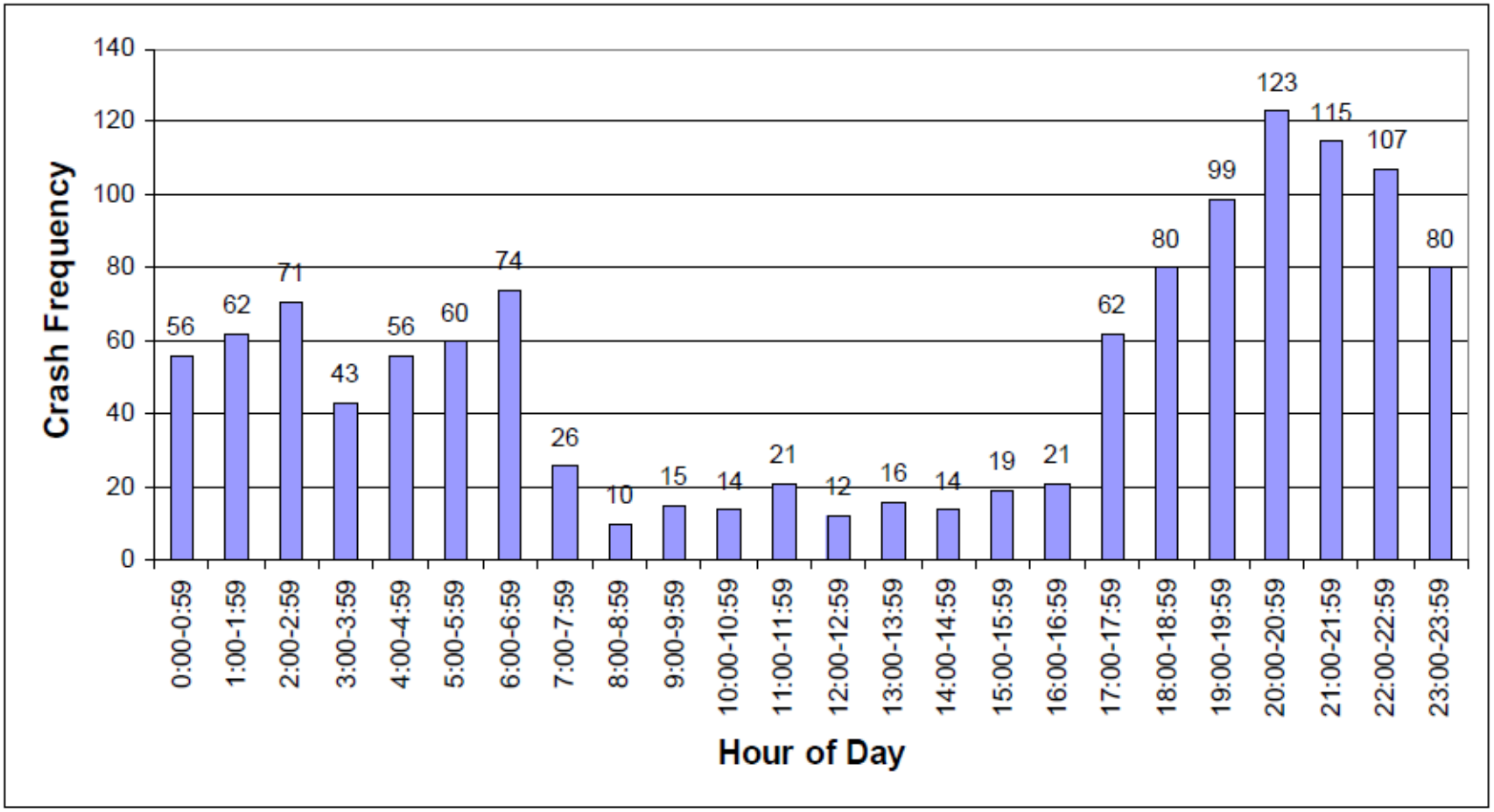
Temporal Deer-vehicle Collision Distribution



Source: Highway Loss Data Institute, 2008

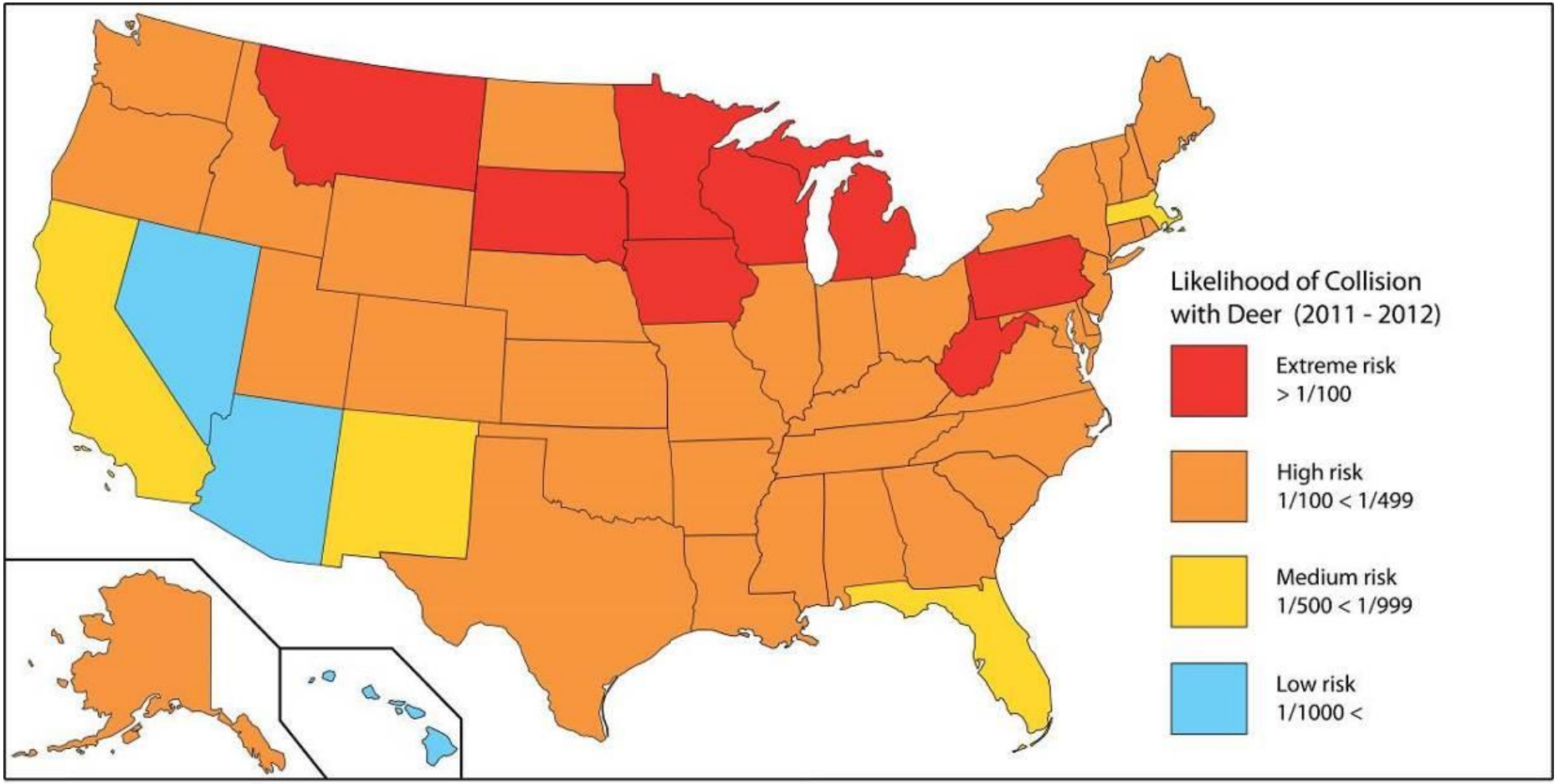
US Human Fatalities – Animal-related Collisions

Hourly Occurrence - 1991 – 2000

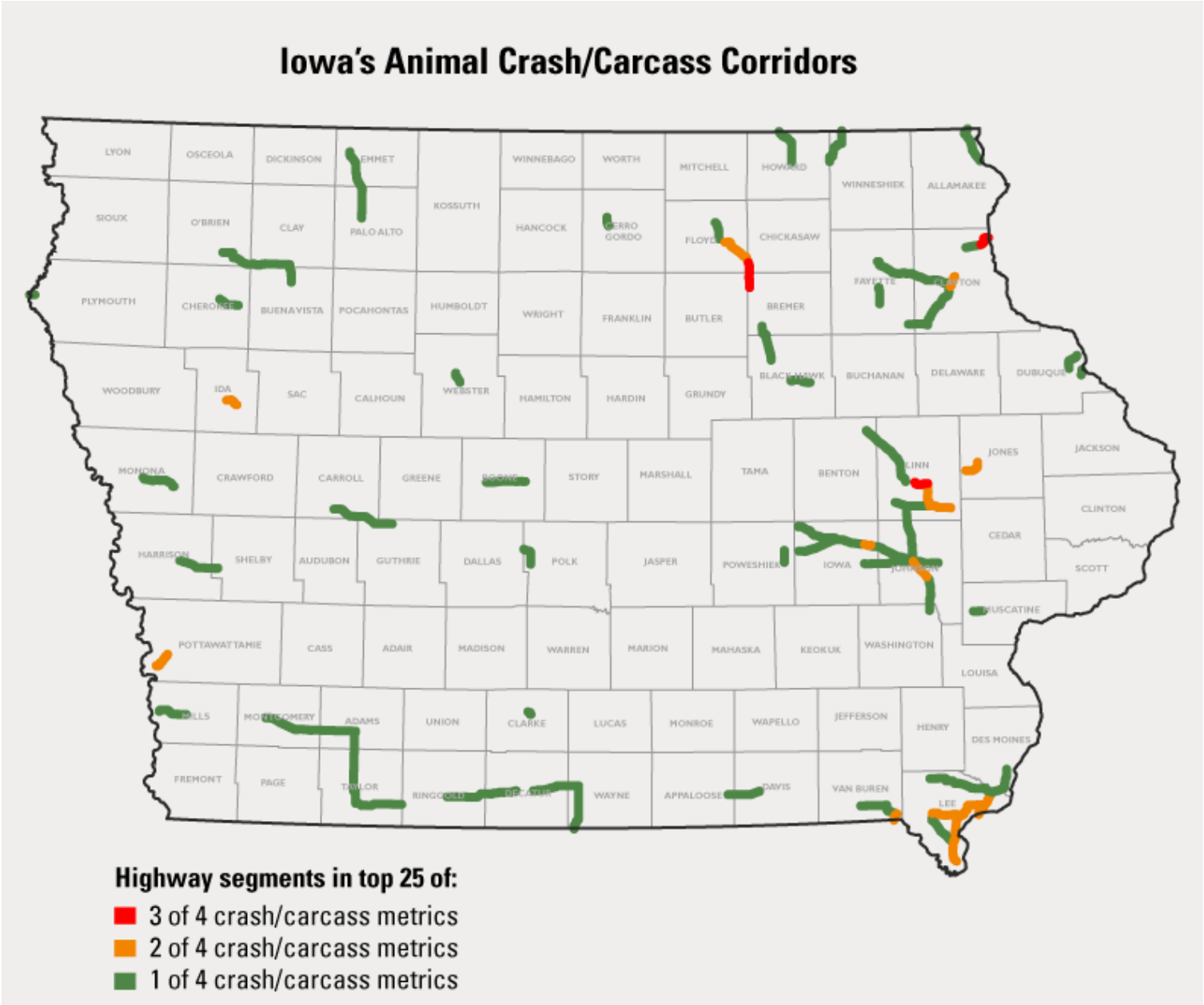


Source: Khattak, A.J., 2003

Likelihood of Collision with Deer



Adapted from State Farm Mutual Insurance Company (2012)



Source: Iowa Department of Transportation

What can be done to increase the information provided by conventional static wildlife warning signs?


Great Value TM/MC
Mild
Thick 'n Chunky
Salsa
avec de gros morceaux
Douce
650 mL
MILD
DOUX
SUGGESTED SERVING
PRÉSENTATION SUGGÉRÉE
Great Value TM/MC
Medium
Thick 'n Chunky
Salsa
avec de gros morceaux
Moyenne
650 mL
MEDIUM
MOYEN
Great Value TM/MC
Hot
Thick 'n Chunky
Salsa
avec de gros morceaux
Épicée
650 mL
HOT
PIQUANT


Forest Fire Danger
Low
Moderate
High
Extreme

U.S. Fire Danger Rating System

Chinese Forest Fire Danger Rating System

Source: China Forest Fire Management

Australian Fire Danger Rating System

Fire danger rating sign in Wanneroo, Australia
(Photo: Wanneroo Volunteer Fire Brigade, Used With Permission)

Category	Forest Fire Danger Index	Grassland Fire Danger Index
Catastrophic (Code Red)	100 +	150 +
Extreme	75 – 99	100 - 149
Severe	50 – 74	50 – 99
Very high	25 - 49	25 - 49
High	12 – 24	12 – 24
Low to moderate	0 - 11	0 - 11

Australian National Fire Danger Ratings

Wildlife-vehicle Collision Data Sources

- Transportation Departments
- Natural Resource Agencies
- Law Enforcement Agencies
- Insurance Providers (Private and Public)

Wildlife-vehicle Collisions (Province-wide Collisions/Hour)	**Colour Code**
Less than 10	Green
10 to 24	Blue
25 to 49	Yellow
50 to 100	Orange
Greater than 100	Red

Hourly Wildlife Hazard Risk Matrix

Month	12:00 PM - 1:00 PM	1:00 PM - 2:00 PM	2:00 PM - 3:00 PM	3:00 PM - 4:00 PM	4:00 PM - 5:00 PM	5:00 PM - 6:00 PM	6:00 PM - 7:00 PM	7:00 PM - 8:00 PM	8:00 PM - 9:00 PM	9:00 PM - 10:00 PM	10:00 PM - 11:00 PM	11:00 PM - 12:00 AM
January												
February												
March												
April												
May												
June												
July												
August												
September												
October												
November												
December												

Wildlife Hazard Warning System®

Low Medium High Very High Extreme

Survey Objectives

1. To determine if drivers understand the basic premise of the Wildlife Hazard Warning System, and
2. To determine if drivers would respond to the system in a manner that would reduce their potential for a wildlife-vehicle collision and/or reduce the potential severity of a wildlife-vehicle collision.

Survey Methodology

- Email snowballing
  - 43 friends, colleagues and acquaintances.
  - 435 persons who I did not know who had publicly available contact information.
- Results
  - 527 survey forms (24 incomplete).
  - 503 completed survey forms.

Survey Participants

- Representative of driving population
  - Near 50/50 gender (male/female) distribution
  - Wide age distribution: 19 to 75+
  - Wide range of driving types
    - From pleasure only to driving for work only
  - Wide range of home communities
    - Urban/suburban/rural

Experience Seeing a Deer

Experience seeing a deer on or near a road or highway?	Number of Responses	% of Responding Survey Participants
Yes	494	98.2
No	9	1.8
Total	503	100.0

Experience with Deer-vehicle Collisions

Experience with a deer-vehicle collision?	Number of Responses	% of Responding Survey Participants
Yes	130	25.8
No	373	74.2
Total	503	100.0

Identifying Deer Sign

Sign Type	Number of Responses	% of Responding Survey Participants
Bear crossing	0	0.0
Deer Crossing	495	98.4
Moose Crossing	5	1.0
Don't know	2	0.4
No response	1	0.2
Total	503	100.0

93.8%

Low

Very High

Extreme

Reported Driving Response	% of Responses for Low Deer Hazard Warning Sign (503 Respondents)	% of Responses for Very High Deer Hazard Warning Sign (502 Respondents)	% of Responses for Extreme Deer Hazard Warning Sign (501 Respondents)
Slow down	0.8	1.2	0.6
Watch for deer	19.1	10.7	4.2
Slow down and watch for deer	10.3	64.1	84.1
Speed up	0.2	0.0	0.0
Speed up and watch for deer	0.4	0.2	0.0
Keep driving the same speed	5.2	0.6	0.0
Keep driving the same speed and watch for deer	64.0	23.2	11.2
No response	0.000	0.002	0.004
Total	100.0	100.0	100.0

Survey Results

Almost 100% of the survey participants reported that they would respond to increasing deer risk hazard levels by looking for deer and/or decreasing speed.

Survey Results

Over 92% of the survey participants indicated they would like a system like Wildlife Hazard Warning System on unfamiliar roads and highways.

Further Analysis and Testing Needed

Field tests with multi-year, multiple control and test sites to:

- Measure changes in driver behaviour to changing wildlife hazard level warnings,
- Measure changes in the number of wildlife-vehicle collisions, and
- Measure changes in the severity of wildlife-vehicle collisions.

Wildlife-vehicle Collision Prognosis

- Near Term
  - Status Quo
  - Continued high rates of wildlife-vehicle collisions
- Long Term
  - Advanced collision avoidance technologies for vehicles
  - Wildlife detection systems (roadside or in-vehicle)
- Medium Term
  - Wildlife Hazard Warning System?

Retrofitting Present Technology

Retrofitting Present Technology

Retrofitting Present Technology

Current In-vehicle Technology

Future In-vehicle Technology

Geographically-referenced Hazard Warnings


11:37 ASW D
TM
6
7
8
50
40
30
20
10
km/h
0

Conclusions

- If all drivers are to have equal assess to wildlife hazard information, risk hazard communication needs to be improved.
- The Wildlife Hazard Warning System (WildHAZ) offers a potential solution.

Acknowledgements

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- 527 Anonymous Survey Participants


The End


Questions?
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