

BIVV-IBSR



Sleepiness of drivers

The situation in Belgium

Wouter Van den Berghe

Research Director – Belgian Road Safety Institute



# Numbers ?

- ▶ The share of driver sleepiness in severe crash causation ...
  - ▶ 4% (US Klauer )
  - ▶ 5% (NO Sagberg, 1999)
  - ▶ 10% (FR Philip et al., 2000)
  - ▶ 16% (US Masten et al., 2006)
  - ▶ 20% (UK Horne & Reyner, 1995, 2001)
  - ▶ 24% (DE Anselm & Hell, 2002)
  - ▶ 29% (AU Hartley, 2000)
  - ▶ 30% (FR AFSA 2008)
  - ▶ 31% (NL NTSB, 1999)

# Numbers ?

- ▶ The *prevalence* of driver sleepiness ...: "*How frequently have you felt tired and sleepy while driving in the past year?* "
  - ▶ 58% at least once (BE Meesmann & Boets, 2014)
  - ▶ 15-39% sometimes (EU Cestac & Delhomme, 2012)
- ▶ A previous BIVV/IBSR survey in the run up to a campaign on tired driving (PITSTOP, 2008) showed that tired driving is more frequent among men and young drivers. This study also showed that tired driving is more frequent among drivers from a higher social class and among professional drivers than among drivers in other groups.
- ▶ But such figures do not really reveal the real magnitude of the problem – i.e. what percentage of drivers has signs of sleepiness at any given moment on the road. And what factors contribute most to this?

# Virtual road-side survey



# Virtual road-side survey

## Karolinska Sleepiness Scale

1. Extremely alert
2. Very alert
3. Alert
4. Rather alert
5. Neither alert, nor sleepy
6. Some signs of sleepiness
7. Sleepy, no effort to stay awake
8. Sleepy, some effort to stay awake
9. Very sleepy, great effort to stay awake, fighting sleep



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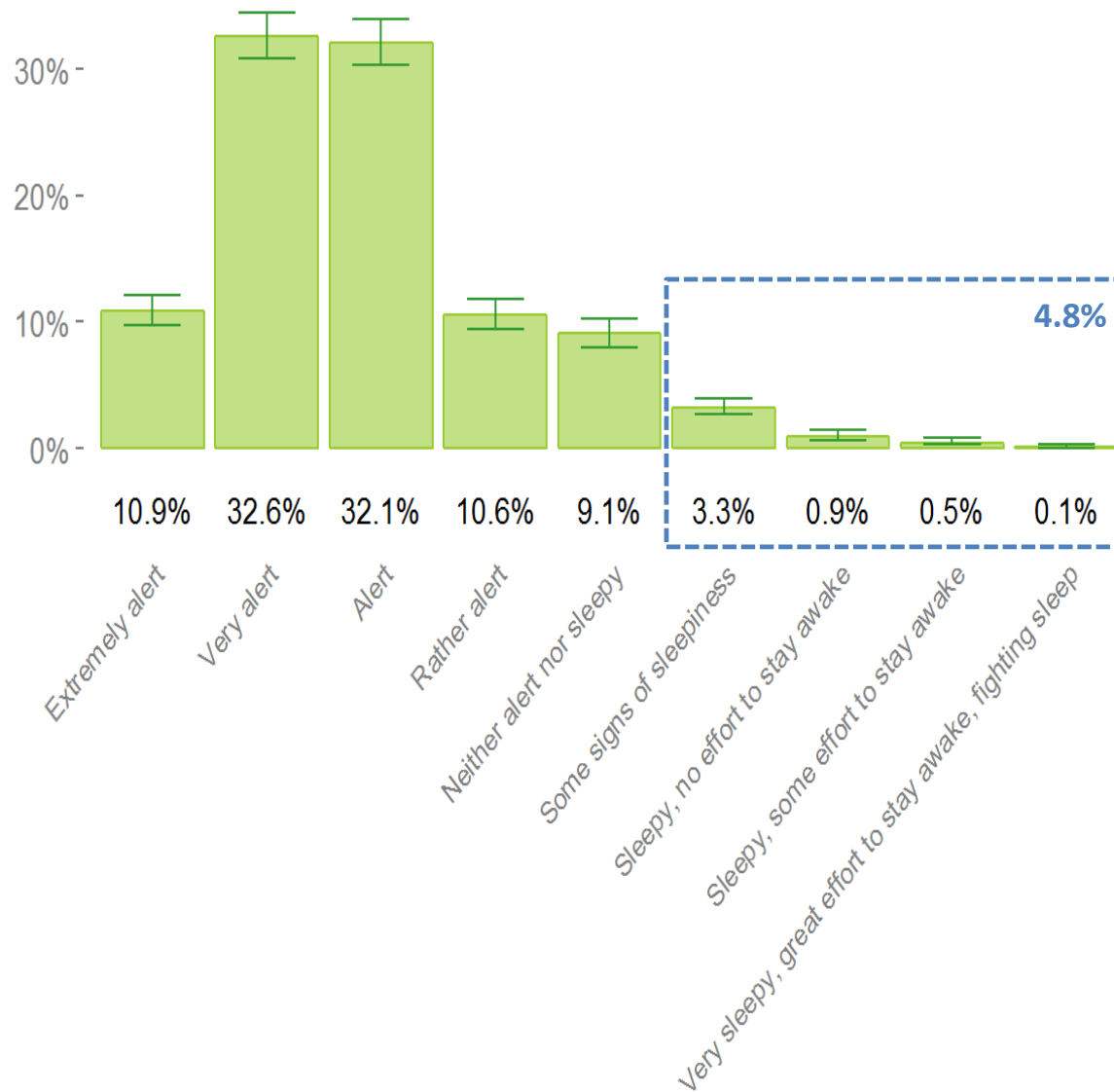


## Contextual variables

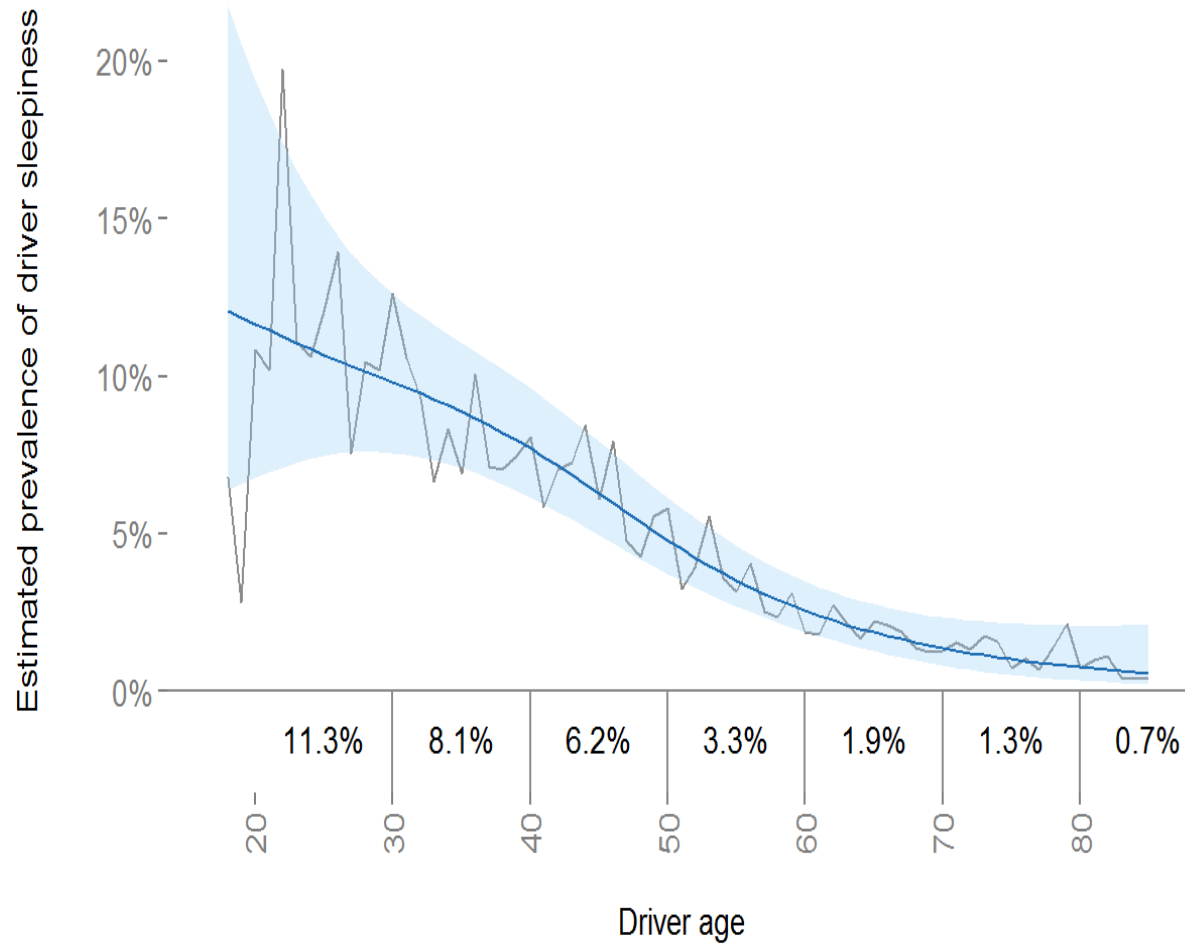
1. Physical characteristics of the trajectory
2. Last sleep episode before the journey
3. Driving behaviour
4. Fatigue
5. Socio-demographics



# Karolinska sleepiness scores (n=2585)

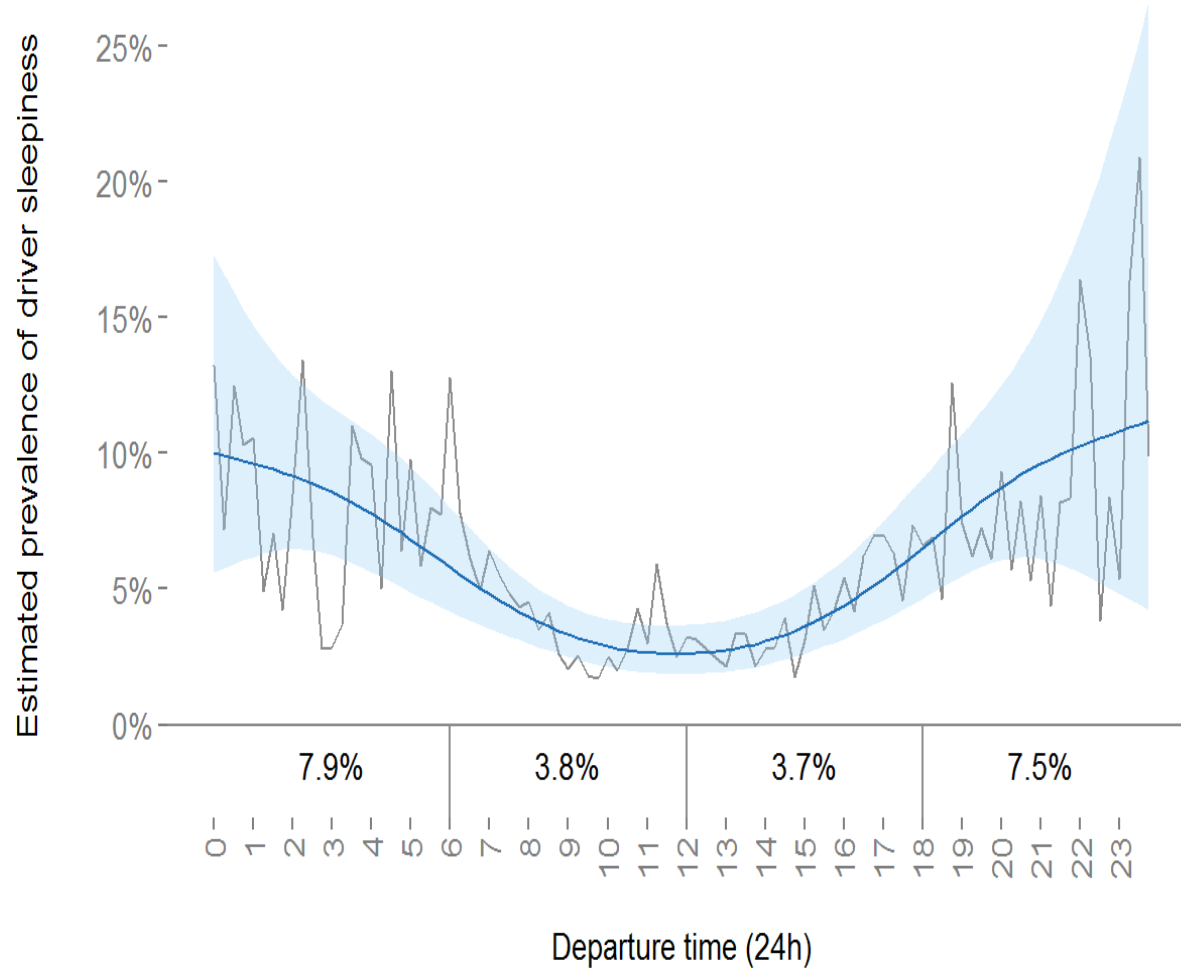


# Driver age

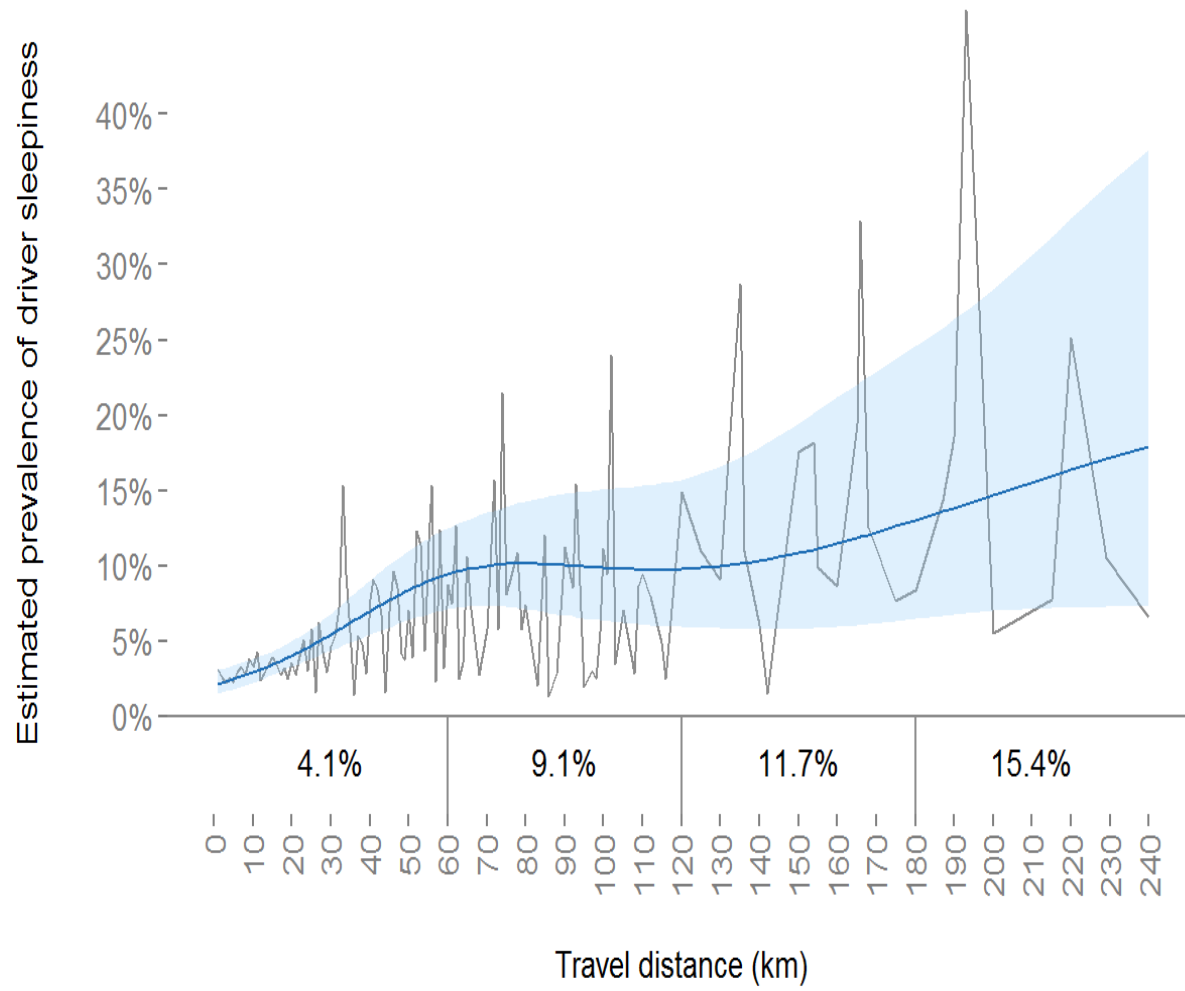




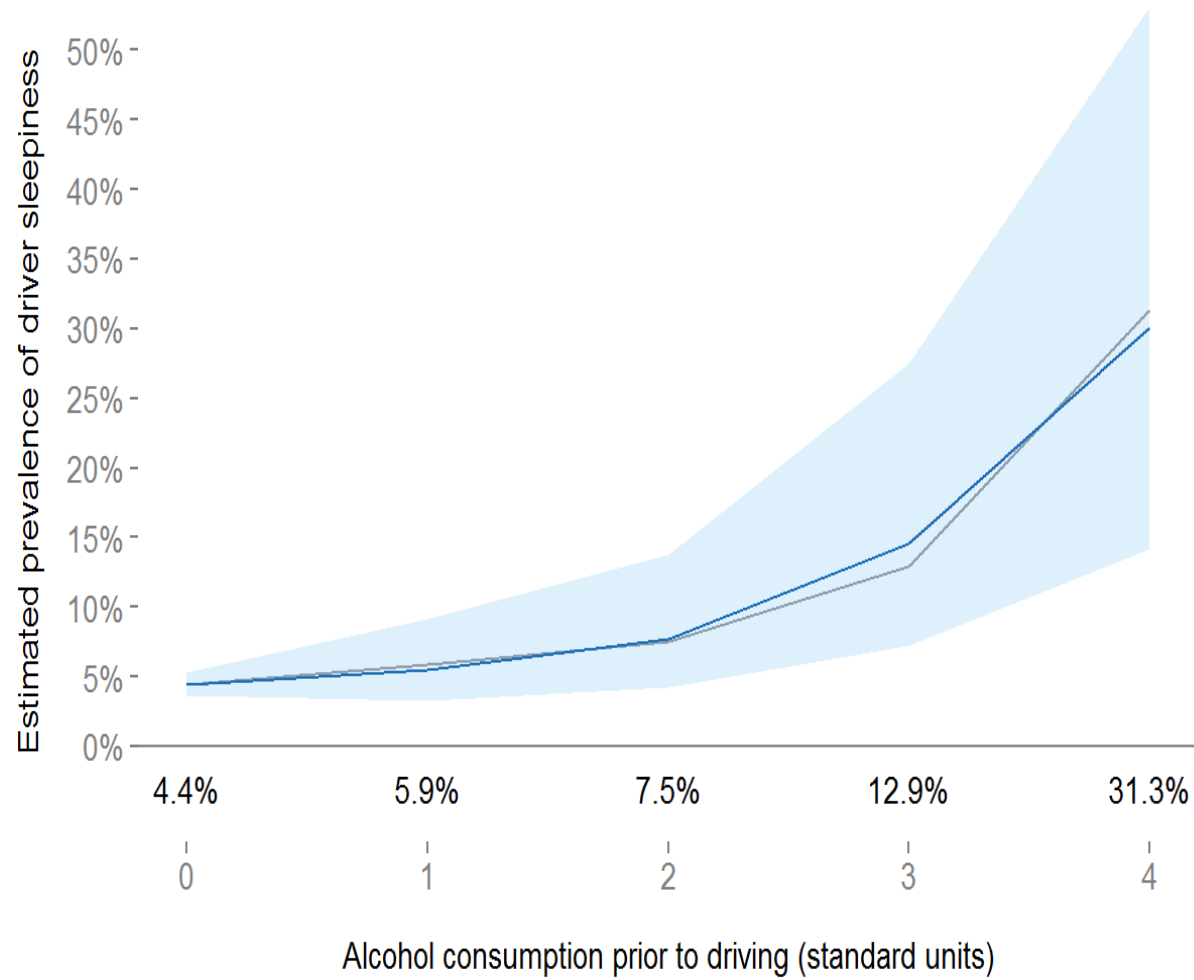
# Departure time



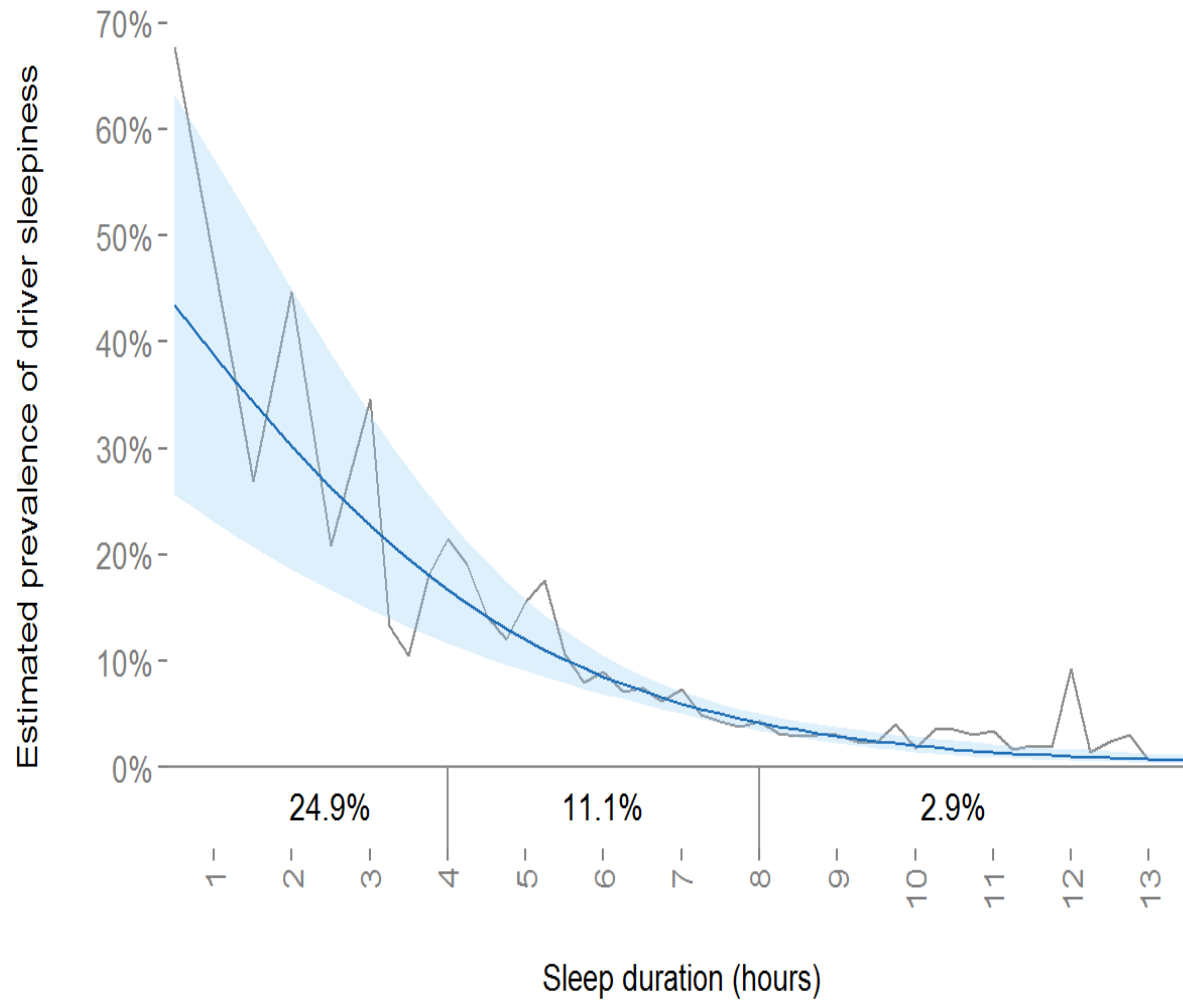
# Travel distance



# Alcohol consumption



# Sleep duration



# Evening-night

8%



# Long-distance

>60km: 11%



# Young driver

18-30y: 11%



# Alcohol

2-4units: 11%



# Acute sleep shortage

4-8hours: 11%; 0-4hours: 25%



# Frequent driving

>4h/d: 31%



# (Near-)crash

past year: 11%



# Irregular sleep pattern

$\Delta$ 2h: 15%



# Daytime sleepiness

$10 \leq ESS \leq 15$ : 8%;  
25%



# Full-time job



# Master's degree



# Employee-manager



# Conclusions of the study

- ▶ At the level of individual trips, on average 4.8% of the Belgian car drivers shows signs of sleepiness.
- ▶ Prevalence varies greatly with specific circumstances.
- ▶ Scenario with the highest risk for sleepiness at the wheel:
  - ▶ *A young person who caught less than 8 hours of sleep is driving a car for a long distance around midnight after having consumed some alcohol. He or she drives a car frequently and while doing so, caused a crash or near-crash in the past 12 months. He or she also has an irregular sleep-wake pattern and often feels sleepy during the day.*
- ▶ Given that sleepiness might account for up to 30% of all severe crashes (international median), showing signs of sleepiness at the wheel qualifies as a major issue in road safety.
- ▶ Part of a broader issue of sleep hygiene and sleep patterns in society

# Regulation in Belgium - general

- ▶ **Article 8.3 of the Traffic Code:** *"Every driver must be capable of controlling the vehicle, have the necessary health & fitness , and have the necessary knowledgde and skills. He must be at all stages be capable of carrying out all the necessary driving movements and of controlling his vehicle or animals."*
- ▶ Thus: a driver who does not seem capable of conducting/driving a vehicle, can be penalised - up to withdrawal of the driving licence
- ▶ This applies also for drivers where the police may see or suspect severe signs of sleepiness
- ▶ This also applies for motorcyclists, cyclists, horse riders, ...



# Regulation in Belgium – fitness to drive

- ▶ In line with current (and new) European Directives
- ▶ For people with serious sleepiness and fatigue problems (pathologic somnolence)
  - ▶ *Narcolepsy / cataplexy syndrome*
  - ▶ *Sleep apnea syndrome*
- ▶ Depending on the degree of the sleepiness problem, the person may not be allowed to drive – temporarily or definitively. This requires an assessment by a neurologist.
- ▶ Difference between two groups
  - ▶ Group 1: car drivers, motorcyclists, cyclists, ...
  - ▶ Group 2: truck and bus drivers, taxi drivers, ambulances driversRequirements are stricter for group 2



# Campaigns

- ▶ Campaigns
  - ▶ By BRSI (in the past)
  - ▶ Now conducted by the regions
- ▶ Focus on recognition of the problem, the risks involved and the measures to take
- ▶ Message: when you feel sleepy, take a stop and sleep 15 minutes

