New strategic plan for bicycle safety in Sweden (with increased use of hospital data)

TRB Pedestrian and Bicycle Safety Analysis
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Background

• Strategic goal to increase modal share of sustainable transport (ped, bike, transit) but without increasing number of accidents

• Safety for car occupants has improved much lately (1998-2011), but the similar trend is not visible for bicyclists

• Better accident data is available through the national accident database that combines police and hospital records -> more focus on vulnerable road users
Policereported severe injuries
Skåne 2000-2003

Diagram 10  Antal svårt skadade per trafikantslag 2000-2003 (polisdata)

Swedish Road Administration (2004)
Hospital reported severe injuries
Skåne 2000-2003

Diagram 9  Antal DAS$^2$ per trafikantslag 2000-2003 (sjukhusdata)

Swedish Road Administration (2004)
New strategy

• Based on analyses of fatal and severe bicycle accidents
  • Transport administration in-depth investigation of fatal accidents
  • VTI Report 801 Cycling accident statistics
• Safety measures based on expected impact (number of accidents x crash reduction factor)
Fatalities and severe injuries by road user category

- **Killed**
  - 57% In cars
  - 17% On bikes
  - 11% On mopeds
  - 10% On motorbikes
  - 2% Pedestrians
  - 3% Some other mode of transport

- **Seriously injured**
  - 40% In cars
  - 38% On bikes
  - 6% On mopeds
  - 6% On motorbikes
  - 6% Pedestrians
Fatalities - Bicycle

Killed

- All killed
  - Cycle-Train: 2%
  - Cycle/Pedestria: 3%
  - Cycle-Moped: 1%
  - Cycle-cycle: 22%
  - Cycle single: 69%
  - Cycle-Motor vehicle: 3%  

- Cycle - motor vehicle
  - Cycle/Tractor: 4%
  - Car/Motorbike: 68%
  - Cycle/Lorry-Bus: 29%

- Cycle - lorry/bus
  - Cycle - Lorry/Bus right-hand turn: 43%
  - Cycle - Lorry/Bus other: 57%
Severe injuries - Bicycle

Serious injury

- 78% Serious injury
- 12% Bicycle
- 10% Giving-way
- 16% Cycle-Cycle
- 14% Cycle-Other
- 7% Cycle-Moped
- 1% Cycle-Pedestrian
- 2% Operation and Maintenance
- 44% Cycle single

- 6% Temporary object
- 15% Outside road
- 9% Uneven
- 3% Skidding other/unknown
- 2% Skidding on gravel surface
- 1% Skidding on leaves
- 1% Skidding on round gravel
- 1% Skidding on ice/snow

Operation and maintenance
## Safety measures - Fatality CRFs

<table>
<thead>
<tr>
<th></th>
<th>Deviation from normal cycling</th>
<th>Approaching critical situation</th>
<th>Critical situation</th>
<th>Crash unavoidable</th>
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</thead>
<tbody>
<tr>
<td><strong>Operation and maintenance</strong></td>
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<td>Removal of loose gravel/leaves</td>
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<td>5-10 %</td>
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<td>Good ice and snow-free maintenance (potholes/cracks)</td>
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<td>5-10 %</td>
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<td><strong>Safe use</strong></td>
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<td>Use of cycle helmet</td>
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<td>25 %</td>
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<td>Sober cycling</td>
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<td>10-15 %</td>
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<td><strong>Infrastructure</strong></td>
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<td>Moving over to separated car-free cycle routes - built-up areas</td>
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<td>5-10 %</td>
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<tr>
<td>Moving over to separated car-free cycle routes - sparsely populated areas</td>
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<td>15-20 %</td>
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<td>Safe cycle crossings</td>
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<td>Road lighting for visibility</td>
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<td>0-5 %</td>
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<td>Kerb adjustment</td>
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<td><strong>Safe cycles</strong></td>
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<tr>
<td>Cycle lighting and reflectors for visibility</td>
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<td>5 %</td>
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<td><strong>Safer motor vehicles</strong></td>
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<tr>
<td>A combination of emergency brakes and air bags in urban environments</td>
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<td>max 30 %</td>
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<tr>
<td>Lorries with warning systems for cyclists in blind spots</td>
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<td>5-10 %</td>
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Table 1: Potential of measures for reducing the number of cyclists killed. The measures are entered in a so-called sequence of events that is described in the text.
Prioritised areas

1. Improve maintenance both Winter and Summer
2. Design bicycle infrastructure according to user needs
3. Start developing processes for safer bicycles and better protection
4. Encourage safer behavior and increase the use of helmets and studded tires
5. Develop knowledge on safety performance
Norwegian Traffic Safety Action Plan

• Looking at current number of fatalities and severe injuries
• Four year national plan gathering safety stakeholders (NPRA, Health, Police, Regions & Large cities, safety advocates etc)
• Extrapolates to target year - expected number of F&SI without measures
• Difference between 'Expected number without measures' and 'Target number' is the need for reduction
• Listing measures needed to reach target and assigning responsibility among stakeholders for carrying them out
Conclusions

Strategic plans based on:

- Solid analysis of current problems
- Quantitative targets
- Identifying proven solutions
- Assigning responsibilities for implementation
- Follow up and re-evaluation
Questions!