

Breakout Session: Crash Data Collection & Analysis

Now that we have it,
what do we do with it?

Seminole County's Experience

Part 1 –

Why We Analyze Crash Data

Overview

- Improve safety for motorists, cyclists, and pedestrians by:
 - Predicting and preventing future crashes.
 - Improving overall efficiency of the roadway network.

United States - 2005

- 6.2 million crashes (long form equiv.)
- 2.7 million injuries
- 43,400 fatalities
 - 784 involved bicyclists (2%)
 - 4,553 involved motorcyclists (10%)
 - 4,881 involved pedestrians (11%)

Note: Totals listed above are approximate value
Source: www.nrd.nhtsa.dot.gov/departments/nrd-30-ncsa/

United States – 2005

- 16,900 fatalities involved alcohol influence (39%)
- 10,200 fatalities involved speeding (25%)
- 23,900 fatalities of persons not using seatbelt (55%)

STATE OF FLORIDA (2005)

- 268,605 crashes (Long Form Only)
- 233,930 million injuries
- 3,533 fatalities
- 1,239 fatalities involving alcohol
- 119 fatalities involved bicyclists
- 441 fatalities involved motorcyclists
- 576 fatalities involved pedestrians
- 398 fatalities involved speeding drivers
- 1,441 fatalities involved no seatbelt used

- Note: Totals listed above are approximate values.

<http://www.hsmv.state.fl.us/hsmvdocs/CS2005.pdf>

Seminole County - 2005

- 3,228 crashes (long form)
- 2,543 injuries
- 39 fatalities:
 - 2 fatalities involved bicyclists (5%)
 - 4 fatalities involved motorcyclists (10%)
 - 11 fatalities involved pedestrians (28%)

Source: <http://www.seminolecountyfl.gov/pw/traffic/safety.asp>

Seminole County - 2005

- 2 fatalities involved alcohol influence (5%)*
- 7 fatalities involved speeding (18%)
- 11 fatalities of persons not using seatbelt (28%)

* Based on actual blood alcohol test results received; most test results not known.

Seminole County Crash Database

- Microsoft Access
- Approximately 10,600 long- and short-form crash reports from 7 cities, Florida Highway Patrol, and the Sheriff's Office.
- 5 sections:
 - Crash
 - Section
 - Passengers
 - Citations
 - Property Damage.

Recent Projects and Programs

- Pedestrian Overpass Installation
- Expanded Driver Education Program
- Alternative Training Education (A.T.E.)
- Red Light Confirmation Program
- Signalized Intersection Improvements
- Pedestrian Crosswalk Improvements

Lake Mary Blvd @ Rinehart Road Pedestrian Overpass

Crashes by Date of Birth, Race & Gender – 2005

Age Summary - 2004

Fatality Summary - 2004

Fatality Summary - 2004

Red Light Confirmation

US 17-92 @ Church St.

Pedestrian Crosswalk Improvements

GPS Injury Crash Locations

Questions and Answers

Seminole County's Experience

Part 2 –

Special Crash Data Analyses

Question the Data

- One crash listed twice
- Two crashes not included in database
- Two multiple fatality crashes recorded as single fatality
- One person died later; not recorded on crash report
- One location reference was wrong
- Several crash reports omitted from copies
- Alcohol test follow-up not provided

2004-2005 Fatalities

- 97 fatal crashes resulted in 105 fatalities:
 - 64 deaths in 2004 (originally 57)
 - 41 deaths in 2005 (originally 39)

Other Data Issues

- Seminole County locates crashes by the nearest intersection

- Frequent jurisdiction changes
- Inconsistent inter-agency communication and data organization
- Inconsistent data at detailed and summary levels
- No routine analyses
- Problem of small numbers

2004-2005 Fatalities

- Distribution of fatalities by involvement:
 - 44 drivers (42%)
 - 17 occupants (16%)
 - 18 motorcyclists (17%)
 - 6 bicyclists (6%)
 - 19 pedestrians (18%)
 - 1 unknown (1%)

Performance Indicators

- Fatality rate per mile of road
- Fatality rate per 100 million vehicle miles of travel (VMT)
- Age distribution of fatalities compared to resident population
- Seminole County fatality rate compared to Florida and U.S.

Average Fatality Rate 2004-05

- Seminole County
 - 0.17 fatality per mile of major road
 - 1.92 fatalities per 100 million VMT
- State of Florida
 - 0.11 fatality per mile of major road
 - 1.66 fatalities per 100 million VMT
- U.S. fatality rate = 1.46 fatalities per 100 million VMT

Pedestrian Fatalities

- 19 pedestrians in 105 fatalities (18%)
- For comparison, pedestrians are:
 - 15% of Florida fatalities

- 11% of U.S. fatalities

Motorcyclist Fatalities

- 18 motorcyclists in 105 fatalities (17%)
- For comparison, motorcyclists are:
 - 12% of Florida fatalities
 - 9% of U.S. fatalities

Bicyclist Fatalities

- 6 bicyclists in 105 fatalities (6%)
- For comparison, bicyclists are:
 - 1% of Florida fatalities
 - 2% of U.S. fatalities

Fatal Crash Locations

- Virtually all fatalities occurred on major roads (higher speeds)
- 3 out of 4 fatalities occurred on State roads (statewide average is 60%)
- 40% in Seminole County cities
- 60% in unincorporated area

Seminole County Road Mileage and Traffic 2004-2005 Fatalities by Age

Teenage Drivers

- 7% of population
- 20% of drivers involved in Seminole crashes
 - High of 33% in eastern part of county
 - All other areas in 17%-21% range
 - Highest involvement rates are at complex and congested intersections
- 15% of Seminole County fatalities
- 81% received citation related to crash
- 21% of all citations
- Record gets worse with age, 16 - 19

Root Causes - 1

- **Lack of driving skills**
 - Youth and inexperience
 - Alcohol and drug use
 - Intersection complexity
 - High traffic volumes
- **Access to vehicles**

Root Causes - 2

- **Risk-taking behavior**
 - Alcohol consumption
 - Didn't use seatbelt
 - Excessive speed
 - Distractions
- **Vehicle dynamics are not linear**

The Obvious Problems

- **Younger drivers**
- **Pedestrian fatalities**
- **Motorcyclist fatalities**
- **Bicyclist fatalities**
- **High-volume, high-speed roads**

Common Theories

- **Tourists involved (unfamiliar with area)**
- **Warm weather puts more pedestrians on the street in winter**
- **Red light running is big cause**
- **Fatal crash problem limited to weekend drinking and partying**
- **Crashes identify hazardous sites**

2004-2005 Fatalities by Day of Week

2004-2005 Fatality Residence

Proximity of Residence to Crash Countywide

Primary Contributing Cause-2004 Fatal Crashes

Primary Contributing Cause-2005 Fatal Crashes

Total Crash Types 2004-05

Fatality Crash Types 2004-05

Driver History as Predictor

- 30 persons killed in 2005 had detailed driving history checked
 - 43 Suspended/revoked license (max = 9)
 - 65 Moving violations (max = 11)
 - 18 DUI (max = 8)
 - 17 previous crashes (max = 3)
 - 4 No previous violations

Pedestrian and Bicyclist History

- 12 bike/ped fatalities in 2004:
 - 4 Suspended/revoked license at time of fatality (3 ped, 1 bike)
 - 18 DUI (max = 9)
- 13 bike/ped fatalities in 2005:
 - 5 Suspended or revoked license at time of fatality (4 ped, 1 bike)
 - 14 DUI (max = 8)

Socioeconomic Factors

- Fatally injured persons were more likely than the general population to:
 - Be a member of a minority race or ethnic group
 - Live in multi-family housing (rental)
 - Have a lower than average income
 - Be aged 15-24

General Findings

- Pedestrian fatality rate is 164% of U.S. average
- Motorcyclist fatality rate is 190% of U.S. average
- Bicyclist fatality rate is 300% of U.S. average
- 95% of Seminole County fatalities were residents of Central Florida

- Many pedestrian and bicyclist fatalities were persons who had lost their license

Conclusions - 1

- Fatalities appear to be a poor predictor of site-specific roadway system deficiencies
- Analyses need to be broadened to look at injury crashes to find site-specific issues
- Proper location of crashes is critical to systematic evaluation
- Data issues existed for fatal crash reports and increased analysis difficulty

Conclusions - 2

- Child passenger safety programs appear to be working well
- Multi-jurisdictional solution required:
 - Countywide
 - With Orange County
- Suspect that higher than expected rate of fatalities for older drivers is due to roadway system complexity

Conclusions - 3

- Usual engineering strategies for reducing fatalities do not appear relevant; *exception*: pedestrian safety
- Demographic characteristics of fatalities suggest traditional outreach programs may not get to the most critical populations

Questions and Answers