Young road user risks: Is age the only fix?

2015 European Transport Safety Lecture

Divera Twisk

Institute for Road Safety Research The Netherlands

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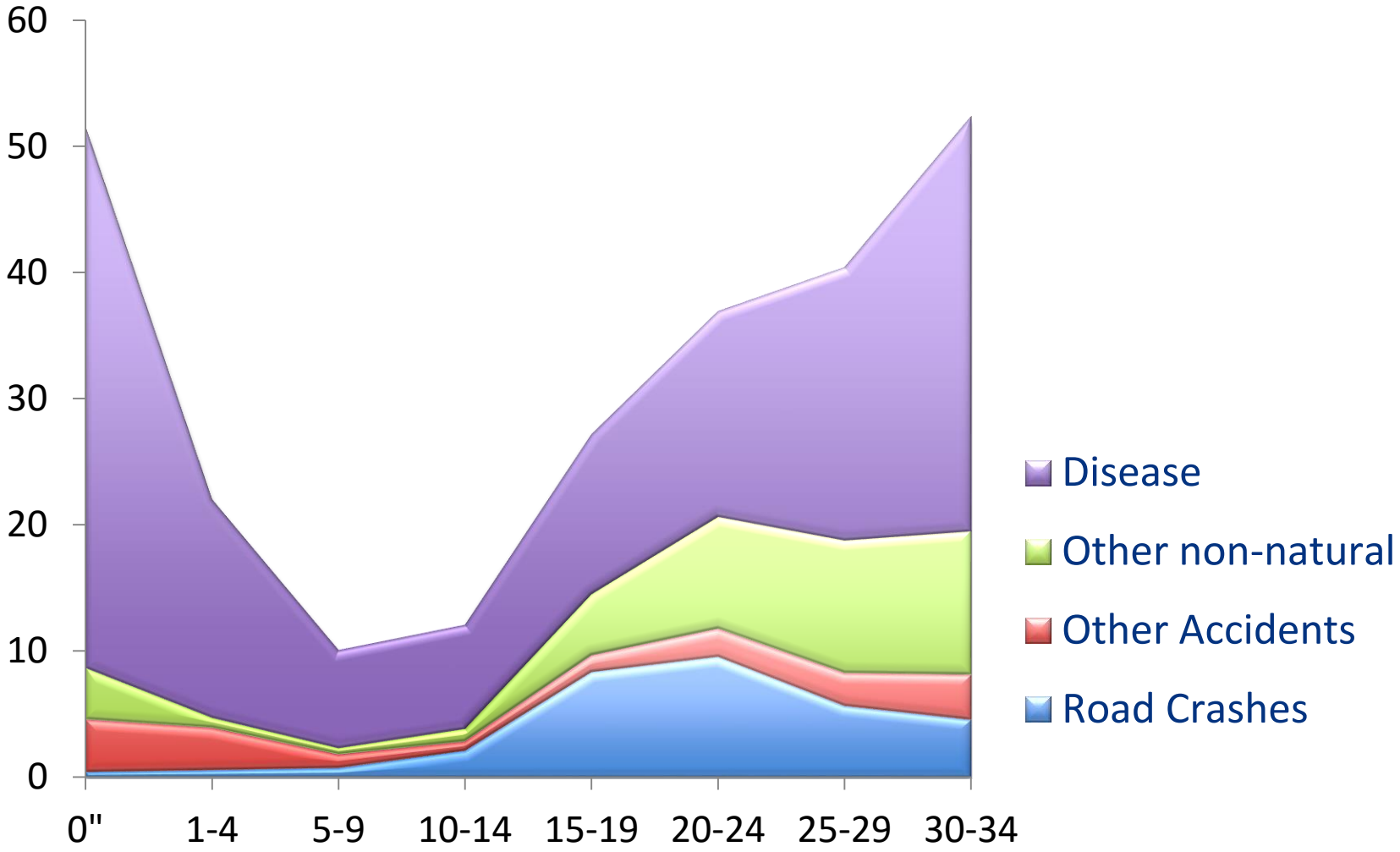
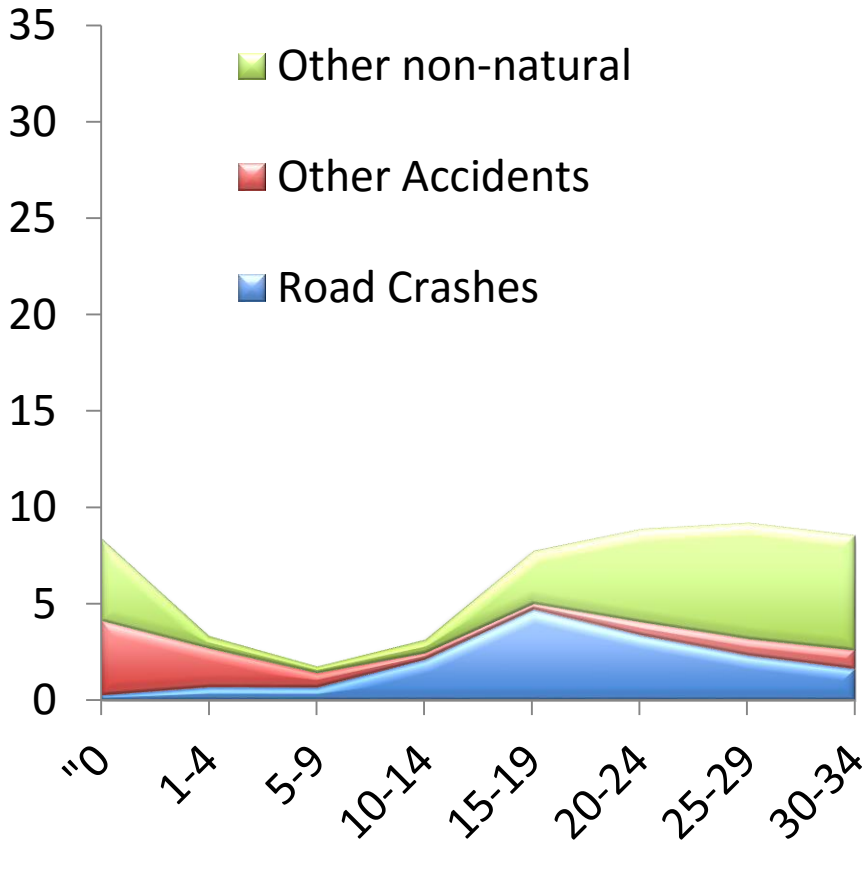
Content

- **Road mortality in terms of public health**
- **Factors explaining the high risk**
- **Effective countermeasures**
- **Cyclists, pedestrians and moped riders**

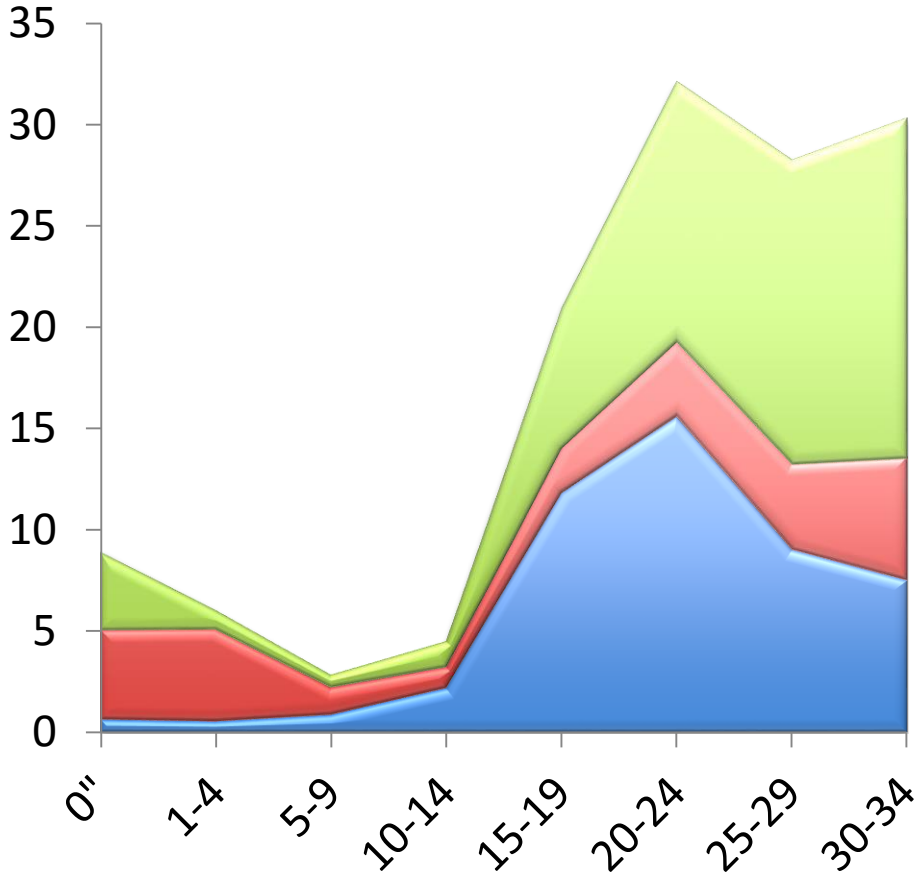


Adolescents do not die from disease, BUT from injuries

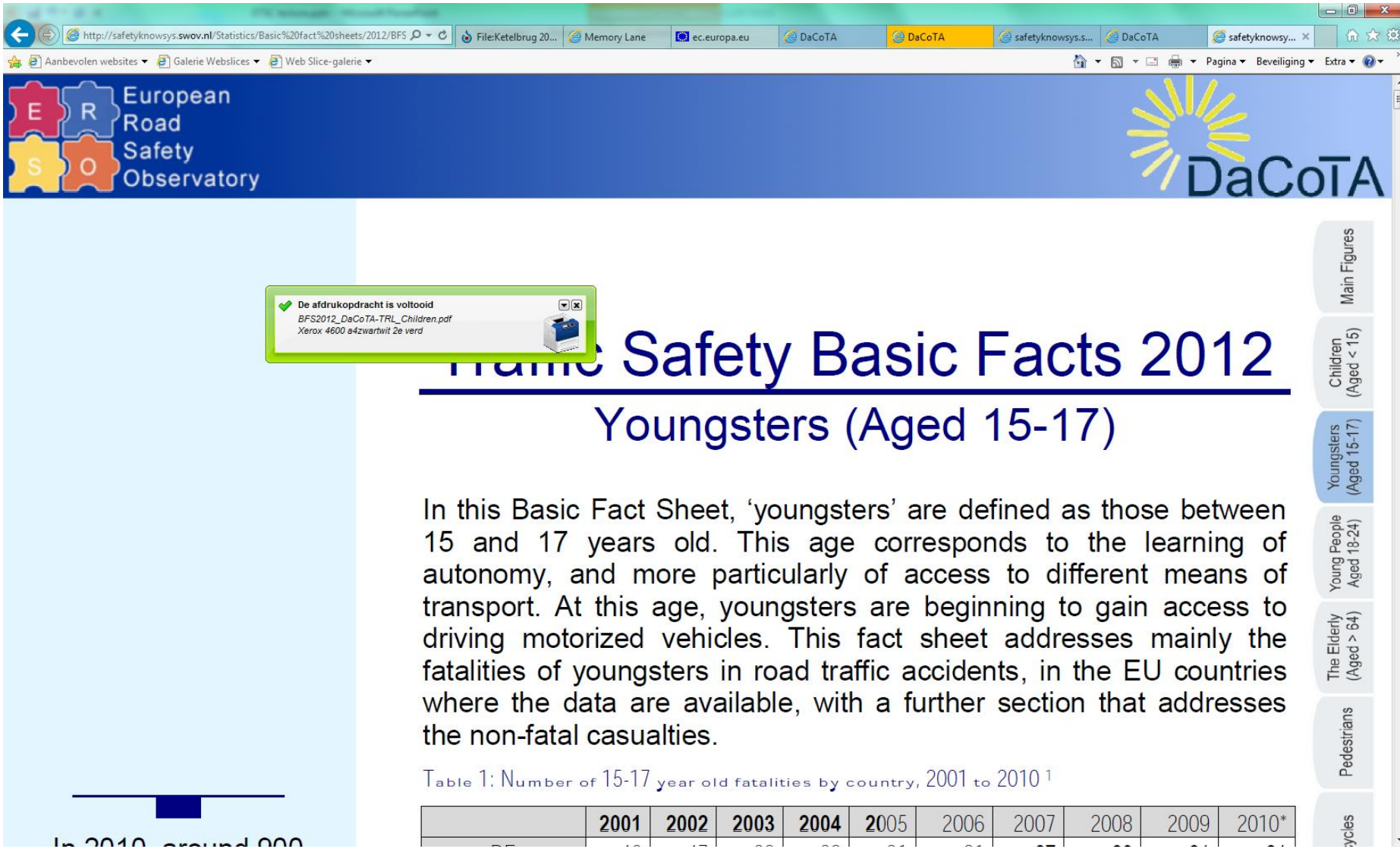
All youngsters equally at risk?



Females



Males



http://safetyknowsys.swov.nl/

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0-15 (# 833)

15-17 (# 833)

- car occupants
- PTW
- pedestrian
- cyclist

18-24 (# 4853)

- car occupants
- two-wheelers
- pedestrian
- other

2001 – 2010 reduction -50%

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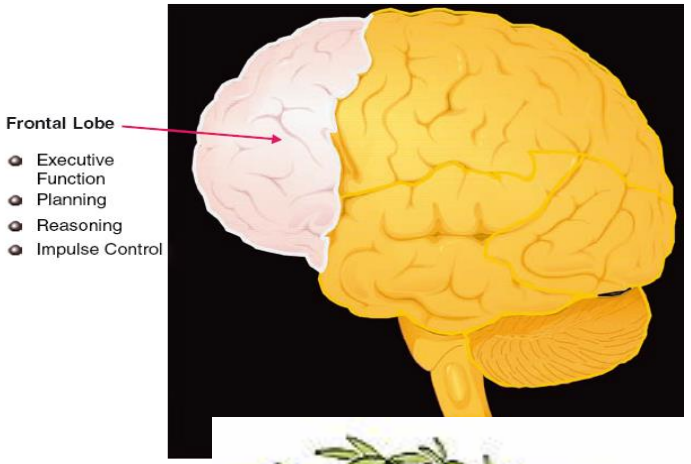
Contributing factors

- Age: Social & Biological immaturity
- Unsafe environment
- Lack of experience
- Poor self assessment: over confident
- High exposure to risky conditions



Source : OECD (2006) young drivers: the road to safety

Age

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Adolescence

- Culturally defined: 10- 24/30 yrs
- Starts with biological changes related to puberty
- Ends with adoption adult roles
- Historically described as troublesome period

Universal characteristics of adolescents

- Impulsive
- Emotionally instable
- More sleep needed/lazy
- Immediate gratification at expense of future rewards
- Sensitive to Peer influences
- Challenge authority
- Explore new behaviour/worlds
- Not unique to humans: also in primates

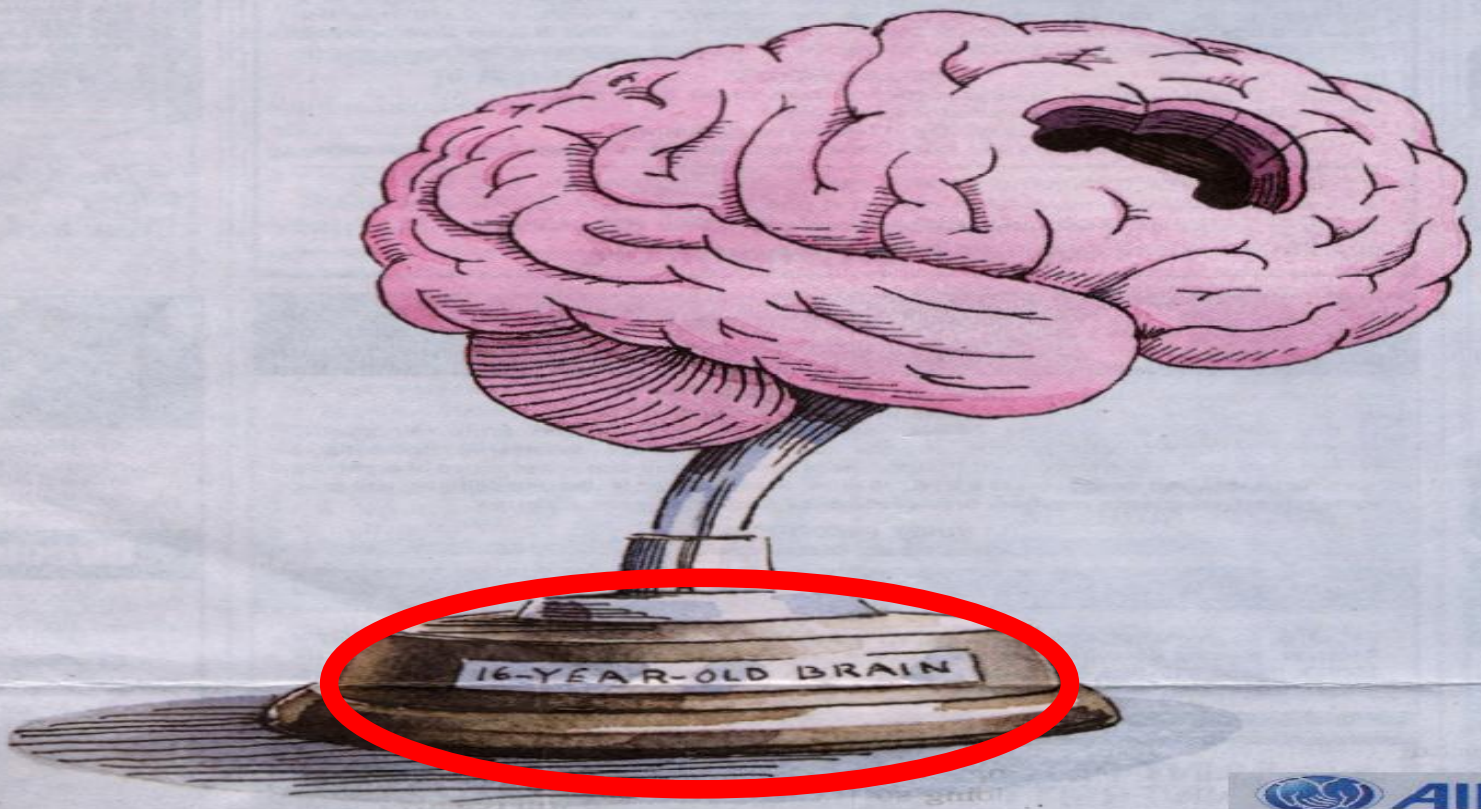
Over represented in any type of unsafe behaviour!

NEW: Brain development

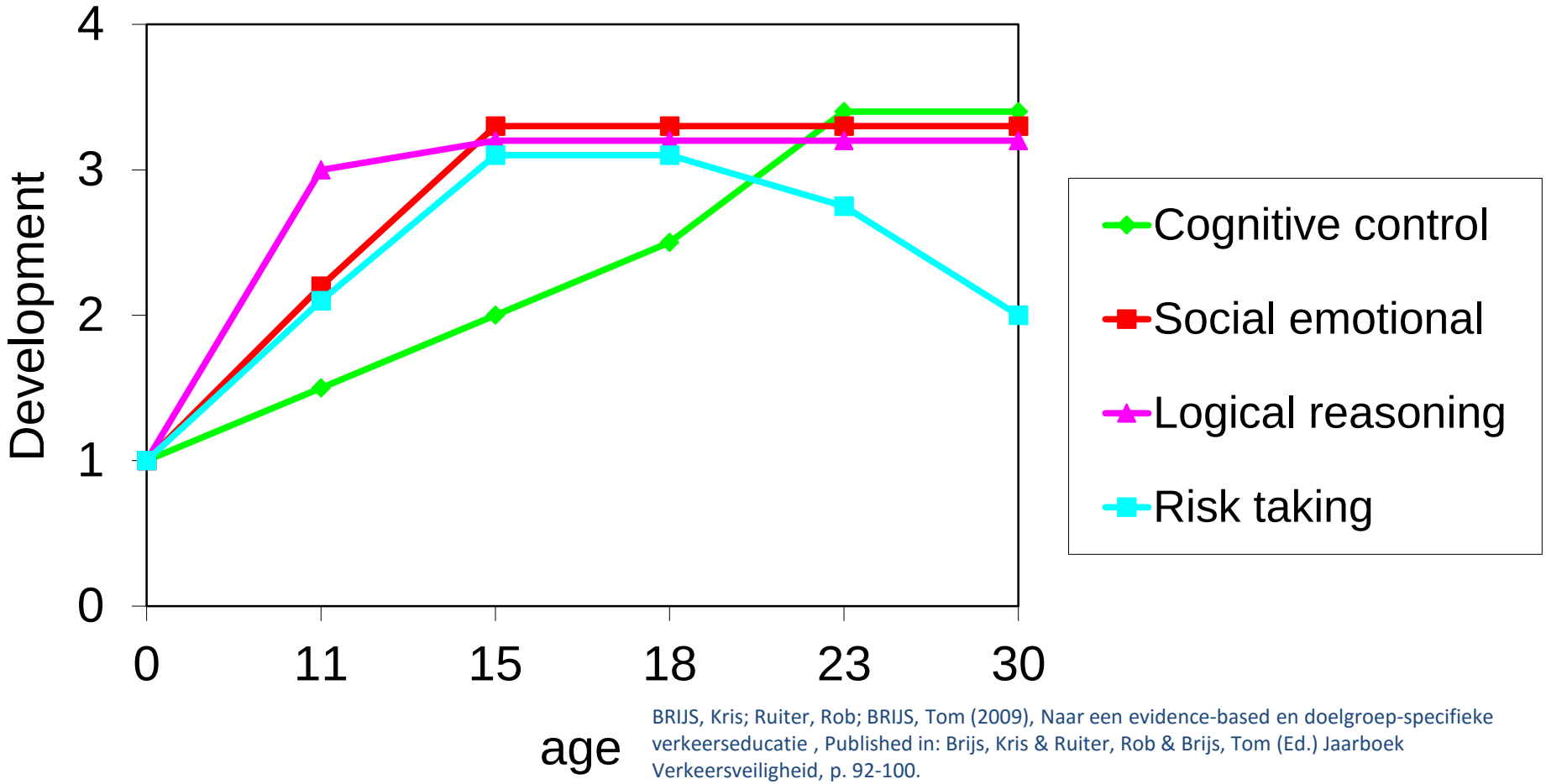
- Magnetic Resonance Imaging techniques
- Structural Brain development not completed at age 4.
- Continues much longer: early 20
- Two simultaneous developments
  - Frontal lobe responsible for integration of information, planning and control
  - Activation of the limbic system under influence of puberty related hormones

Why do most 16-year-olds drive like they're *missing a part of their brain?*

BECAUSE THEY ARE.



Should we focus more on Immaturity?

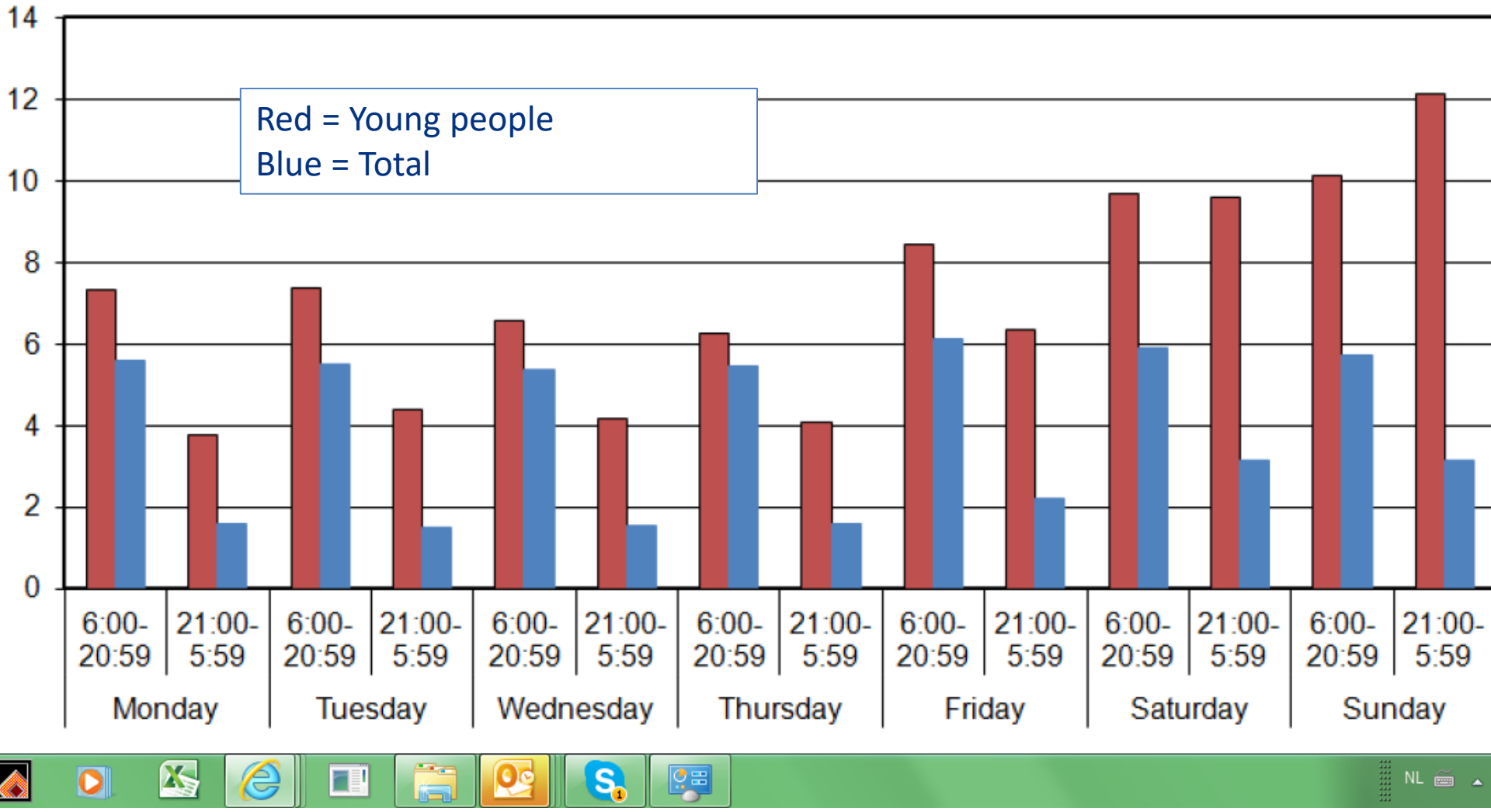


BRIJS, Kris; Ruiter, Rob; BRIJS, Tom (2009), Naar een evidence-based en doelgroep-specifieke verkeerseducatie , Published in: Brijs, Kris & Ruiter, Rob & Brijs, Tom (Ed.) Jaarboek Verkeersveiligheid, p. 92-100.

All conditions equally risky?

Source: EU

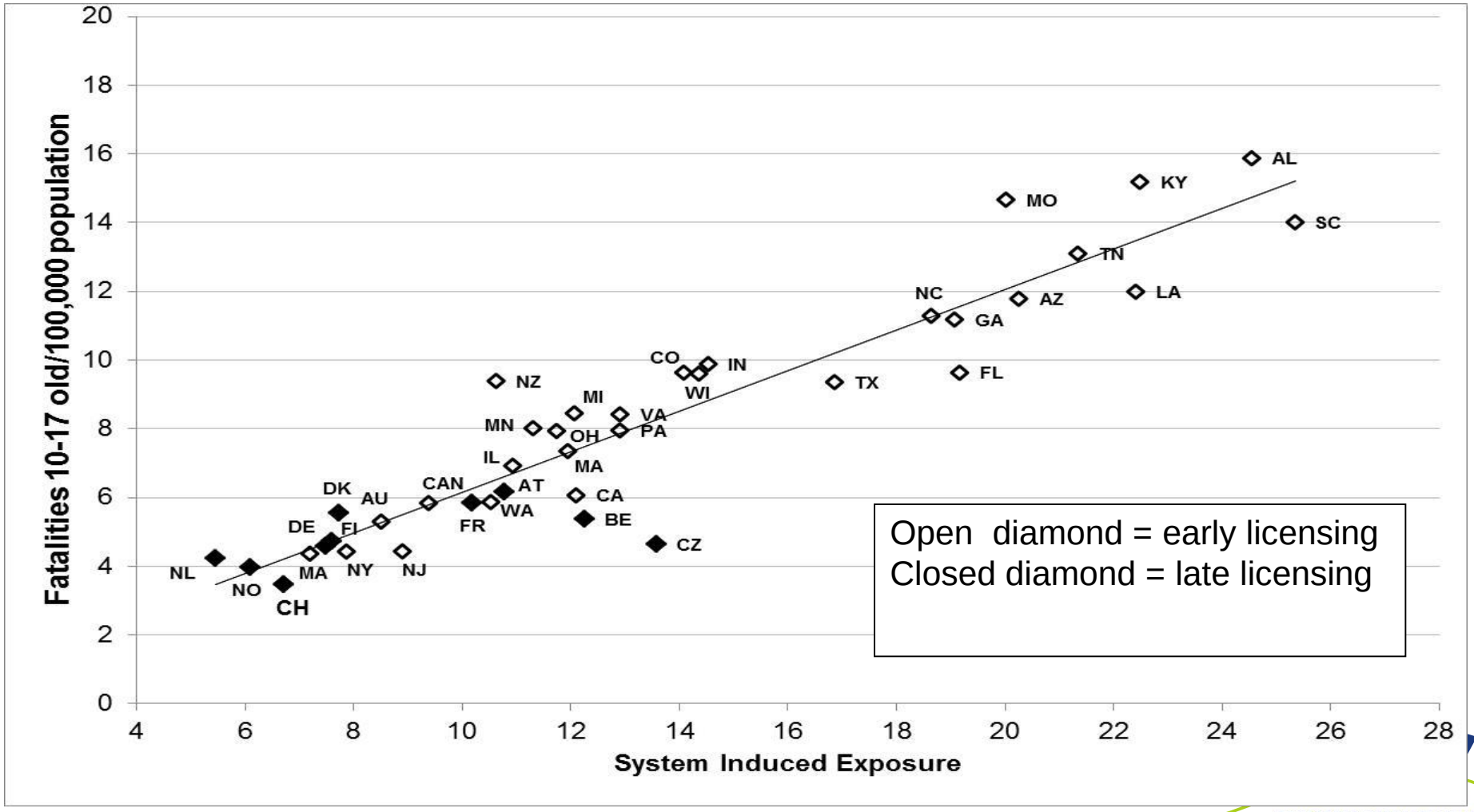
Figure 7: Fatality rates per million inhabitants, by day of week and time of day in the EU-23, 2010[2]



Source: EU

Safe environment

All countries the same?



Why are these countries so different?

General safety levels: countries safe for experienced drivers are also safe for novice drivers

Priority 0: Benefits from general road safety

Strict drink and drug driving laws and enforcement:

- random breath testing

Seat belt use:

- reminders

Speed management:

- Camera’s

Vehicle design:

- Old cars less protection

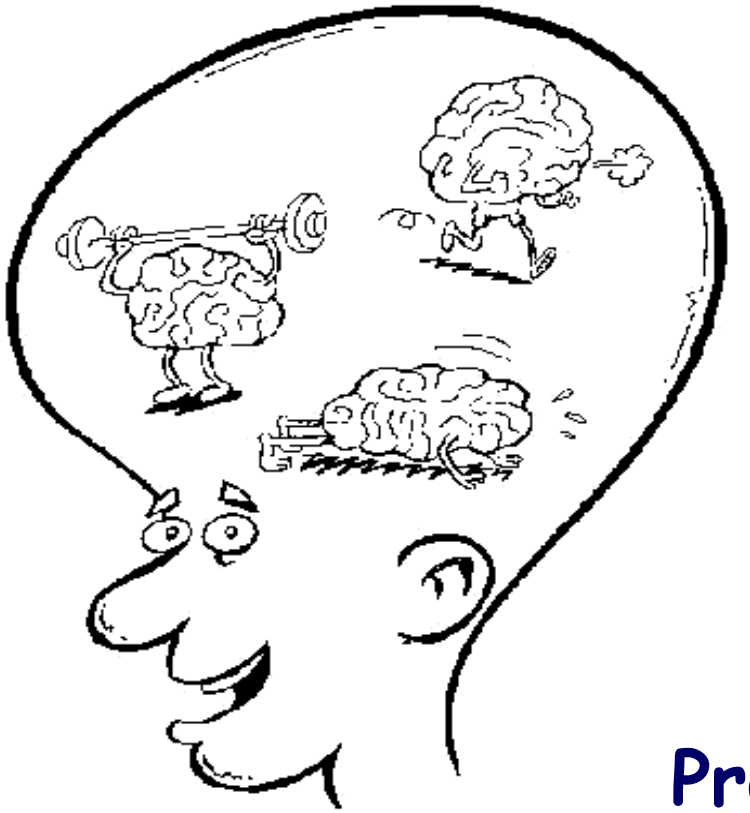
Safe infrastructure

Measures for cyclists and pedestrians

- Extra mirrors lorries -40%
- Cycle airbag -40%
- Underride protection -35%

Inexperience

Priority 1: more road experience before solo travel



Practic
e
makes
perfect

We are only made to walk!

Human capacities

- Limited Attention and Memory
- Limited in simultaneous actions (overload, errors, slow)
- Selection of (ir)relevant information
- Forecasting and anticipation
- Not innate (such as walking)

Go on auto pilot!

Practice leads to automated routines

100.000 km or 6 years are required

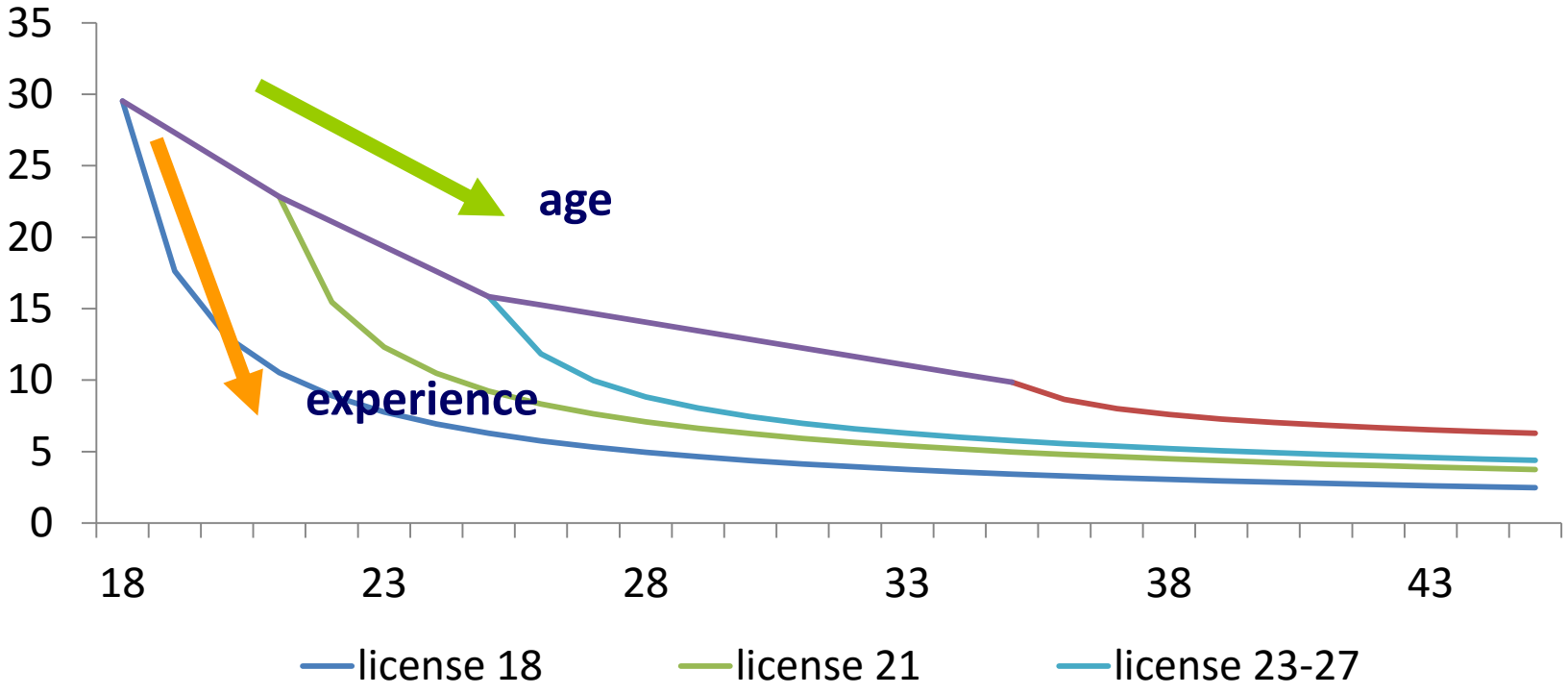
Once ingrained are hard to erradicate

Perception, decision actions all go “ unnoticed”

Some routines are impossible to train (e.g skidding)

Age and Experience

Crashes per million kilometre/Age Experience



Experience more influential than age

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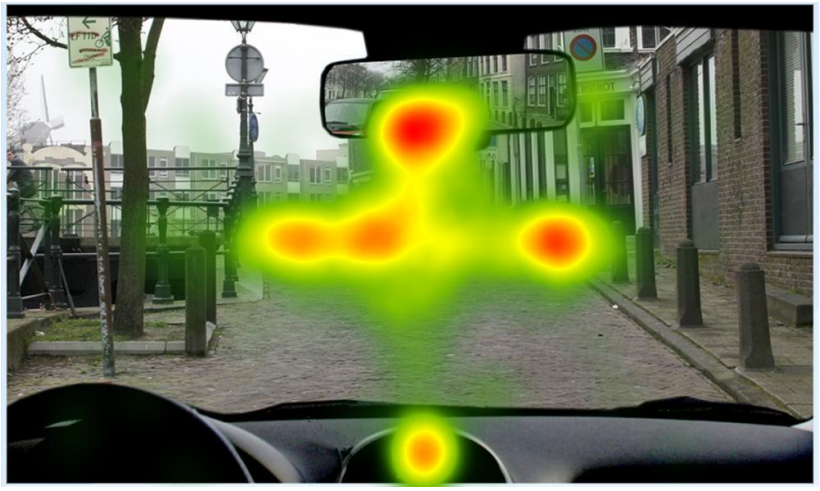
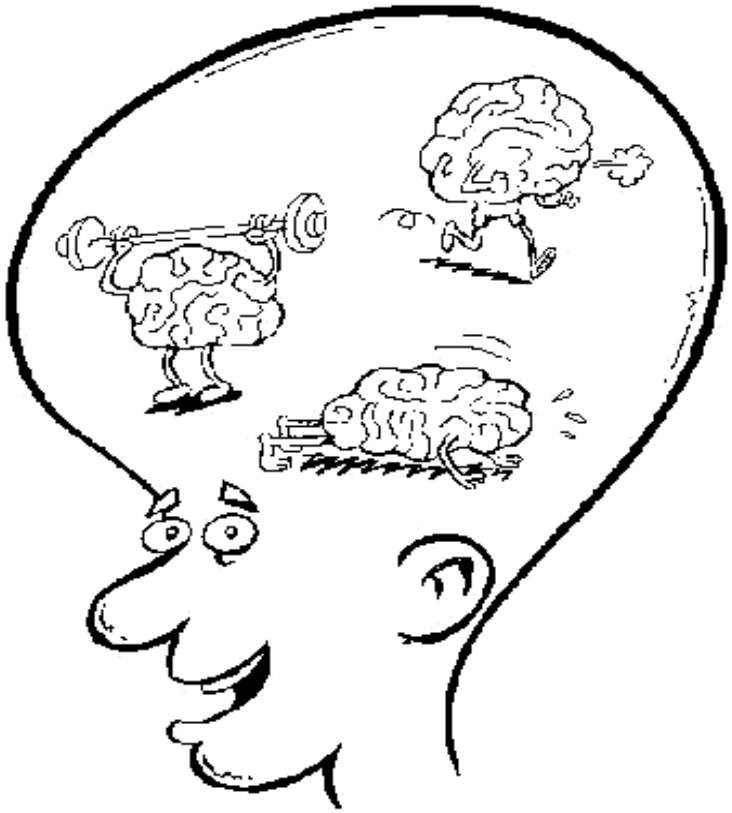
Lack of experience shows …….

Learner drivers



Experienced drivers

Priority 1: more road experience before solo travel



Pre-license training with higher levels of practice under supervised driving conditions

Priority 2: Protection in solo road travel

Remember the weekend night

Source: EU

Priority 2: Protection in solo driving

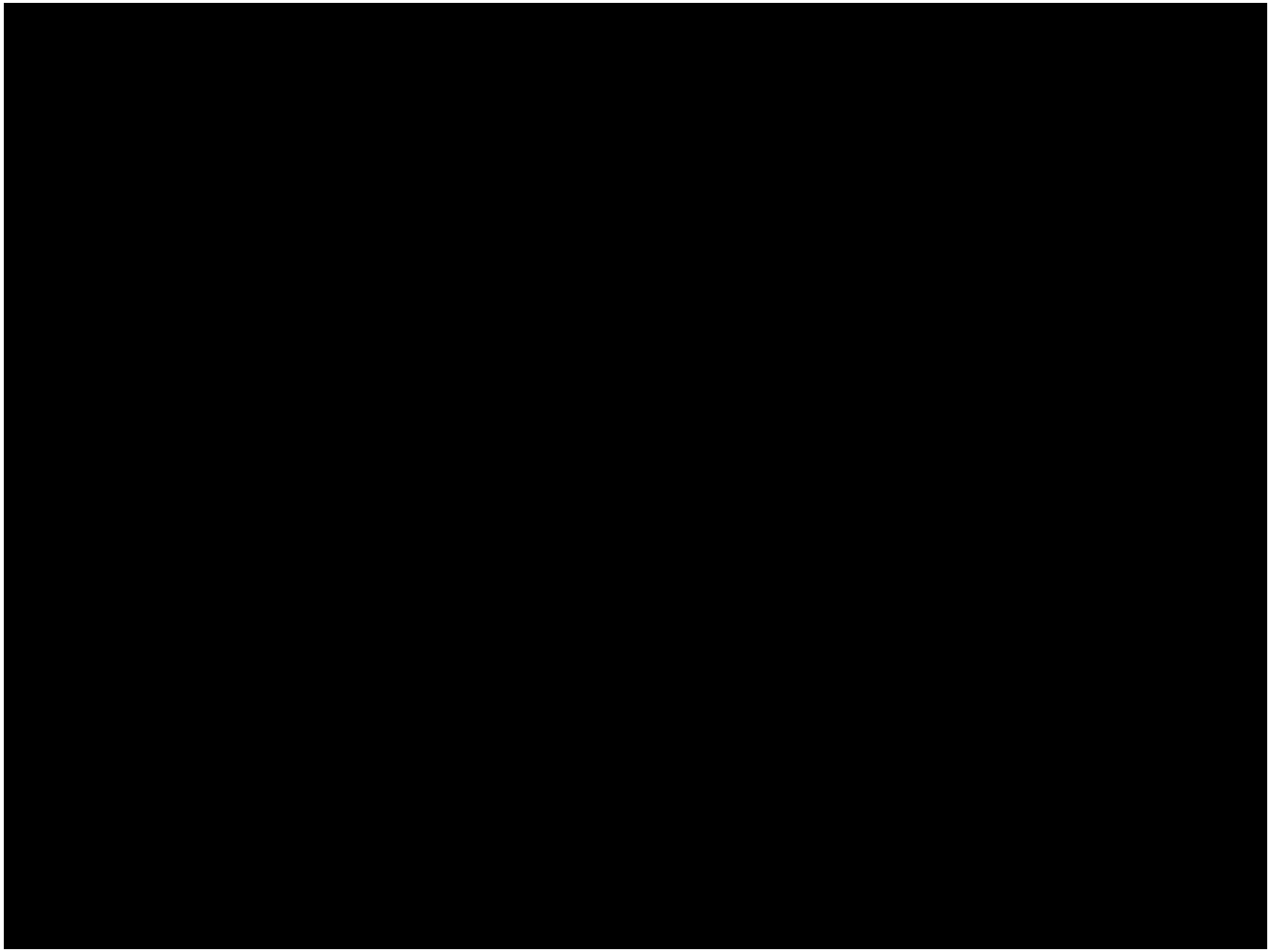
- Zero alcohol for young drivers (widely accepted)
- Restrictions on peer age passengers;
- Restrict night-time driving (more difficult to implement)

Restrictions can be lifted progressively as drivers gain experience

Priority 3: Education, training and licensing

- Research benefits of (driver) training and education
- Evaluate !!
- Avoid ‘over confidence’

Example 1: Novice drivers poor at detecting hidden hazards



Training helps to improves hazard detection

STISIM (Systems Technology Inc. Simulation)

Example 2: Youngsters dangerous around lorries

Results …

- Identification of blind spot location improves
- Safe behaviour in complex behaviour does not improve
- Only 10% passed the test after training

Priority 3: Education, training and licensing

- Research benefits of (driver) training and education
- Evaluate !!
- Avoid ‘over confidence’
- Avoid fear – appeals

Priority 4: new technology

- Monitoring of solo restrictions
- Rewards and enforcement in-car box
- Provision of ***useful*** driver support

Conclusions

Age is thus not the only fix!

- Create a safe road environment
- Practice in safe conditions before solo road travel
- Protective measures in solo travel and lift progressively
- Improve education/training & evaluate
- avoid overconfidence
- Make the most of ITS solutions
- Don’t trust your gut feeling: ‘Find the evidence’.

Thank you for your attention

Divera.twisk@swov.nl