Crashes involving cyclists aged 50 and over

SWOV-team for in-depth research
Ragnhild Davidse
Risk of a traffic fatality (index)
Risk of a serious injury (index)
Crashes involving cyclists

Cyclist fatalities
- Crash with motorised vehicle
- Other

Seriously injured cyclists
- Crashes with motorised vehicle
- Other

Other: falls, collisions with objects, collisions with other cyclists or pedestrians
‘Non-motorised’ cyclist crashes

- 80% of seriously injured cyclists
- Risk and number increasing
- Information about these crashes is scarce
- Only 4% of crashes is registered by police
  - Not always notified
  - If notified, not always registered as a road crash

- National research agenda bicycle safety
- SWOV in-depth study
SWOV in-depth study

- Set of comparable crashes (40 – 60)
- Collection of detailed information
- As soon as possible
- Multidisciplinary investigation team
- Investigates single crashes
- Aggregates results to prototypical crashes
Aim and focus

• How do these crashes occur?

• Discover the interplay of factors

• Find leads for measures to improve road safety
In-depth study cyclists aged 50+

- Crashes in which a cyclist aged 50 or over was involved:
  - Falls
  - Collisions with an obstacle
  - Collisions with other cyclists, mopedists or pedestrians

- Notified by police and ambulance services

- August – November 2012 (4 months)
Dataset

• 128 relevant crashes

• Data collected on 41 crashes
  – Interview with cyclists (semi-structured)
  – Bike inspection
  – Scene investigation
  – Injury information

• Checked on bias
Catchment area SWOV-team
Injured cyclists aged 50 and over

• Cyclist:
  – 49% male
  – 51% female

• Age:
  – 39% 50-64 years old (-)
  – 46% 65-74 years old (++)
  – 15% 75 and over (--)
Crashes cyclists aged 50 and over

• Types of crashes:
  – 1/3 falls (in shoulder, dismounting) [--]
  – 1/3 obstacle (pole, bridge, kerb)
  – 1/3 cyclist collides with cyclist or light moped rider

• Bikes:
  – 39% pedelec females: 48%
  – 17% racing bike (males: 35%)
Crash and injury factors

• Crash reconstruction

• Which factors contributed to occurrence?
  – General (weather, traffic, ...)
  – Human (medical, experience, distraction, speed, ...)
  – Road (width, obstacles, bends, roadside, ...)
  – Vehicle (condition, weight distribution, brakes, ...)
  – Injury factors (helmet, contact)

• Crash scenario
Eight different crash patterns (1)

- Cyclist looses balance **while dismounting**
- Cyclist off course **runs into kerb or verge**
- Cyclist collides with **obstacle on cycle path**
- **Distracted cyclist** collides with oncoming cyclist or rides into verge
Eight different crash patterns (2)

- Cyclist **underestimates traffic situation**
- Collision in **sight restricted** circumstances
- **Miscommunication during overtaking**
- **Falling objects** and unsuccessful emergency manoeuvres
Most frequent human factors

• Behaviour/presence of other road user (reason to stop, visual obstruction, distraction)

• Distraction / narrow focus

• Experience with situation/bicycle

• Cycling speed

• Lateral position

• Medical condition
Most frequent other factors

- Bicycle facility too narrow
- Vertical alignment: steep slope
- Obstacle not positioned well and/or marked correctly
- Saddle height (not able to reach ground)
Similar study carried out in Zeeland

- Financed by Zeeland
- Oct 2012- Nov 2013
- 35 crashes
- Very similar results
Recommendations

• Take into account that road user interaction also plays a role in single-vehicle crashes

• Anticipate on growth of number of cyclists who need more space and more time to react

• Remove obstacles on and next to cycling facilities

• Make sure that the bicycle fits its rider and his characteristics (height, weight, speed)

• Improve stability of bicycles, especially pedelecs

• Develop new measures to prevent cyclist injuries
Thank you for your attention