

# **Crash and Behavioral Characteristics, and Health Outcomes, Associated with Vehicular Crashes by Tourists in Wisconsin, 1992-1996**

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# Background

- Tourism is Wisconsin's second largest industry, with estimated revenues from out of state tourists over \$3.25 billion in 1996.
- Tourists comprise a significant part of all crashes in Wisconsin -- almost 9,500 (6%) in 1996.
- The potential public health impact of vehicle crashes associated with tourism in Wisconsin may be an area policy makers wish to intervene on.

# Goal

- ❖ Estimate the incidence of “tourist” related vehicular crashes in Wisconsin.
- ❖ Understand the general characteristics of crashes in which tourists are involved.
- ❖ Show the prevalence of problem behaviors (such as drinking, speeding, “tailgating”) which are associated with tourists.
- ❖ Describe the health outcomes associated with tourist related crashes.
- ❖ Compare “tourists” and Wisconsin residents on behavioral aspects of vehicular crashes.

# Data

- ❖ Data from the 1992-1996 Wisconsin CODES data was used in the analysis.
- ❖ Wisconsin CODES data links together WisDOT crash record information (occupant, vehicle, accident), with Wisconsin hospital discharge data provided by the Office of Health Care Information.
- ❖ Only motorcycles, cars, SUVs, vans, pickup trucks and motor/mobile homes were included.

# Methods

- Define Tourists
- Identify proportion of drivers from out of state who are “tourists”.
- Define selection criteria to define tourist vs other drivers from out of state.
- Extract sample
- Review findings

# Tourist Crashes-- A Definition

- Drivers involved in crashes are residents of a state besides Wisconsin.
- Excludes persons in Wisconsin solely for business purposes.
- Includes persons visiting relatives.
- Includes persons passing through Wisconsin on their way to another state.

# Tourists -- Data Problems

- No information exists in Wisconsin's crash data regarding the purpose for the trip during which the crash occurred.
- No information exists in crash data to identify why out of state drivers involved in crashes were in Wisconsin.
- While some data on revenues and average amounts spent per trip by out of state residents is available from the Wisconsin Dept. of Tourism, it is not detailed enough to allow controls for monthly and seasonal fluctuation in crash rates.

# Identifying “Tourist” Related Crashes

- To identify tourist crashes as opposed to business related crashes, we need to do two things:
  - ❖ Identify the likely percentage of crashes by out of state drivers who are tourists.
  - ❖ Estimate the appropriate number of known tourist related crashes from available crash data.

## Identifying Tourist Crashes (2)

- We assume that business travel into Wisconsin by out of state drivers is constant over the entire year.
- Tourism is lowest during the winter months -- although even then it is a substantial part of Wisconsin travel by out of state drivers.
- We assume that even in the winter, “tourist” drivers are responsible for 50% of all crashes by out of state drivers.

## Identifying Tourist Crashes (3)

February through April have the lowest number of crashes involving out of state drivers, for all years combined (1992-96):

February	2,693
March	2,593
April	2,571
Total	7,859
50% of Total (Business)	3,930
Est'ed Business Crashes, 1992-1996:	15,720

# Identifying Tourist Crashes (4)

The percentage of tourist related accidents over the 1992-1996 period is thus:

Total Crashes:	48,369	100.0%
Business Crashes:	15,720	32.5%
Tourist Crashes:	32,649	67.5%

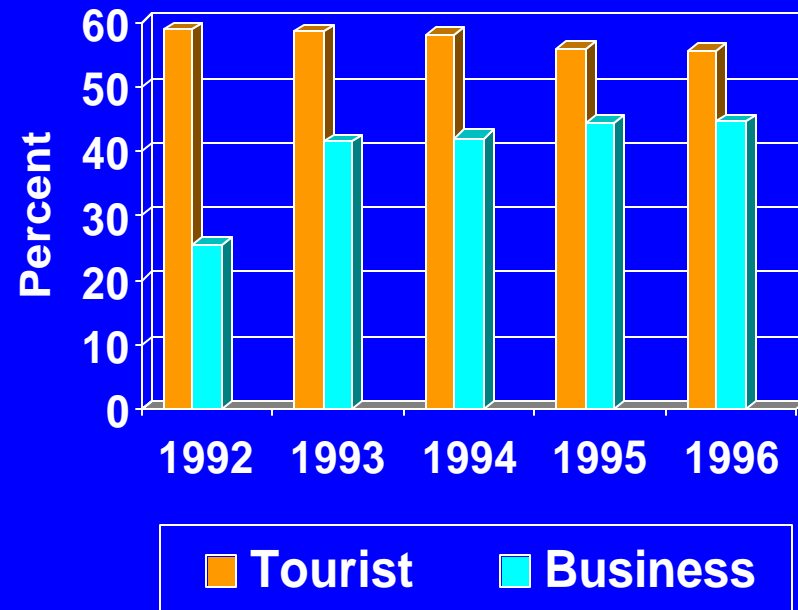
# Identifying Tourist Crashes (5)

Selection criteria for identifying tourist related crashes in crash data:

- ❖ All crashes occurring on the weekend.
- ❖ All crashes occurring between 6pm and 7am.
- ❖ All crashes in which the driver was 65 or older.
- ❖ Only 95% of all such cases will be classified tourist, as opposed to business.

# Identifying Tourist Crashes (6)

Average percentage of crashes involving out of state drivers classified as tourists over the study period is 57.3%.

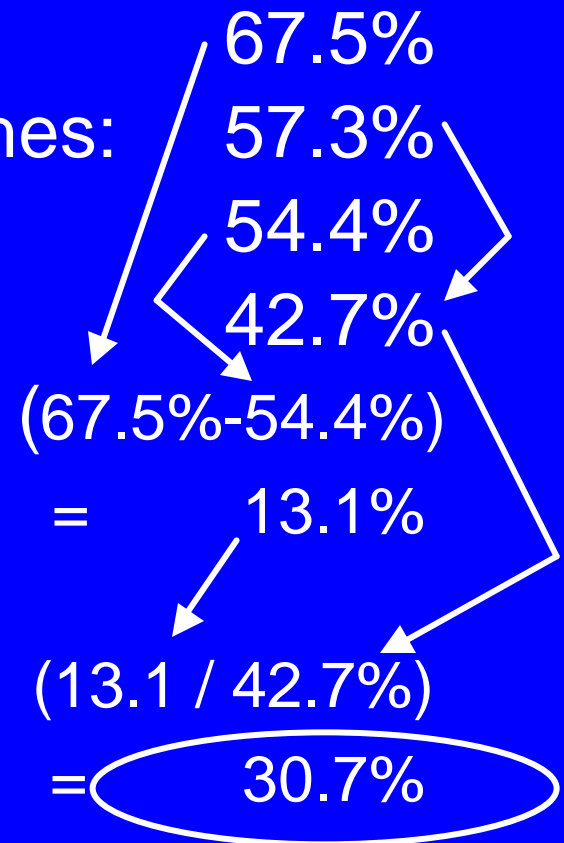


## Identifying Tourist Crashes (7)

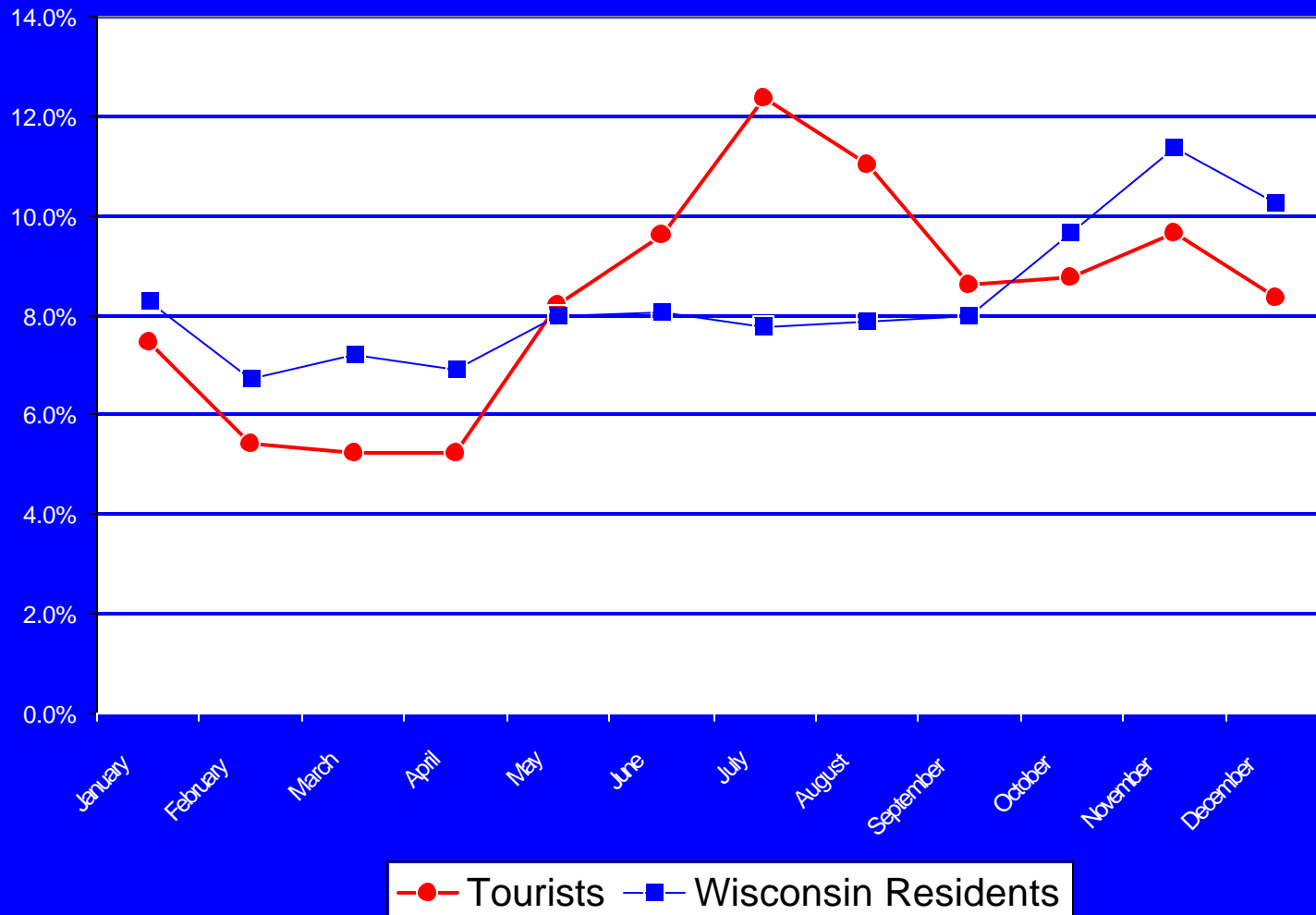
- Thus, 95% of the 57.3% of crashes for which we have strong evidence that they are tourist related will be randomly selected as tourist related crashes.
- We will then randomly select enough cases from the remainder of the crashes involving out of state drivers to increase the tourist related crashes to 67.5% -- our estimated percent of tourist related cases.

# Identifying Tourist Crashes (8)

- ❖ Estimated Tourist Percent:
- ❖ Total Tourist Classified Crashes:
- ❖ Tourist Crashes - 5%:
- ❖ Remaining Crashes:
- ❖ Gap between Identified and Estimated Tourist Percent:
- ❖ Gap as a Percent of Remaining Crashes:



## Percent of Total Annual Accidents, by Month, for Tourists (1992-1996) and Wisconsin Residents (1996)



**Table 1.**  
**Number of Drivers and total Number**  
**of Occupants, in Tourist Related Crashes,**  
**in Wisconsin, 1992-1996**

	<b>Drivers</b>		<b>Occupants</b>	
<b>1992</b>	7,401	19.5%	12,769	19.6%
<b>1993</b>	7,732	20.4%	13,265	20.4%
<b>1994</b>	7,855	20.7%	13,205	20.3%
<b>1995</b>	7,639	20.1%	13,156	20.2%
<b>1996</b>	7,345	19.3%	12,735	19.6%
<b>Total</b>	37,972	100.0%	65,130	100.0%

# Health Outcomes related to Tourist Crashes, Wisconsin, 1992-1996

Transported	5,485	8.42%
Died	826	1.27%
Hospitalized	198	.30%
Serious Head/Brain Injury	173	.26%
Spinal Cord Injury	27	.04%
Serious Lower Leg Injury	121	.23%
Hospital Charges (Total/Ave.)	\$18,804,000	\$21,441

# Crash Characteristics for Tourist Related Crashes, Wisconsin, 1992-1996

Single Vehicle	9,100	24.0%
Interstate	6,937	18.3%
State Highway	16,844	44.4%
County Highway	2,830	7.5%
Local Road	11,361	29.9%
Urban County	14,563	38.4%
Weekend	16,362	43.1%
6pm-6am	15,591	41.4%
Frontal Collision	1,833	4.8%
Rear End Collision	8,041	40.6%

## Behavioral Characteristics Related to Drivers, for Crashes Involving Tourists and Wisconsin Residents

	Tourist Crashes(1992-96)		Wisconsin Residents (1996)	
	Number	Percent	Number	Percent
<b>Alcohol Involved</b>	2,426	6.4%	10,259	4.7%
<b>Drugs were Involved</b>	208	0.5%	1,327	0.6%
<b>Citation Issued</b>	15,795	41.6%	102,997	46.9%
<b>Speeding/Speed Too Fast</b>	4,558	12.0%	21,359	9.7%
<b>Following Too Close</b>	844	2.2%	6,844	3.1%
<b>Failure to Yield</b>	3,686	9.7%	25,111	11.4%
<b>Inattentive Driver</b>	3,576	9.4%	20,423	9.3%
<b>Wearing Seat Belt</b>	33,919	89.3%	184,055	83.8%
<b>Total</b>	37,972	100.0%	219,605	100.0%

# Conclusions

- ❖ There are approximately 7,500 tourist crashes in Wisconsin annually.

*Comparing tourist crashes to those involving Wisconsin Drivers:*

- ❖ Hospitalizations are lower for tourists -- 1.3% vs 1.9%
- ❖ The death rate is higher for tourists-- .3% vs .1%
- ❖ Police reported alcohol and drug use involvement is higher for tourists -- 6.9% vs 5.5%
- ❖ Citations are issued less frequently to tourists -- 6.9% vs 5.5%.
- ❖ Self reported seat belt use is higher for tourists, 91% vs 84%