Motorcycle Rider Training and Collision Avoidance

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Does rider training improve collision avoidance performance?
• “Formally trained” riders in the Hurt study were mostly LAPD or CHP motor officers, who had far more rigorous training than most rider training courses and more riding experience.

• In Thailand, only one rider had any formal training.
Rider collision avoidance braking by rider training, Hurt Study

- Self-taught (n = 393)
- Family, friends (n = 340)
- Formal training (n = 61)

<table>
<thead>
<tr>
<th>Percent</th>
<th>None</th>
<th>Front (any combination)</th>
<th>Rear only or rear brake &amp; swerve</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31</td>
<td>31</td>
<td>24</td>
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<td>33</td>
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</table>
Rider evasive action choice & execution by rider training, Hurt study

- Formal training (n = 61)
  - 36.1% No Action
  - 18% Right choice, poor execution
  - 29.5% Wrong choice, good execution
  - 11.5% Proper choice and execution

- Family, friends (n = 343)
  - 31.5% No Action
  - 15.2% Right choice, poor execution
  - 35.6% Wrong choice, good execution
  - 9.9% Proper choice and execution

- Self-taught (n = 400)
  - 30.5% No Action
  - 19.5% Right choice, poor execution
  - 30.5% Wrong choice, good execution
  - 14% Proper choice and execution
Loss of control mode by rider training for riders who took evasive action, Hurt study

Loss of control mode

- No loss
- Capsize
- Wobble
- Lost wheelie
- Slide-out
- High-side
- Ran off road

Percent

- Self-taught (n = 272)
- Family, friends (n = 235)
- Formal training (n = 40)
Loss of control mode by rider training for Thailand riders who took evasive action

- Ran off road
- High-side
- Slide out
- Capsize

- No loss of control

<table>
<thead>
<tr>
<th>Family, friends (n = 65)</th>
<th>Self-taught (n = 471)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>80</td>
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<tr>
<td>10</td>
<td>70</td>
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<td>70</td>
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</tr>
<tr>
<td>80</td>
<td>0</td>
</tr>
</tbody>
</table>

Percent
Loss of control mode among riders who took evasive action

- Ran off road
- Slide-out
- Capsize

Thailand (N = 550)
Hurt study (N = 603)

Percent
Thailand, cumulative percent distribution, front and rear skid mark length

Cumulative percent

Skid length, meters

Front (n=33)

Rear (n=105)
Time from Precipitating Event to impact, Thailand & Hurt studies
But lower crash speeds mean less severe injuries, right? Right?
AT-RISK ZONES FOR MOTORCYCLE IN LANE 2, CAR LEFT TURN

A. MOTORCYCLE CLEARS BEFORE CAR ENTERS
B. MOTORCYCLE BRAKES ENOUGH TO BE STRUCK BY CAR
C. COLLISION UNAVOIDABLE
D. FRONT AND REAR BRAKING REQUIRED TO AVOID
E. REAR-ONLY BRAKING SUFFICIENT TO AVOID
F. CAR CLEARS BEFORE MOTORCYCLE ARRIVES

1. CAR BEGINS TURN
2. ENTERS MOTORCYCLE PATH
3. CAR EXITS MOTORCYCLE PATH

REFERENCE LINE
Brake type and frequency of braking slide-out

- **Thailand - front brake**
- **Los Angeles - front brake**
- **Thailand - rear brake**
- **Los Angeles - rear brake**

<table>
<thead>
<tr>
<th>Brake type</th>
<th>Percent who slid out</th>
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</thead>
<tbody>
<tr>
<td>Single leading shoe</td>
<td>20</td>
</tr>
<tr>
<td>Double leading shoe</td>
<td>30</td>
</tr>
<tr>
<td>Single disc hydraulic</td>
<td>35</td>
</tr>
<tr>
<td>Double disc hydraulic</td>
<td>50</td>
</tr>
</tbody>
</table>

- Single leading shoe: Thailand - 10, Los Angeles - 20
- Double leading shoe: Thailand - 30, Los Angeles - 40
- Single disc hydraulic: Thailand - 25, Los Angeles - 35
- Double disc hydraulic: Thailand - 40, Los Angeles - 50
Thailand, rider training and collision avoidance action