NMVCCS Observations

National Motor Vehicle Crash Causation Survey

Carl Ragland
Team Manager, NMVCCS
Data Collection Forms

- **Each Vehicle has form for:**
  - PAF
  - Driver Interview
  - General Vehicle
  - Occupants

- **Each crash has form for:**
  - Crash
  - Non-motorist
  - Witness
- Critical pre-event related factors (1-12)
  - Pre-event movement
  - Critical pre-crash event
  - Critical reason for critical pre-crash event
  - Associated pre-crash event factors (4-12)
- Critical reason for critical pre-crash event factors:
  - Driver
  - Vehicle
  - Environment
Examples of Critical Reason for Critical Event Factors

- **Tire failure/condition**
- **Driver distraction**
  - Looking at mirror
  - Talking
  - Looking outside vehicle
  - Other
- **Fatigue**
- **Driver inexperience**
- **Overcompensation**
- **Too fast**
- **Icy roads Highway design/conditions**
Driver Interview
(91 Questions)

- Driver and vehicle history and familiarity
- Trip related
- Physical and mental status
- Driver focus prior to crash
- Driver recognition and actions
General Vehicle

- General Vehicle information, i.e. year/make/model
- Tire information and condition
- Specific vehicle info on advanced equipment
  - ABS
  - ESC
  - Lane Departure
  - Adaptive cruise control
  - Brake assist
On scene response log to EMS dispatch
Percentage of qualified on-scene cases vary
  ♦ Multiple frequencies
  ♦ Distance to site
  ♦ Local scanner laws
Types of Data Analysis

- Rollover rates versus ESC
- Loss of control versus ESC
- Human, environmental and vehicle factor analysis
- Potential benefit analysis for countermeasures
Single Vehicle Example Crash

- Southbound lanes of three-lane divided interstate.
- 1997 Honda Civic
- Non contact vehicle
- Vehicle swerved right, skid clockwise, contacted delineator post, then rock
- Belted 34-year old female who was transported, treated and hospitalized for a complaint of pain
- No interview – statement obtained from medical report
Single Vehicle Example Crash
Single Vehicle Example Crash
Single Vehicle Example Crash
Single Vehicle Example Crash

• Movement of the vehicle just prior to recognition (pre-event movement)
  • Going straight

• The Critical Pre-crash Event
  • This vehicle control loss due to traveling too fast for conditions

• The Critical Reason for the Critical Event
  • Performance error
  • Overcompensation
    – This was chosen because the driver overreacted to the situation by steering too abruptly to the right.
A Transit Bus and a Car Crash

U Turn

- **V1**, a 2004 Toyota Lexus
- **V2**, a 2003 Gillig Low Floor bus
- Late, dark, slush-covered roadway was illuminated by street lamps
- The driver of V1 making U-turn
- Driver of V1 pulled to the right side of the roadway while decelerating
- The driver of the bus saw V1 pull to the right and assumed that the driver of V1 would wait
- V2 struck V1 on left
- V2 braked and steered and hit legally parked vehicle
- V1 rotated back southbound and the left side of V1 came to rest against the right side of V2.
U Turn
U Turn

- **Pre-event movement**
  - Decelerating in traffic lane
    - Pulled to the right
    - Decelerated

- **Critical precrash event**
  - This vehicle traveling
    - Over the lane line on left side of travel lane

- **Critical reason for the critical event**
  - Decision Error
    - Illegal maneuver