Distracted cycling: What do we know (PPT)

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Publication date
2016

Citation (APA)
Hagenzieker, M. (2016). *Distracted cycling: What do we know (PPT)*. 9. ADAC/BASt Symposium , Berlin, Germany.

Distracted cycling
What do we know ?

Marjan Hagenzieker

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Source: Roxanne herder Productions

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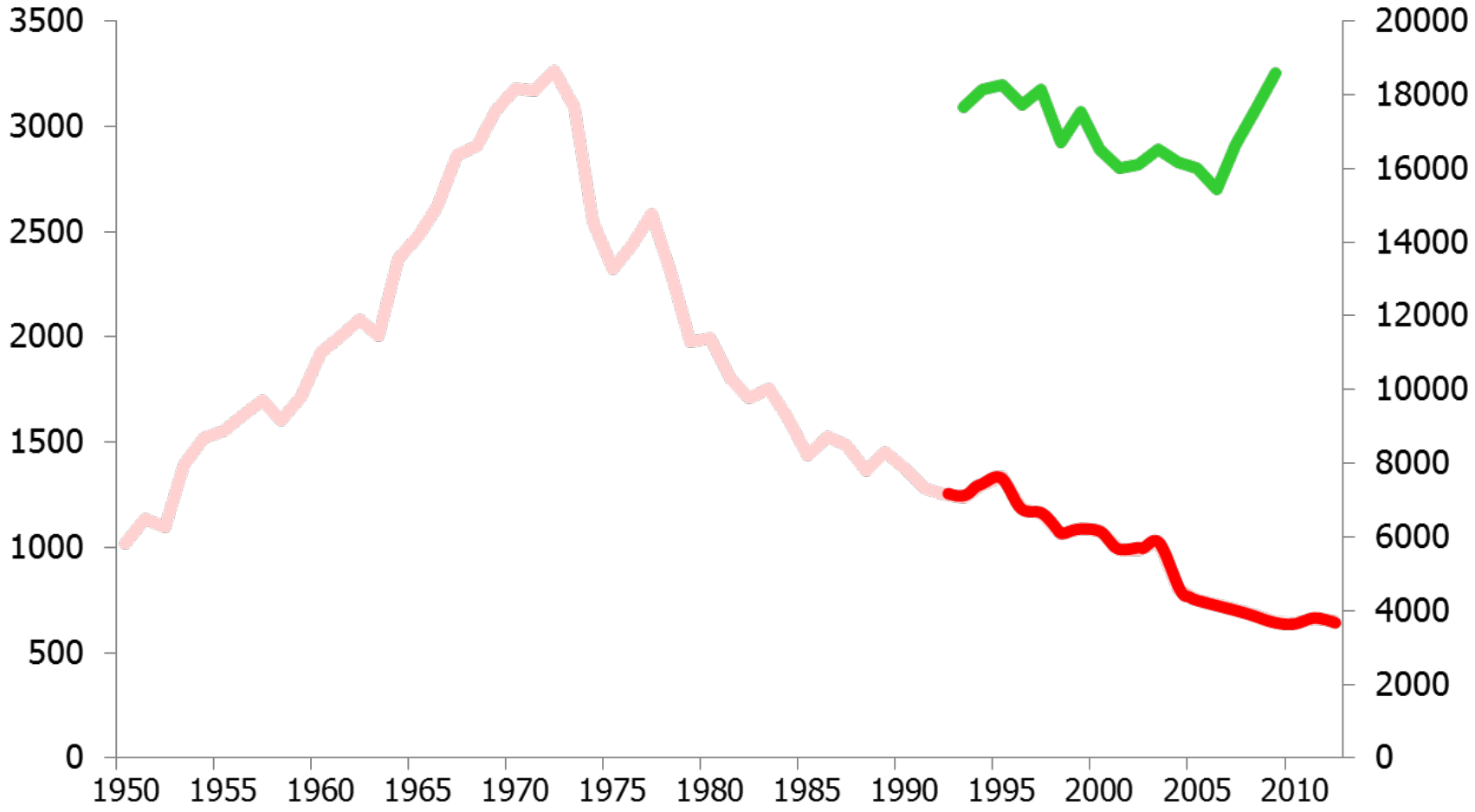
Road safety in the Netherlands



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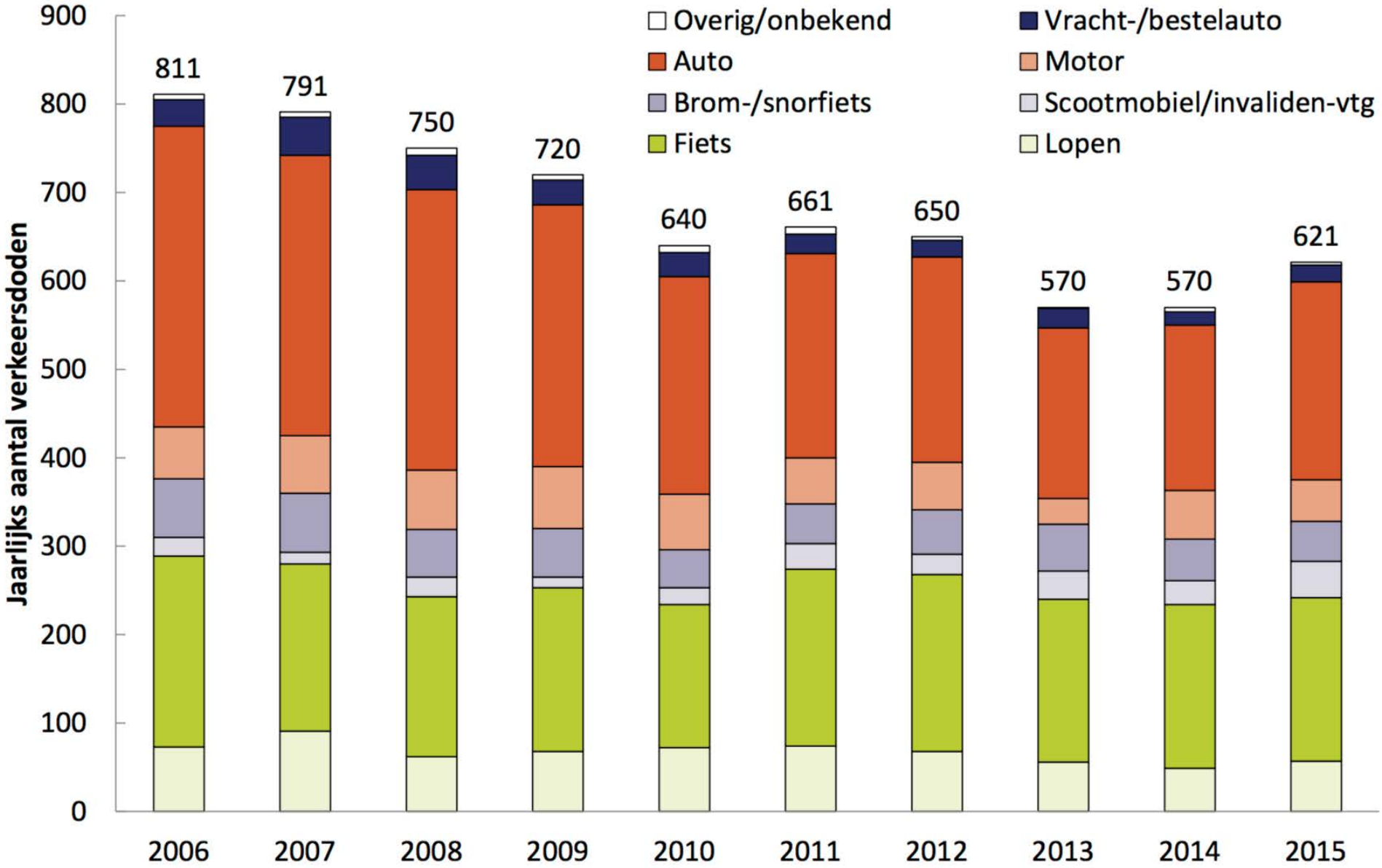
Road fatalities in the Netherlands



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Cycling safety in the Netherlands: serious injuries

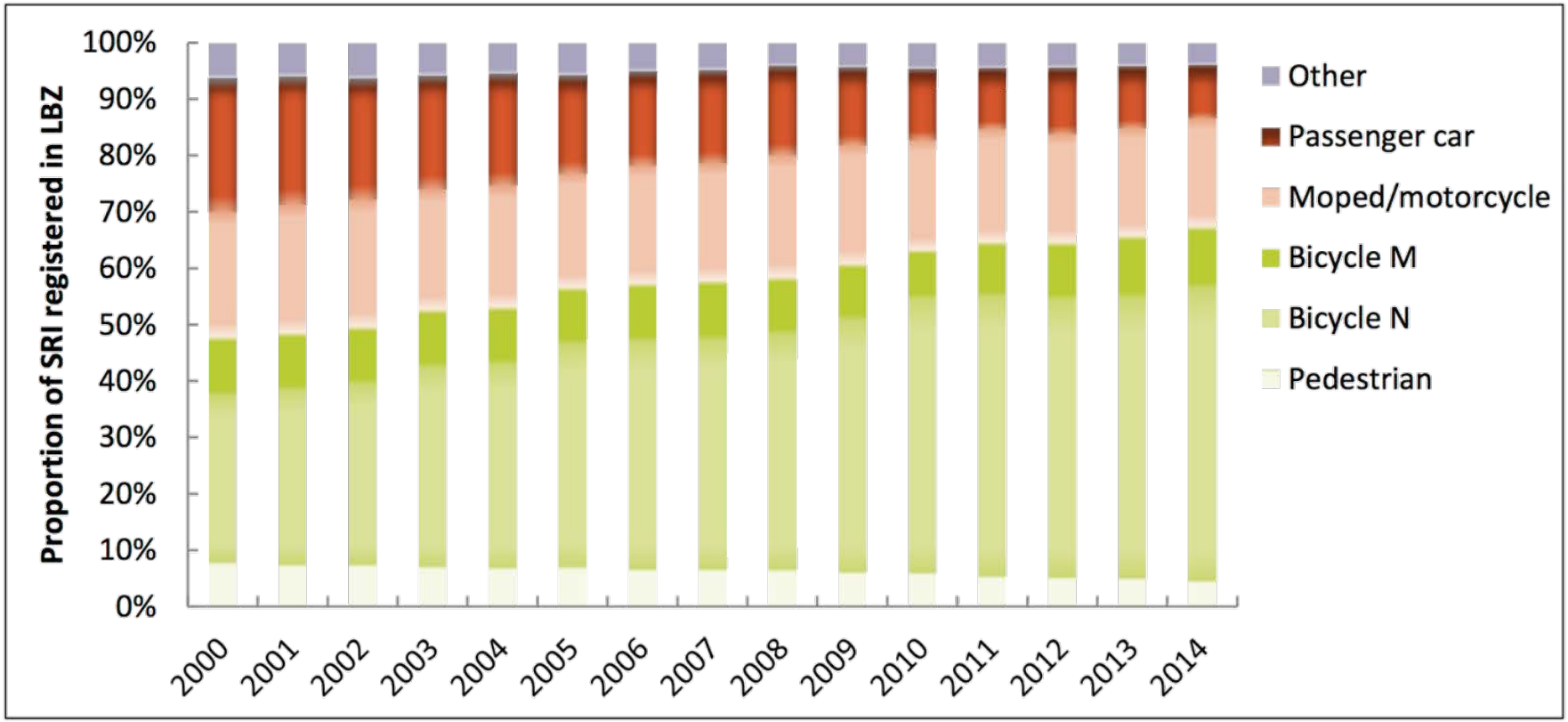

Figure 2. *Number of serious road injuries in the Netherlands since 2000, distributed by mode of transport, based on the LBZ register. The precise disaggregation is unknown as the modes of transport are not always accurately registered in the LBZ. Sources: DHD and SWOV.*

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Source: SWOV factsheet 2016

Trends

- In many (EU) countries active mobility is encouraged
  - cycling becomes more popular
  - E-bike, sports, older people , …
- Portable electronic devices:
  - Phoning
  - Texting
  - Listen to music
- Quiet electric cars
  - Target: 1 million in 2025 in the Netherlands*

* *IEA (2012)*

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Consequences of these trends

- More distracted cycling ?
- Use of portable devices by bicyclists ?
- Effects on behaviour and road safety ?
- Countermeasures ?

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What is distraction ?

- cf “Everybody knows what attention is” (James, 1890)
- Various definitions in literature, all focussing on driver – not cyclist/pedestrian, e.g.:
- “the diversion of attention away from activities critical for safe driving towards a competing activity” (Lee et al, 2008)
- “diversion of attention from driving, because driver is temporarily focusing on an object, person, task or event not related to driving” (Hedlund et al, 2005)

→ distraction = attention for the wrong things

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Types of distraction

Visual

Auditory

Motor

Cognitive

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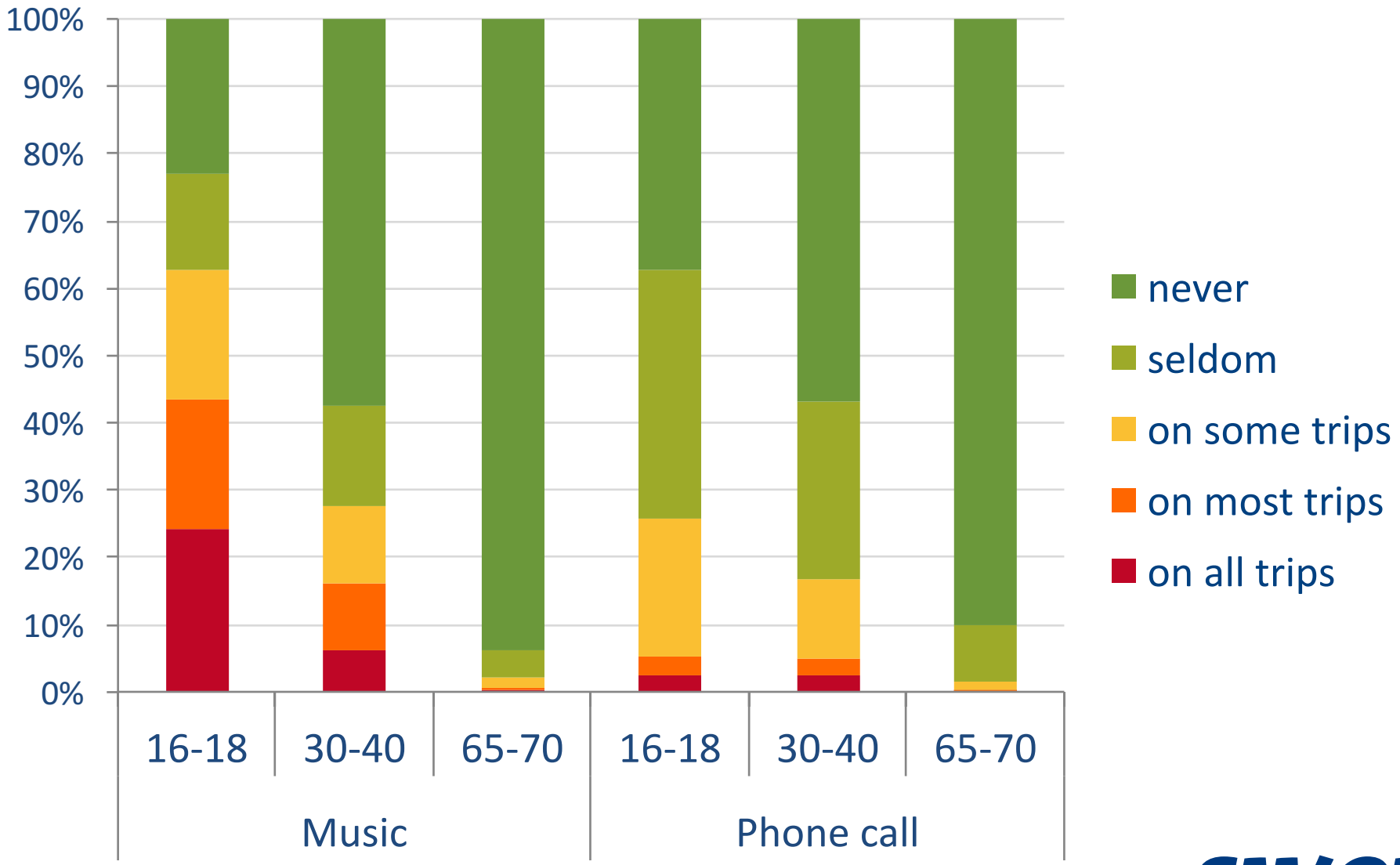
Prevalence of ♫ and 📱 in NL



Source: Stelling et al. (2016) ICTTP, Brisbane

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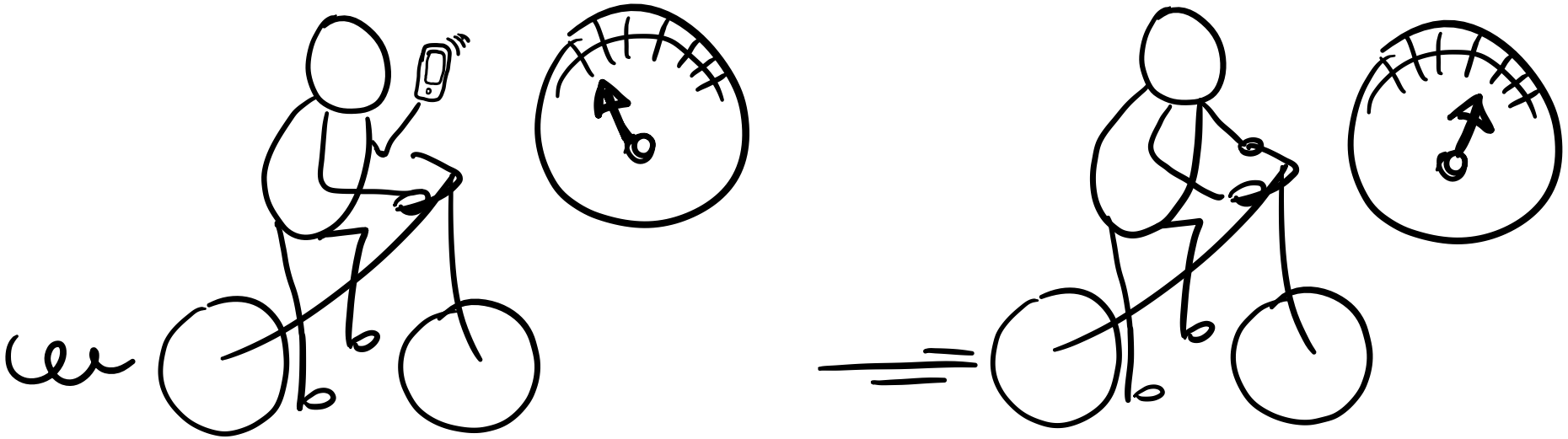
What happens when cyclists use phone?



(De Waard et al., 2010, 2011, 2015; Terzano, 2013; Stelling et al. 2016 in prep.)

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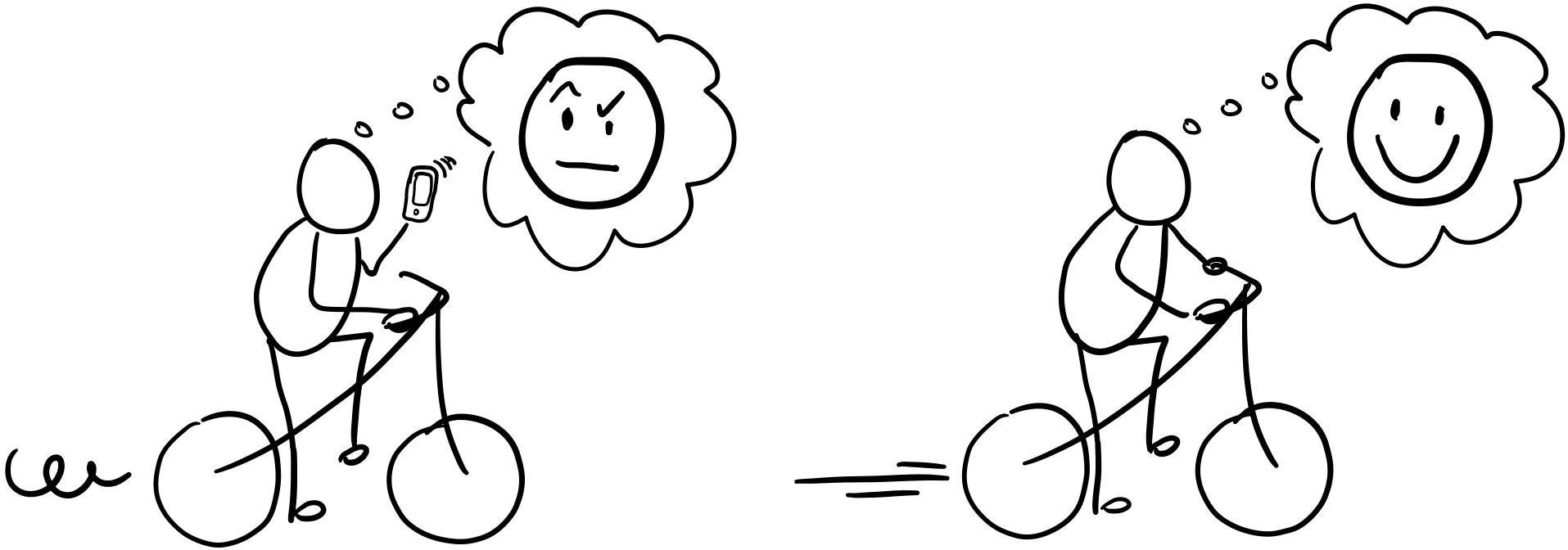

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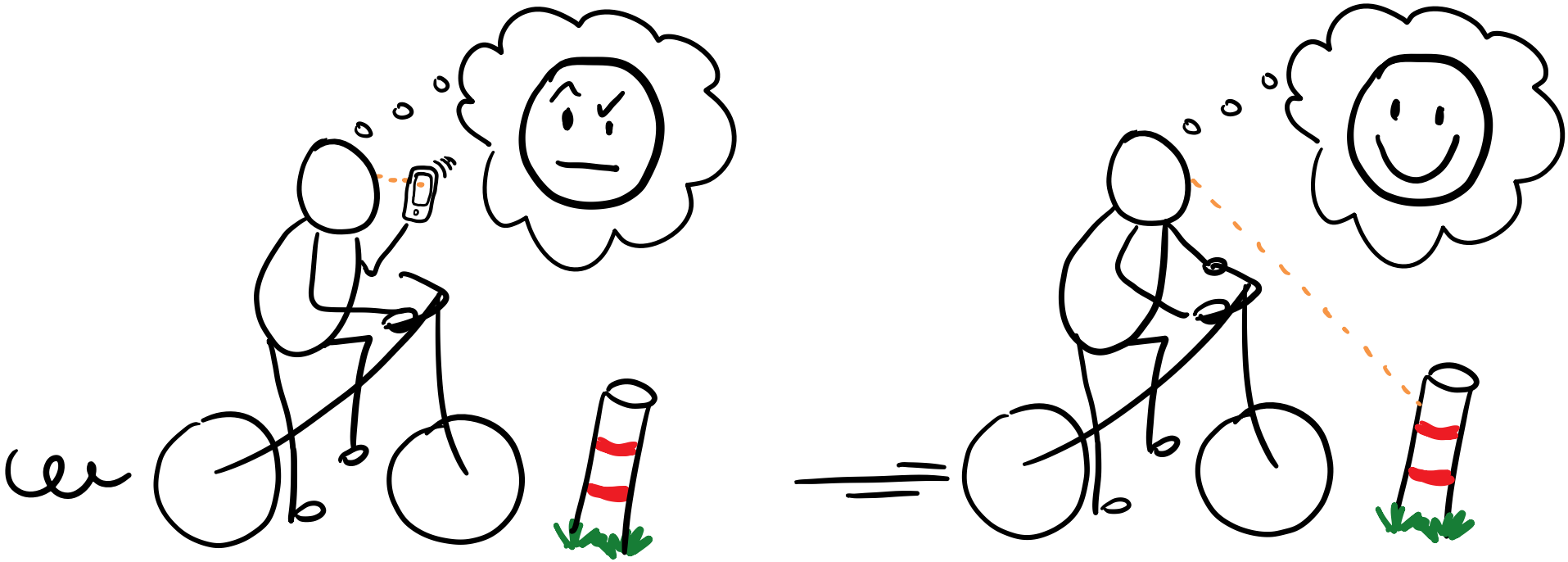

(De Waard et al., 2010, 2011, 2015; Terzano, 2013; Stelling et al. 2016 in prep.)

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What happens with auditory perception ?

- Device use compromises auditory perception*
- In-earbuds particularly detrimental

- Listening to music through one earbud : hardly negative effect on cycling behaviour and number of missed auditory stimuli
- But: negative impact on sound localisation: we need two ears to localise sounds! **

** De Waard, Edlinger & Brookhuis (2011); ** Stelling et al., 2016*

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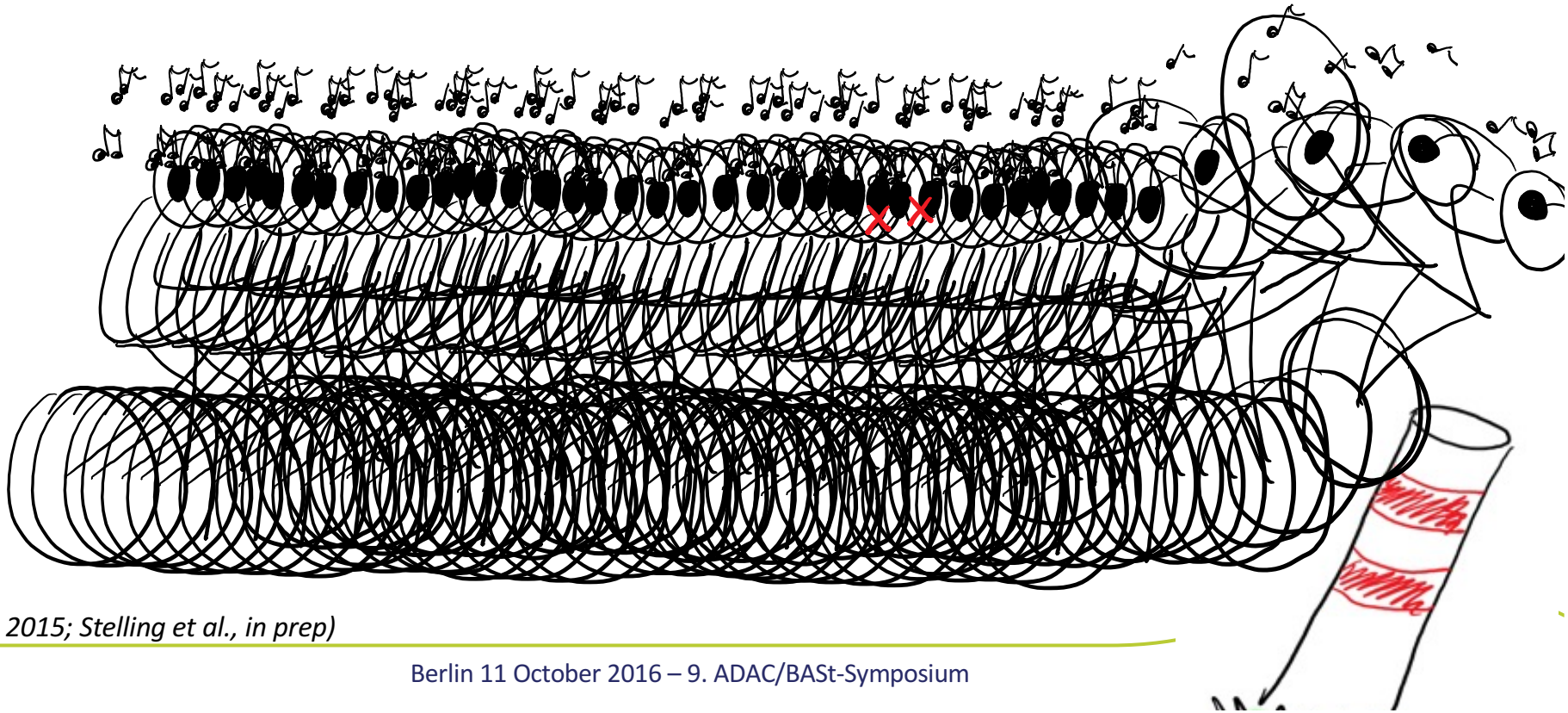
Compensatory behaviour ?



(Kircher et al., 2015; Stelling et al., in prep)

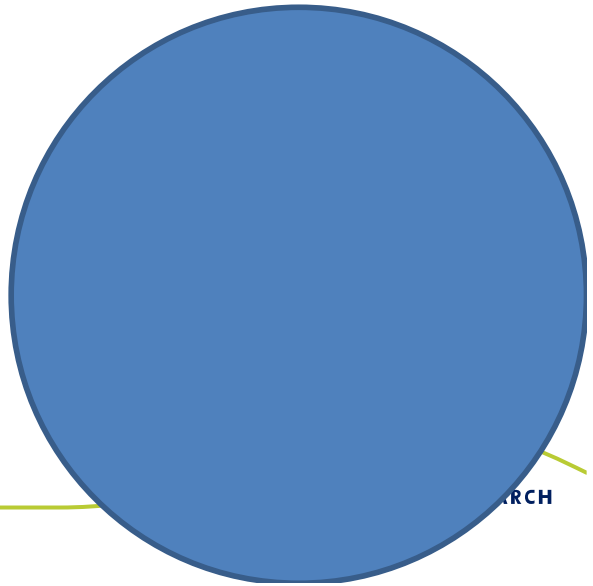
New research methodologies

- Instrumented bike
- Naturalistic cycling
- In-depth studies
- Cycle-RAP

Picture from Kovácsová et al 2016. Transp. Res. Part F.

Q: In what percentage of bicycle crashes may phone use have played a role (in NL)?

- ❑ A) 4 – 5 %
- ❑ B) 10 – 11 %
- ❑ C) 12 – 15%



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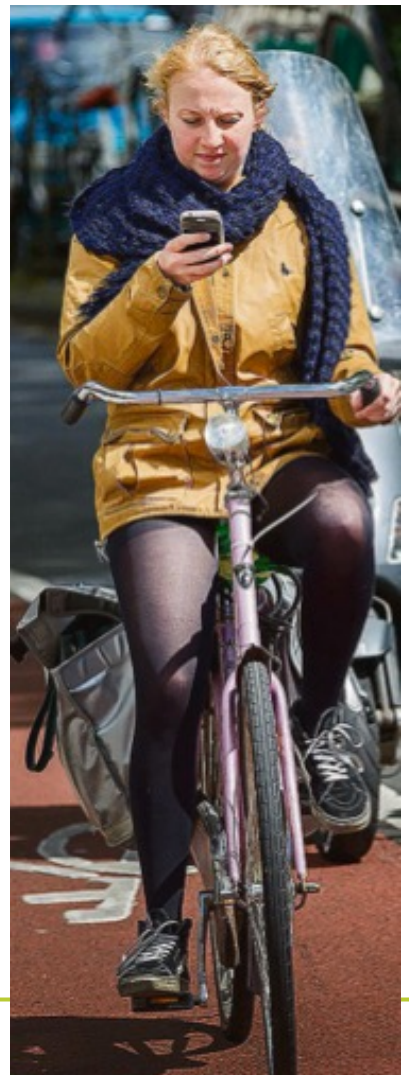

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- ❑ B) 10 – 11 %
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Source: SWOV Fact sheet (Jan 2016) Phone use by cyclists and pedestrians

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However, ..

- Crashes involving bicyclists and pedestrians often not recorded
- Particularly: crashes with personal (serious) injuries
- Number of seriously injured cyclists is showing an increasing trend not only in the Netherlands, also in other European countries, e.g. Germany *(EU 2016)*
- Lack of exposure data!

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Risk of phone use by cyclists

Source: SWOV Factsheet 2016

Countermeasures

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What do we know ?

- Few studies on distraction among cyclists available
- Portable devices while cycling appears considerable; but no precise prevalence data
- In 4 – 5 % of bicycle crashes may phone use have played a role in NL
- Severe under-reporting of bicyclist/pedestrian crashes; injury & exposure data largely absent
- Listening to music, talking on phone and texting negatively influence behavioural performance and self-reported crash risk
- Cyclists listening to music and talking on the phone miss auditory information

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What we do not know ..

- Few studies, small scale, local / regional , often based on self-reports
- Methodologies vary, difficult to compare
- Precise prevalence (+ who, what, where) unknown
- Crash/injury risks (+ who, what, where) unknown
- Effective countermeasures largely unknown

- Conclusion: Large knowledge gaps

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