Estimation of Cost Reduction due to Introduction of FlexPLI within GTR9

5th Meeting of Informal Group GTR9 Phase 2
Bergisch Gladbach, December 6th - 7th, 2012

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National accident statistics (GER)

Vehicle to pedestrian casualties (2009 – 2011):

Only passenger car (1x) to pedestrian (1x) accidents [2 road users]

65843 accidents

Averaged accident severity p.a.:

323 fatally injured
5774 severely injured
15785 slightly injured
In Depth Accident Data (GIDAS)

Dataset (GIDAS from 1999-2011) and starting position:

- Only accidents with one pedestrian and one passenger car involved
- 1925 accidents; 1760 complete (wrt. injuries, impact location, etc.)
- Pedestrian laterally impacted, i.e. impact location @ 8-10 / 2-4 o‘ clock
- Injury causing vehicle parts: vehicle front, w/o BLE!

Assumption: reduction of lower extremity related AIS 1-3 injuries by 1 when vehicle designed with pedestrian friendly bumper (AIS-1 shifting)

  e.g.: open tibia fracture ➔ closed tibia fracture

  closed tibia fracture ➔ bruises

- Considered lower extremities: all injury types of tibia, fibula, knee, ligaments, subtalar joint

  ➔ 498 vehicle to pedestrian accidents affected
In Depth Accident Data (GIDAS)

MAIS injury distribution of all complete pedestrian casualties (1760 casualties original vs. 1704 casualties shifted [some AIS1 shifted to AIS0]):

MAIS shifting due to pedestrian friendly vehicle bumper design:

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Accident Data (GIDAS + GER)

MAIS injury distribution of fatally, severly and slightly injured pedestrians in GIDAS (Σ casualties: 1759)

Shifting of fatally, severly and slightly injured pedestrians from national accident statistics after AIS-1 shifting

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Shifting of fatally, severely and slightly injured pedestrians from national accident statistics:

Original national dataset

National dataset, shifted

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National accident data [GER]

Shifting of fatally, severely and slightly injured pedestrians from national accident statistics:

<table>
<thead>
<tr>
<th></th>
<th>Fatally Injured</th>
<th>Severely Injured</th>
<th>Slightly Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original</td>
<td>313</td>
<td>5774</td>
<td>15785</td>
</tr>
<tr>
<td>Shifted</td>
<td>312</td>
<td>5268</td>
<td>16016</td>
</tr>
</tbody>
</table>

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National accident data [GER]

Estimation of cost reduction:

<table>
<thead>
<tr>
<th></th>
<th>original</th>
<th>shifted</th>
<th>Diff. [abs]</th>
<th>costs per case [€]</th>
<th>Reduction [€]</th>
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</thead>
<tbody>
<tr>
<td>Fatally injured</td>
<td>323</td>
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<tr>
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<td>5774</td>
<td>5268</td>
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<tr>
<td>Slightly injured</td>
<td>15785</td>
<td>16016</td>
<td>-231</td>
<td>4305</td>
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<tr>
<td><strong>Σ</strong></td>
<td><strong>15584</strong></td>
<td><strong>15390</strong></td>
<td><strong>-194</strong></td>
<td><strong>4305</strong></td>
<td><strong>63.725.349</strong></td>
</tr>
</tbody>
</table>

Estimation of maximum annual cost reduction in Germany due to vehicles designed with pedestrian friendly bumper (AIS-1 shifting):

63.725.349 EURO

Estimation of annual cost reduction in Germany under consideration of 70% injury risk covered by FlexPLI:

63.725.349 EURO * 0,7 = 44.607.744 EURO
Thank you!