A Preliminary Look At Safety Critical Events From The Motorcyclists’ Perspective
1997-2009 – U.S. M/C fatalities have risen average 10% per year

Peak of 5,312 in 2008

MC fatalities increased from 5% to 13% of overall traffic fatalities
Value of Studying Near Crash Scenarios

- Improve understanding of external circumstances surrounding crashes
- Specify rider crash-avoidance actions
- Identify actions to correct for unsafe acts or the rider or others
- Improve applicability of rider training
Research Considerations

Include Rider’s Perspective on:
- Utilization of Crash Avoidance Skills
- Improvements in Riding Skills
- Use of Protective Gear
- Attitudes About Safety
- Perceived Value of Training
Limitations of Prior Crash Causation Studies

- Narrative rider accounts often not gathered due to rider injury status
- Data limited to injury crashes
- Near crash situations not part of the national crash database
- National databases based only on fatalities
Statement of the Problem

- Safety critical events (near misses) have never been described and categorized for motorcyclists
Study Purposes

- Describe Safety Critical Events for Motorcyclists
- Evaluate training efforts in crash avoidance skills
Research Design

- MSF-sponsored training location in California
  - Following all state guidelines
- Course provides waiver
  - CA DMV on-bike test is disincentive
- Participants recruited during first classroom session
- Random assignment to conditions by cluster
  - Single class versus Multiple classes (BRC / RETS)
Participant Recruitment Process

- By Research Assistant, with RiderCoach cooperation
- Fully informed consent
- Incentives offered to join
  - Value of project – helping fellow motorcyclists
  - Full participation = full refund of BRC fees
  - Number of modules attended = # of tickets to drawing for one of TWO free motorcycles
- Initial questionnaire (MSQ) completed
Motorcycle Study Questionnaire (MSQ)

- Areas of Questions: motorcycle use and riding experience, motorcycle crashes, near misses, and traffic tickets, several measures of motorcycling attitudes and riding behavior, rider demographics, and other issues

- Please describe your most recent near miss on a motorcycle in detail below, including the most likely cause of the near miss and any skills or strategies you used to avoid a crash.
The Sample

- 4804 MSQ’s completed
- 83% reported no near miss experience during the previous 3 month period
- 54 – no follow up description
- 93 – generic descriptions
- Final Sample - 686

Table 1

<table>
<thead>
<tr>
<th>How many times have you experienced a near miss in the last 3 months while riding a MOTORCYCLE on a public road?</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>3971</td>
<td>2.7</td>
</tr>
<tr>
<td>On 1 or 2 occasions</td>
<td>696</td>
<td>14.5</td>
</tr>
<tr>
<td>On 3 to 5 occasions</td>
<td>105</td>
<td>2.2</td>
</tr>
<tr>
<td>On 6 to 10 occasions</td>
<td>23</td>
<td>0.5</td>
</tr>
<tr>
<td>On more than 10 occasions</td>
<td>9</td>
<td>0.2</td>
</tr>
<tr>
<td>Total</td>
<td>4804</td>
<td></td>
</tr>
</tbody>
</table>
Content Analysis

- Unit of Analysis: Near Miss Description
- Inductive Category Development
  - Random Sample of 100
  - Discussion
- Four main variables
  - Number of Vehicles
  - Near Crash Type
  - Motorcyclist Primary Response / Secondary Response
  - Traffic Safety Concept Inclusion
- Reliability Analysis
  - Two Coders – training & discussion
  - Met criterion set by Landis & Koch
Results: Number of Vehicles

- Number of Vehicles
  - Multiple Vehicle: 89%
  - Single Vehicle: 11%
Results: Near Crash Type

Near Crash Type: Percent

- Vehicle changes lanes into mc path or lane (both vehicles moving)
- Generic car pulls out or "cuts me off"
- Vehicle ahead slows or stops suddenly
- Vehicle entering mc lane from right (other than intersection)
- Vehicle turns left into motorcycle path
- Vehicle pulls into mc path from right (at intersection)
- Vehicle merged into mc path or lane (both vehicles moving)
- MC loss of control - MC speed
- MC lane sharing - vehicle in mc path
- Vehicle from behind not slowing
- Miscellaneous
- MC loss of control - Road surface conditions
- MC loss of control - Other single vehicle
- Opposing traffic enters mc path or lane (crosses yellow line)
- MC lane sharing - MC hitting other vehicles
- Obstacles in mc path or lane
- Pedestrians entering traffic lanes
- Animals in traffic
- MC lane sharing - Other vehicle squeezing mc path
Results: Primary Rider Response

Primary Rider Response: Percent

- Brake
- No Rider Response mentioned
- Swerve
- No action taken
- Decelerate
- Honk the horn
- Change lanes
- Accelerate
- Change lane position
- Adjusted lean angle
- Leave roadway
- Downshift

0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0

IMSC Conference
October 2013
Results: Secondary Rider Response

Secondary Rider Response: Percent

- No Rider Response mentioned
- Brake
- Swerve
- Change lanes
- Honk the horn
- Change lane position
- Accelerate
- Downshift
- Adjusted lean angle
- Decelerate
- Leave roadway

IMSC Conference
October 2013
Results: Traffic Safety Concept Included?

Traffic Concept Cited: Percent

- Yes: 65.3%
- No: 34.7%
Results: Motorcyclists Error Indicated?

Motorcyclist Error Indicated: Percent

- Yes: 6.7%
- No: 93.3%

IMSC Conference
October 2013
Conclusion

- **Mirrors Crash Causation Data**
  - Multiple Vehicle Involvement
  - Self-report Overrepresents this type of crash

- **Self-Report Bias Evident**
  - Rider Error
  - Multiple Vehicle versus Single Vehicle

- **Rider Responses**
  - Braking
  - Swerve

- **Limitations**
  - Short, incomplete descriptions
  - Descriptions treated as independent

- **Future**
  - Cross analysis by other questionnaire categories
A Preliminary Look At Safety Critical Events From The Motorcyclists’ Perspective

Questions?

Dr. Sherry Williams
swilliams@msf-usa.org

Dr. Jim Heideman
jheideman@msf-usa.org

IMSC - 2013
October 15-16, 2013
Orlando, FL