AGENDA

01 CONTRIBUTORS
02 DETAILED OUTCOMES
03 OUTCOMES SYNTHESIS
04 LOCAL PECULIARITIES
05 NEXT STEPS
<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>CYCLIST</th>
<th>PEDESTRIAN</th>
<th>SLOW SPEED</th>
<th>COMMENTS</th>
<th>SOURCE</th>
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<td>BELGIUM</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes *</td>
<td>* Low speed limits Low numbers</td>
<td><a href="mailto:aurelie.wayenbergh@mobilit.fgov.be">aurelie.wayenbergh@mobilit.fgov.be</a></td>
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<tr>
<td>GERMANY</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Very general data on cyclists</td>
<td><a href="mailto:Seiniger@bast.de">Seiniger@bast.de</a></td>
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<td>SPAIN</td>
<td>Yes</td>
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<td>No</td>
<td>Urban area accidents</td>
<td><a href="mailto:enrique.alcala@upm.es">enrique.alcala@upm.es</a></td>
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<td>Yes</td>
<td>No</td>
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<td><a href="mailto:juris.dreimanis@csdd.gov.lv">juris.dreimanis@csdd.gov.lv</a></td>
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<td>Yes</td>
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<td>FRANCE</td>
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<td>Yes</td>
<td>Yes</td>
<td>1 year data</td>
<td><a href="mailto:cyril.chauvel@lab-france.com">cyril.chauvel@lab-france.com</a></td>
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<td>Yes</td>
<td>Yes</td>
<td>Categories N2 N3 differ</td>
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<td>RUSSIA</td>
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<td><a href="mailto:pavel.stankov@nami.ru">pavel.stankov@nami.ru</a></td>
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<td>SWITZERLAND</td>
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<td>Yes</td>
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<td><a href="mailto:balazs.csonka@hu.tuv.com">balazs.csonka@hu.tuv.com</a></td>
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<td>HOLLAND</td>
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<td><a href="mailto:tguiting@rdw.nl">tguiting@rdw.nl</a></td>
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<td>Yes</td>
<td>Yes</td>
<td>Low numbers</td>
<td><a href="mailto:timo.karkkainen@trafi.fi">timo.karkkainen@trafi.fi</a></td>
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</table>
As the VRU-Proxi IWG work focuses on very specific scenarios, the corresponding data has been extracted from the information given by the contributors, as much as possible.

Fatalities were considered for this synthesis

« Other impacts » and « other vehicle categories » has been discarded, as they could not bring information on the scenarios.
As the VRU-Proxi IWG work focuses on very specific scenarios, the corresponding data has been extracted from the information given by the contributors, as much as possible.

Fatalities were considered

« Other cases » has been discarted, as they could not bring information on the scenarios
02

DETAILED OUTCOMES
OUTCOMES FROM JAPAN DATA ON CYCLISTS: 900 Fatalities

- Main contributors: M1 (38%) – N1 (29%) – N3 (20%)
- 58% Cyclists are killed in forward motion (S+TO) by M1 (44%) – N1 (44%) – N2 (10%)
- 22% Cyclists are killed in forward motion (TODS) by N3 (68%) – M1 (17%) – N2 (8%)
- 18% Cyclists are killed in forward motion (TDS) by M1 (45%) – N2 (25%) – N1 (19%)
- 16 Fatalities (2%) in rearward motion by M1 (31%) – N2 (31%) – N1 (25%)
- M3 killed very few cyclists

OUTCOMES FROM JAPAN DATA ON PEDESTRIANS: 1,296 Fatalities

- Main contributors: M1 (44%) – N2 (27%) – N3 (14%) – N1 (13%)
- 55% Pedestrians are killed in forward motion (TDS) by M1 (44%) – N2 (30%) – N1 (12%)
- 22% Pedestrians are killed in forward motion (S+TO) by M1 (58%) – N1 (21%) – N2 (17%)
- 13% Pedestrians are killed in forward motion (TODS) by M1 (42%) – N2 (20%) – N3 (20%)
- 125 Fatalities (10%) in rearward motion by M1 (46%) – N2 (30%) – N3 (12%) – N1 (11%)
- M3 killed few pedestrians
Outcomes from FRANCE data on CYCLISTS: 28 fatalities
- Main contributors: M1 (36%) – N3 (36%) – N2 (18%)
- 46% Cyclists are killed in forward motion (S) by M1 (38%) – N3 (38%) – N1 (23%)
- 36% Cyclists are killed in forward motion (TODS) by N3 (50%) – N2 (50%)
- 18% Cyclists are killed in forward motion (TDS) by M1 (100%)
- No fatalities in rearward motion
- M2 – M3 did not kill cyclist

Outcomes from FRANCE data on PEDESTRIANS: 229 fatalities
- Main contributors: M1 (40%) – N3 (31%) – N1 (20%)
- 44% Pedestrians are killed in forward motion (S) by N3 (46%) – M1 (37%) – N1 (12%)
- 13% Pedestrians are killed in forward motion (TODS) by N3 (42%) – M1 (32%) – N1 (16%)
- 9% Pedestrians are killed in forward motion (TDS) by M1 (50%) – N1 (25%) – M3 (6%)
- 20% Pedestrians are killed in rearward motion by M1 (43%) – N1 (39%) – N3 (17%)
- M2 – N2 did not kill pedestrians
DETAILED OUTCOMES


- Outcomes from POLAND data on CYCLISTS: 1251 fatalities
  - Main contributors: M1-N1 (74%) – N2-N3-M2-M3 (26%)
  - 56% Cyclists are killed in side collision
  - 31% Cyclists are killed in rear collision (forward-rearward)
  - 13% Cyclists are killed in front collision

- Outcomes from POLAND data on PEDESTRIANS: 5282 fatalities
  - Main contributors: M1-N1 (82%) – N2-N3-M2-M3 (18%)
DETAILED OUTCOMES
LATVIA – NATIONAL – ALL SPEEDS – 2010-2016

- Outcomes from LATVIA data on CYCLISTS: 91 fatalities
  - Average of 13 cyclists killed per year

- Outcomes from LATVIA data on PEDESTRIANS: 462 fatalities
  - Average of 66 pedestrians killed per year
Outcomes from CANADA data on CYCLISTS: 2 fatalities
- 2 cyclists killed in 5 years
- 1 on forward motion (S) by a LDV
- 1 on forward motion (TODS) by a HGV

Outcomes from CANADA data on PEDESTRIANS: 29 fatalities
- Main contributors: LDV (80%) – HGV (13%) – Buses (3%)
- 63% Pedestrians are killed in forward motion (S) by LDV (95%) – HGV (5%) 
- 13% Pedestrians are killed in forward motion (TDS) by LDV (100%) 
- 7% Pedestrians are killed in forward motion (TODS) by LDV (50%) – HGV (50%)
- 3% Pedestrians are killed (1 case) in rearward motion by a HGV
Details of outcomes from Spain data on cyclists and pedestrians.

**Outcomes from Spain data on Cyclists: 19 fatalities**
- Main contributors: M1 (84%) – N2-N3 (11%)
- 90% Cyclists are killed in forward motion (S) by M1 (88%) – N2-N3 (6%) – M2-M3 (6%)
- 5% Cyclists are killed in forward motion (TODS) by N2-N3 (100%)
- 5% Cyclists are killed in forward motion (TDS) by M1 (100%)
- No fatalities in rearward motion

**Outcomes from Spain data on Pedestrians: 477 fatalities**
- Main contributors: M1 (74%) – N1 (16%) – M2-M3 (5%) - N2-N3 (5%)
- 80% Pedestrians are killed in forward motion (S) by M1 (79%) – N1 (12%) – M2-M3 (6%)
- 6% Pedestrians are killed in forward motion (TODS) by M1 (62%) – N1 (19%) – N2-N3 (12%)
- 12% Pedestrians are killed in rearward motion by M1 (41%) – N1 (39%)
Outcomes from BELGIUM data on CYCLISTS: 4 fatalities
- Main contributors: N3-N2 (75%) – M1 (25%)
- 50% Cyclists are killed in forward motion (S) by M1 (50%) – N3-N2 (50%)
- 25% Cyclists are killed in forward motion (TDS) by N3-N2 (100%)
- No fatality in forward motion TODS
- 1 fatality in rearward motion (N2-N3)
- M2 – M3 did not kill cyclists

Outcomes from BELGIUM data on PEDESTRIANS: 15 fatalities
- Main contributors: M1 (60%) – N2-N3 (33%) – N1 (7%)
- 53% Pedestrians are killed in forward motion (S) by M1 (63%) – N2-N3 (17%)
- 13% Pedestrians are killed in forward motion (TDS+TOPDS) by M1 (100%)
- 13% Pedestrians are killed in rearward motion by N1 (50%) – N2-N3 (50%)
- M2 – M3 did not kill pedestrians
OUTCOMES FROM HUNGARY DATA ON CYCLISTS: 253 FATALITIES

- Cyclists are 13% of all road fatalities
- 77% of the cyclists are killed by M1-M2-M3 and N1-N2-N3
  - 64% by M1-N1
  - 32% by N2-N3
  - 4% by M2-M3

OUTCOMES FROM HUNGARY DATA ON PEDESTRIANS: 453 FATALITIES

- Pedestrians are 24% of all road fatalities
- 92% of the pedestrians are killed by M1-M2-M3 and N1-N2-N3
  - 68% by M1-N1
  - 26% by N2-N3
  - 5% by M2-M3
DETAILLED OUTCOMES
GERMANY – NATIONAL STATISTICS – ALL SPEEDS – 2010-2016

- Outcomes from GERMANY data on CYCLISTS: 408 fatalities
  - Cyclist represent 53% of VRU killed

- Outcomes from GERMANY data on PEDESTRIANS: 1547 fatalities
  - Main contributors: M1 (77%) – N3 (10%) – N2 (6%) – N1 (5%)
  - 70% Pedestrians are killed in forward motion (S) by M1 (83%) – N3 (8%) – N1 (4%)
  - 4% Pedestrians are killed in forward motion (TDS) by M1 (70%) – N3 (11%) – N1 (7%)
  - 4% Pedestrians are killed in rearward motion by M1 (55%) – N3 (17%) – N2 (17%)
  - M3 did not kill pedestrians on rearward motion
  - M2 did not kill pedestrians on forward motion
DETAILED OUTCOMES


- Outcomes from FINLAND data on CYCLISTS: 73 fatalities
  - Main contributors: M1 (39%) – N3 (35%) – M3 (17%) – N1 (9%)
  - 43% Cyclists are killed in forward motion (TODS) by N3 (40%) – M3 (30%) – M1 (20%)
  - 35% Cyclists are killed in forward motion (S) by M1 (63%) – M3 (13%) – N3 (13%) – N1 (13%)
  - 13% Cyclists are killed in rearward motion by N3 (67%) – M1 (33%)

- Outcomes from FINLAND data on PEDESTRIANS: 141 fatalities
  - Main contributors: M1 (54%) – N2-N3 (25%) – N1 (12%) – M3 (13%)
  - 66% Pedestrians are killed in forward motion (S) by M1 (68%) – N1 (8%) – N2-N3 (8%)
  - 16% Pedestrians are killed in forward motion (TODS) by N2-N3 (50%) – M3 (33%) – M1 (15%)
  - 16% Pedestrians are killed in rearward motion by M1 (33%) – N3 (33%) – N1 (33%)
Outcomes from RUSSIA data on CYCLISTS: 426 fatalities
- 5331 accidents
- 8% fatalities in average
- May vary depending on region: from 3% to 16%

Outcomes from RUSSIA data on PEDESTRIANS:
- No data available
OUTCOMES SYNTHESIS

MAIN TRENDS SO FAR FOR CYCLISTS – LOW SPEED ACCIDENTS

- M1 and N3 are the main contributors for cyclist fatalities
- M2 and M3 are minor contributors

- Most cyclists are killed when the opposite vehicle is moving forward and straight
- Cyclists are often killed when the opposite vehicle is moving forward and turn opposite to driver side
- Cyclists killed when the opposite vehicle is moving backwards are not common (see peculiarities)
OUTCOMES SYNTHESIS

MAIN TRENDS SO FAR FOR CYCLISTS – ALL SPEEDS ACCIDENTS

- M1 and N3 are the main contributors for cyclist fatalities
- N1, M2 and M3 are very minor contributors

- 90% cyclists are killed when the opposite vehicle is moving forward and straight
- Cyclists happen to be killed when the opposite vehicle is moving forward and turn to driver side or opposite to driver side
- Cyclists killed when the opposite vehicle is moving backwards are rare
OUTCOMES SYNTHESIS

MAIN TRENDS SO FAR FOR PEDESTRIANS – LOW SPEED ACCIDENTS

- M1 is the main contributor for pedestrian fatalities
- N2-N3 are altogether a danger for pedestrians
- M2 and M3 are minor contributors

- Pedestrians are often killed when the opposite vehicle is moving forward and straight
- Pedestrians are often killed when the opposite vehicle is moving forward and turning
- Pedestrians are quite often killed when the opposite vehicle is moving backwards
OUTCOMES SYNTHESIS
MAIN TRENDS SO FAR FOR PEDESTRIANS – ALL SPEEDS ACCIDENTS

- M1 is the main contributor for pedestrian fatalities, by far
- N may altogether be a danger for pedestrians
- M2 and M3 are minor contributors

- Most pedestrians are killed when the opposite vehicle is moving forward and straight, by far.
- Pedestrians are sometimes killed when the opposite vehicle is moving forward and turning
- Pedestrians are sometimes killed when the opposite vehicle is moving backwards
### SUMMARY MATRIX - PEDESTRIANS

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<tr>
<th>PEDESTRIANS</th>
<th>M1</th>
<th>N1</th>
<th>N3</th>
<th>N2</th>
<th>M2 M3</th>
<th>FW S</th>
<th>FW TDS</th>
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## SUMMARY MATRIX - CYCLISTS

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04
LOCAL PECULIARITIES
LOCAL PECULIARITIES FOR CYCLISTS

- M3 killed 17% of cyclists in Finland
- N1 is a high contributor for cyclist fatalities in Japan (29%)
- Cyclist can be killed when opposite vehicle is moving backward in Japan (16 cases – 2%) and Finland (13% - needs explanation)
Canadian figures are above average on LDV and moving forward scenario
NEXT STEPS
NEXT STEPS

- Get more data (CH, NL, UK ?)
- Clarify remaining shadow zones
- Select accident scenarios VRU-Proxi IWG wants to take into consideration
THANK YOU
GLOSSARY

- TODS = Turn Opposite to Driver Side
- TDS = Turn to Driver Side
- S = Straight
- TO = Take Off
- LS = Low Speed
- AS = All Speeds
- NA = Non Available