Young Drivers – Impact of Alcohol

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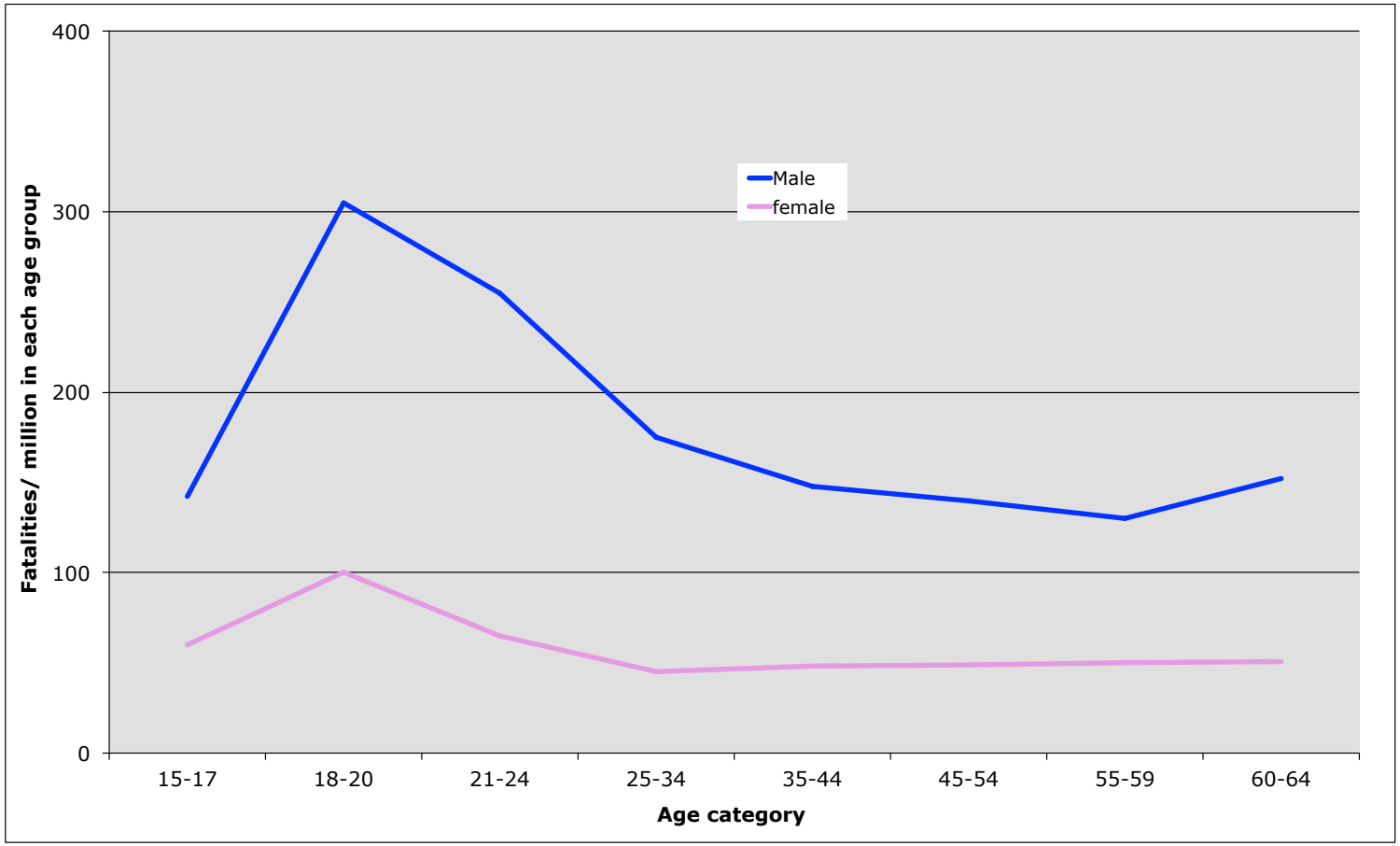
Talk outline

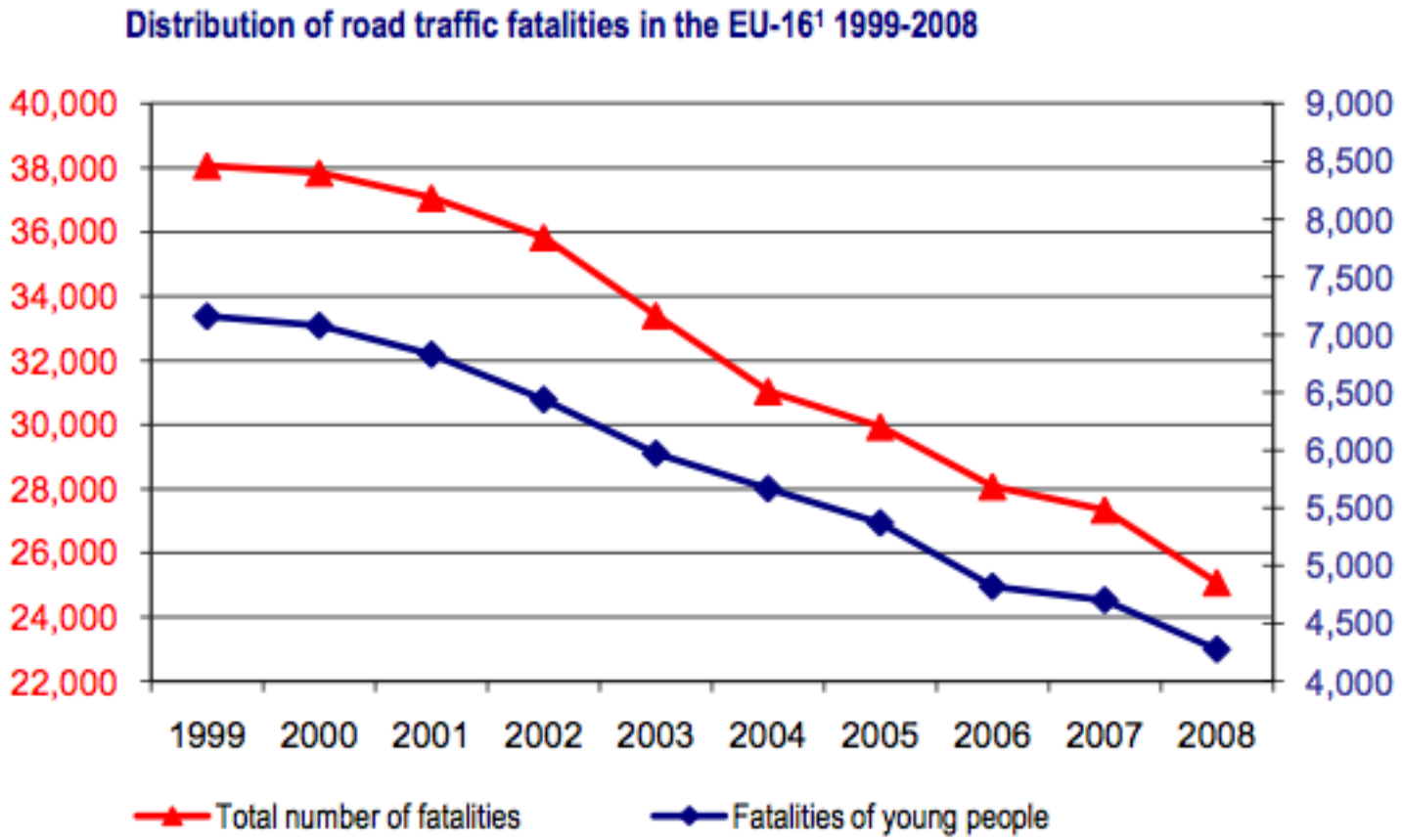
- Some background statistics
- Reasons why alcohol has a particular impact on young drivers
  - Highlight on areas of weakness which are exacerbated by alcohol
- Antecedents of drink driving
- Policy and training/education interventions

Young drivers - a universal problem



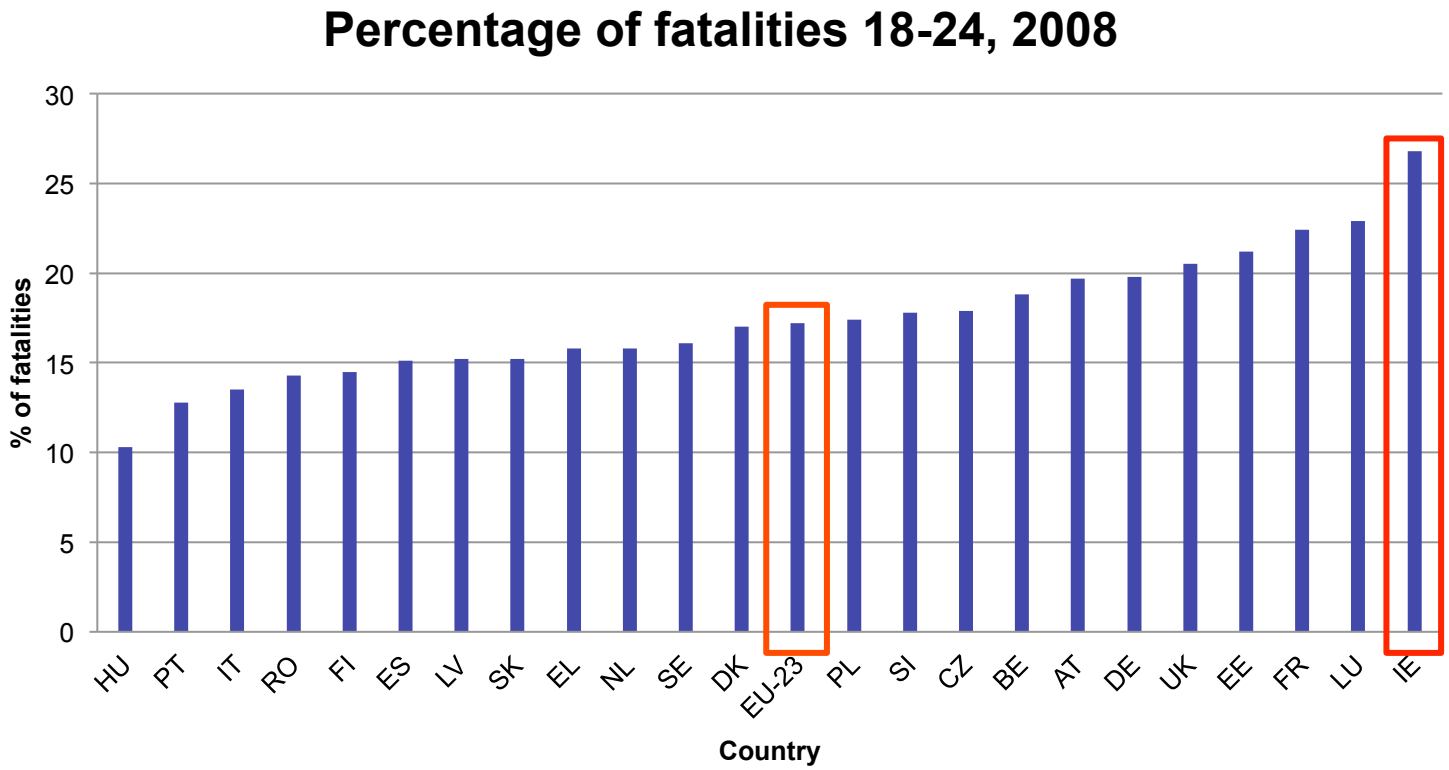
Adapted from OECD Policy Brief - Young Drivers: The Road to Safety 2006

Fatality reduction by age



DaCoTA Road Safety Facts, 2010

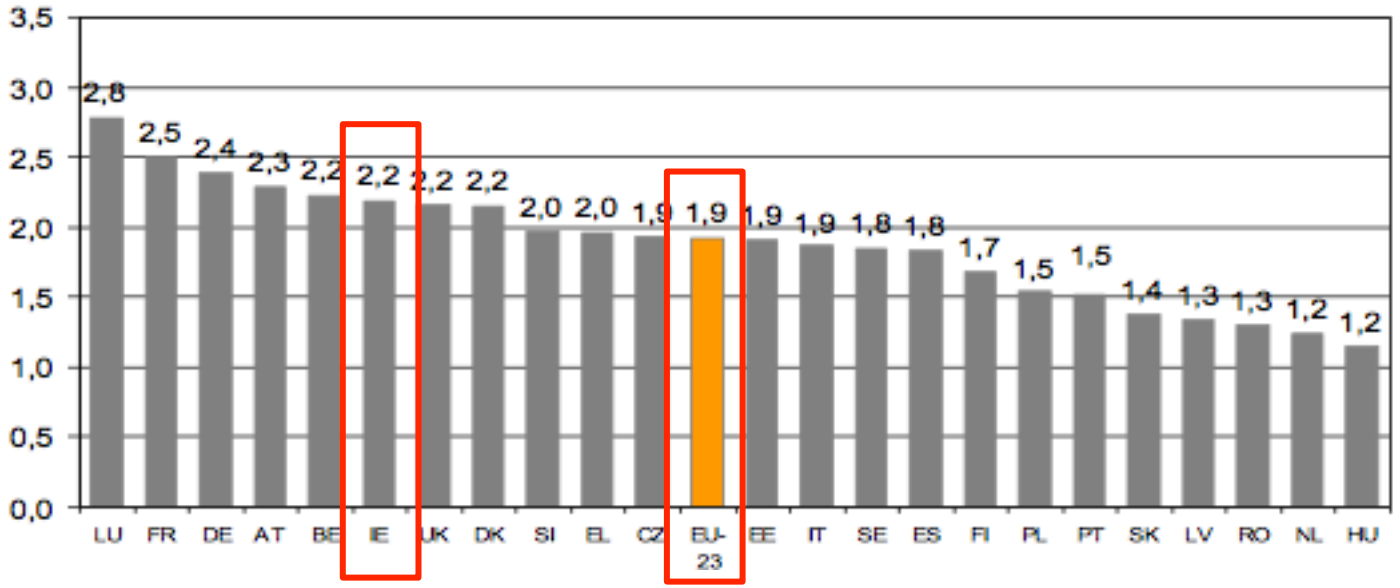
EU-23 Young Driver fatalities



Derived from DaCoTA Road Safety Facts, 2010

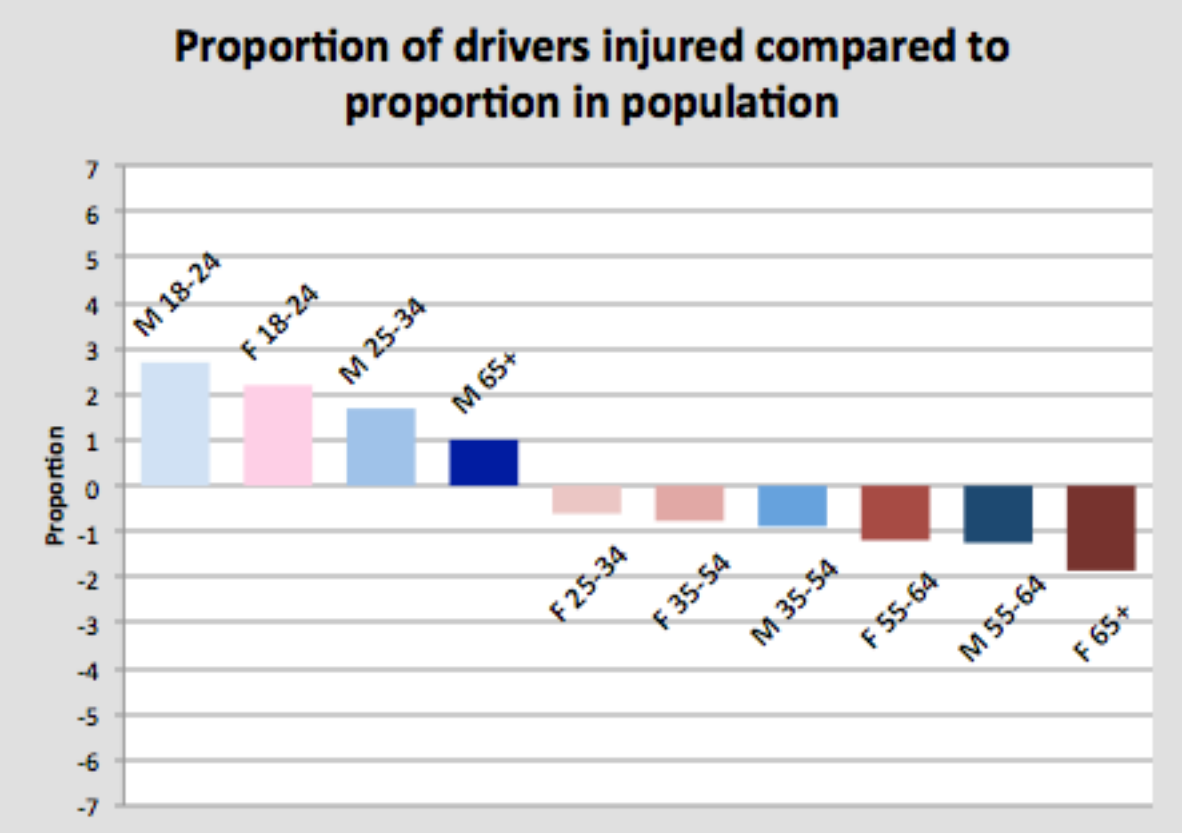
Accounting for proportion in population

- Relative fatality rate
  - % of fatalities from specific age category / % of population which comes from age category



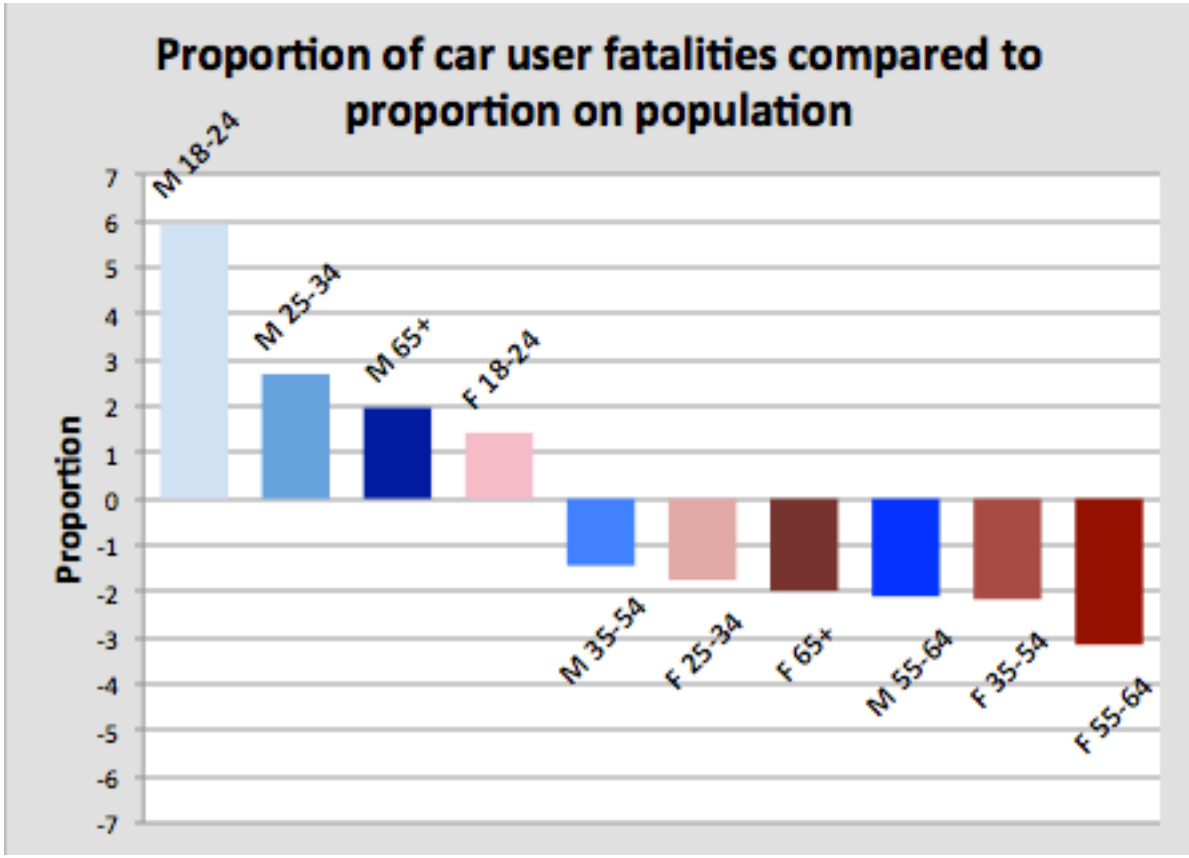
DaCoTA Road Safety Facts, 2010

Gender by age – 2010 driver injuries



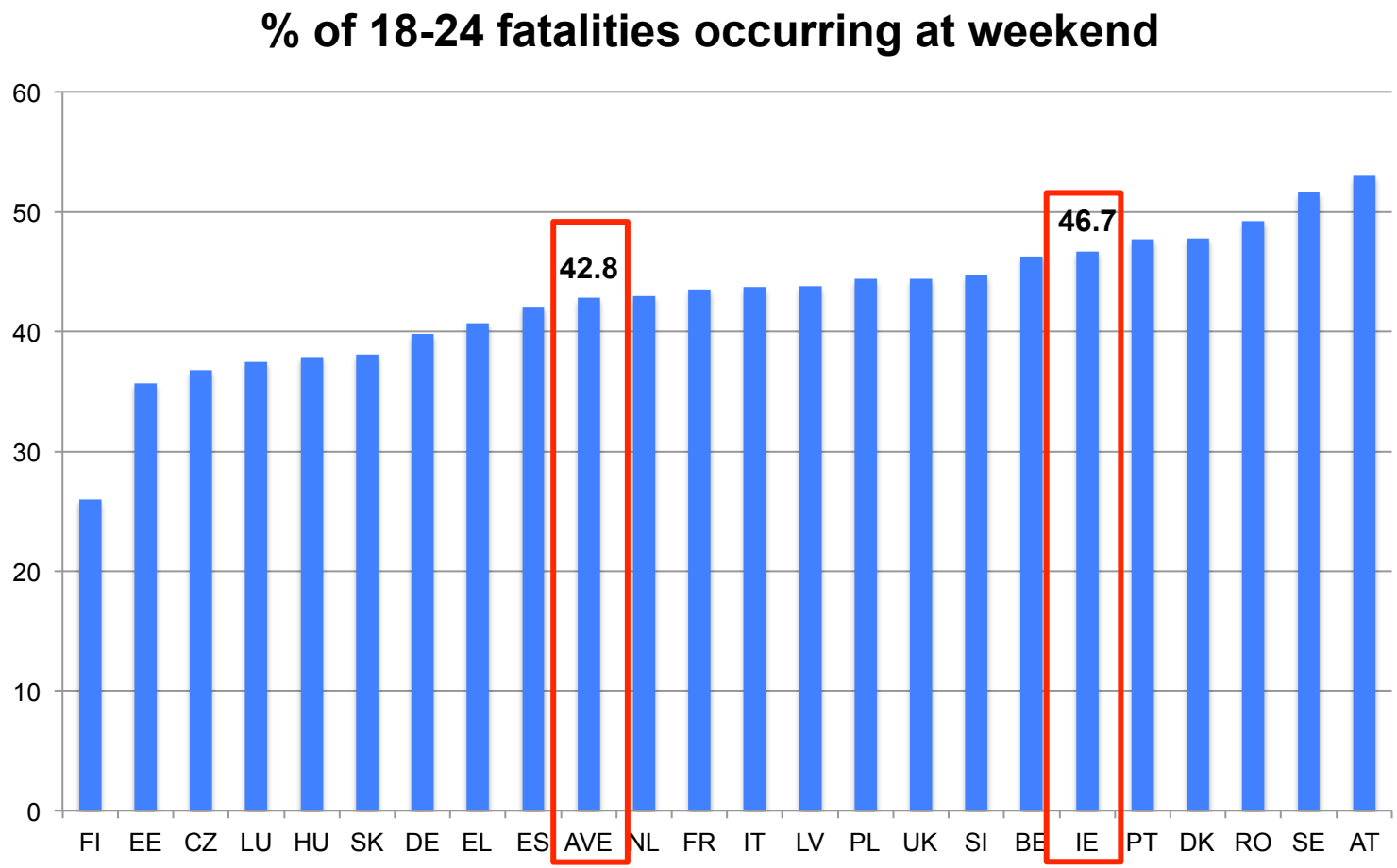
Calculated from Census 2011 & RSA Road Collision Facts 2010

Gender by age – 2010 fatalities

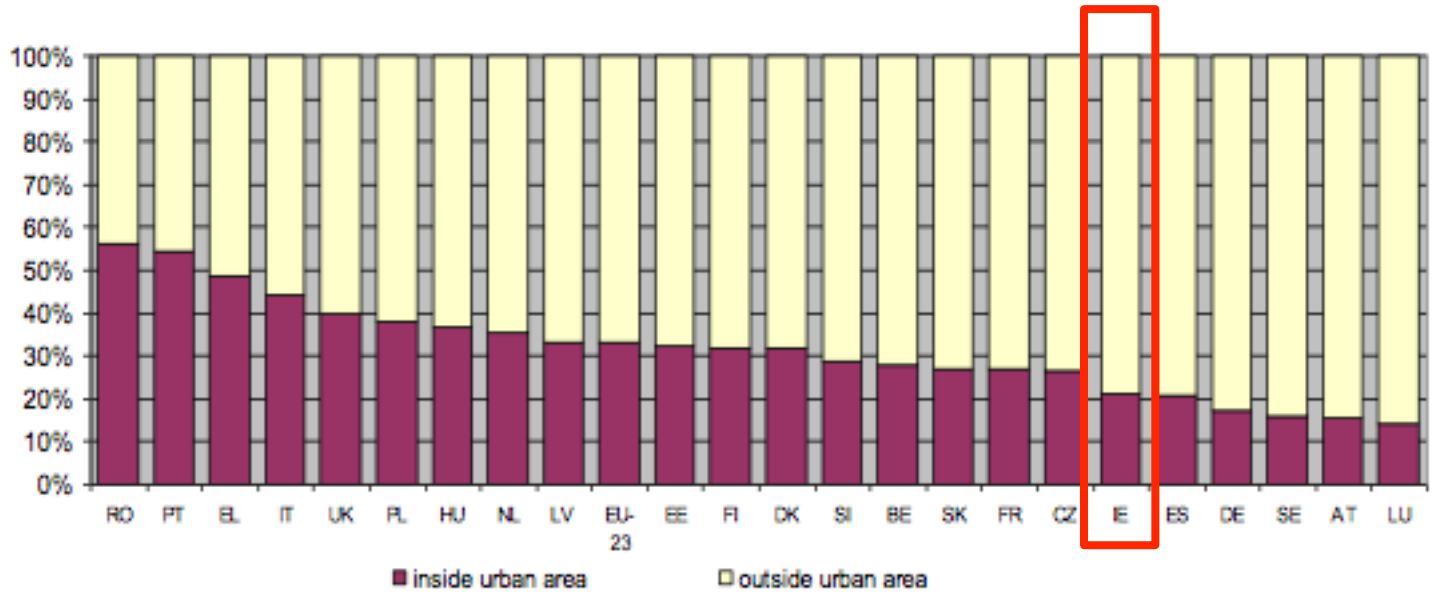


Calculated from Census 2011 & RSA Road Collision Facts 2010

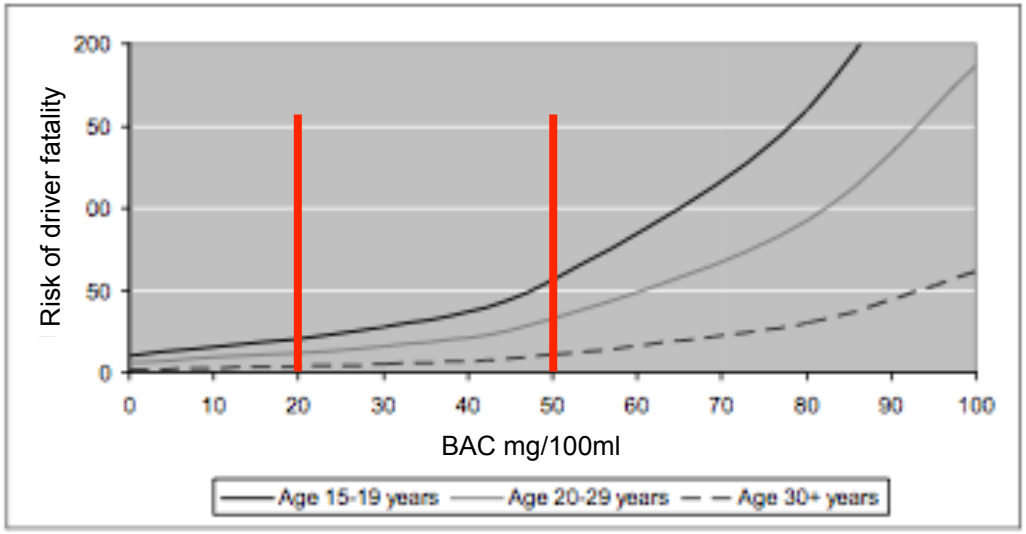
Timing of YD fatalities – Sat + Sun



Location of 18-24 fatalities

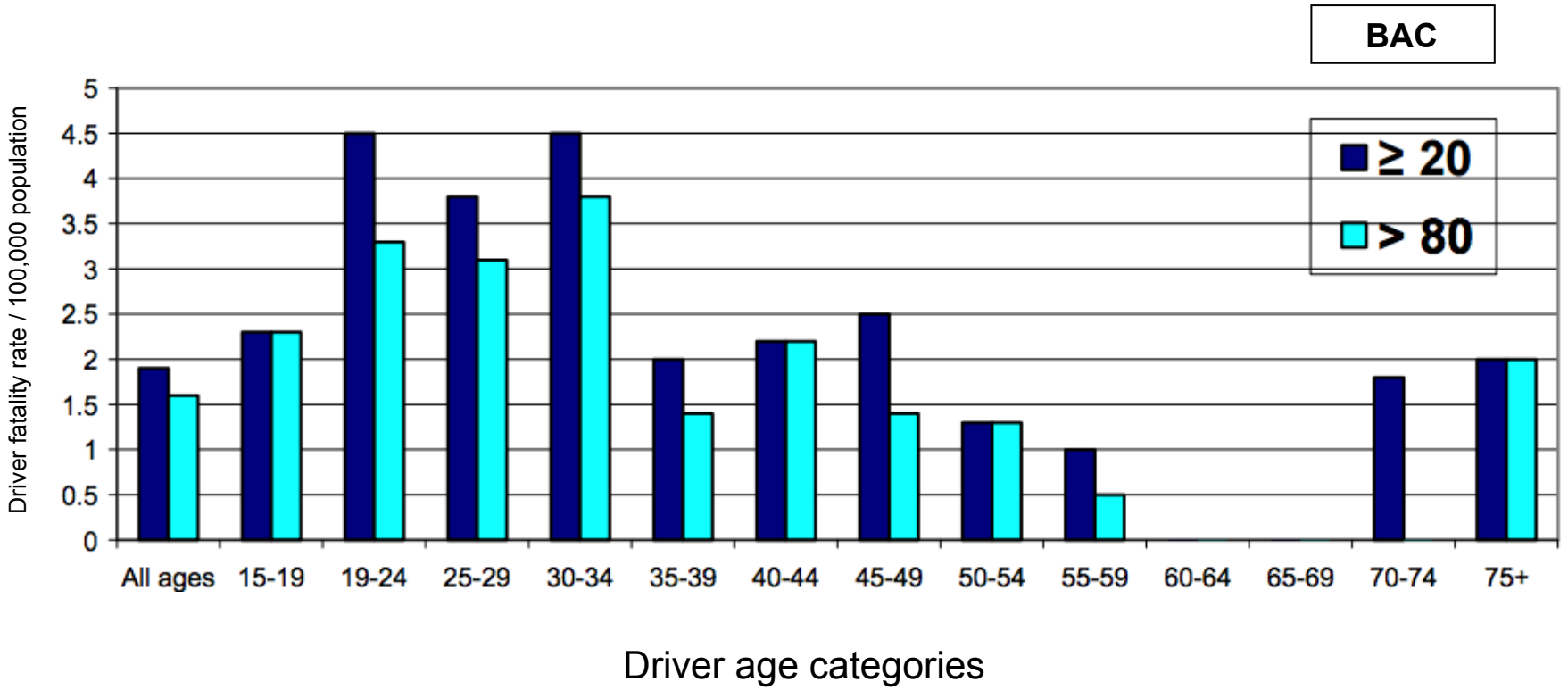


Impact of alcohol on fatality risk



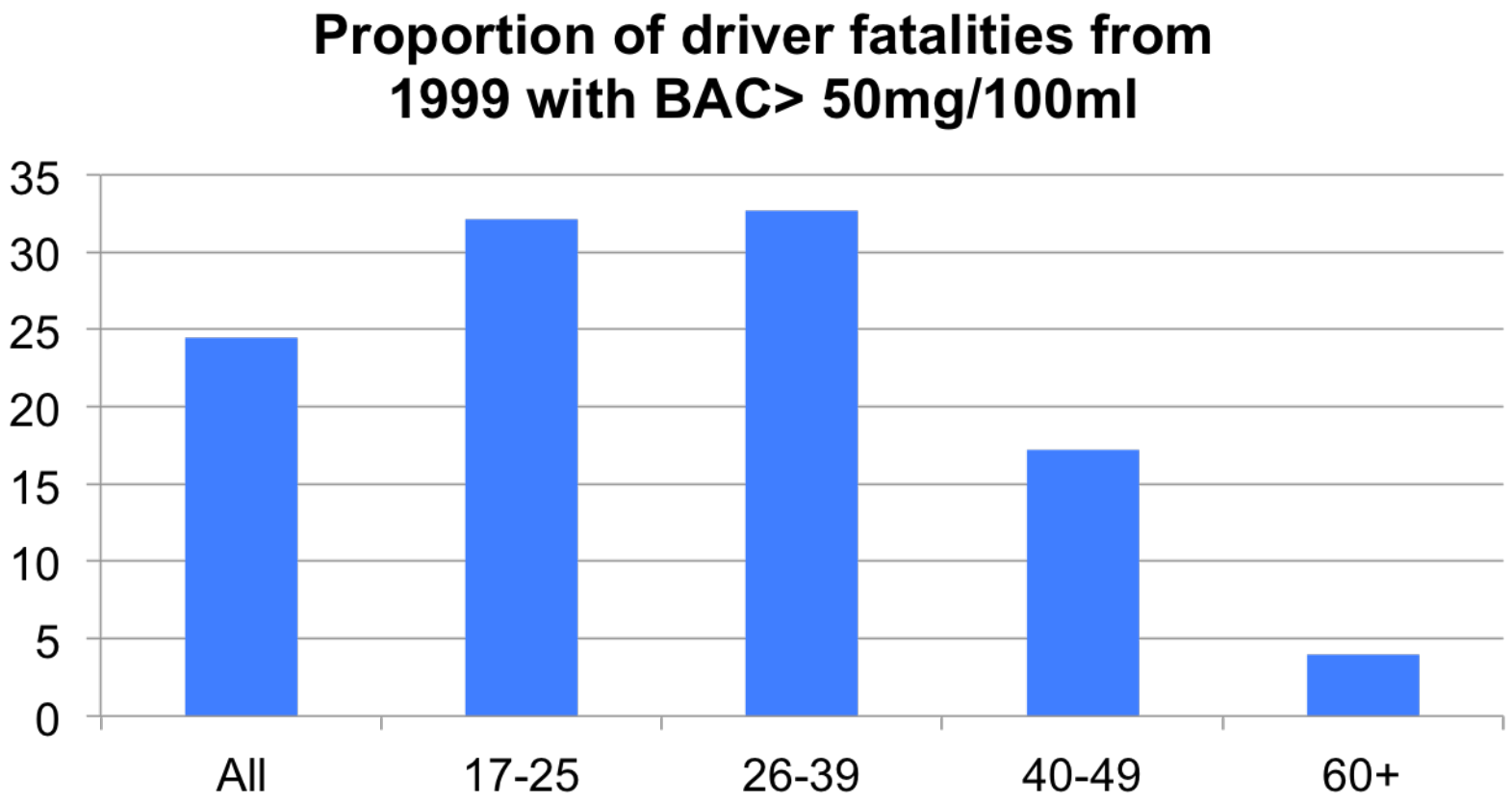
Adapted from Keall, Frith & Patterson (2004)

Alcohol related Irish driver fat. 2003



Bedford, McKeown, Vellinga & Howell (2006)

Comparative data - Australia



Australian Transport Safety Bureau (2004)

Mandatory Alcohol Testing data

- Detection rates
  - 2007 = 4% (19,848 / 489,029)
  - 2011 = 2% (10,575 / 537,311)
- Gender
  - Up to 2012, 84% of DD offences committed by males
  - Compare to 90% in 2004, pre-MAT

Mandatory Alcohol Testing data

- Age
  - Majority of offences committed by drivers aged 22-36
  - 23% of the offenders in this age category are linked to 2 or more offences since Jan 2008

Impact of Alcohol on YDs

- Lower tolerance due to less exposure
- YDs are less experienced/skilled - anything which makes the task more difficult will have a greater negative impact on them
  - At low levels of BAC YDs are more likely to be negatively impacted than older more experienced drivers (*Palamara, Adams & Gavin, 2004*)

European Road Safety Observatory (2006)

Impact of Alcohol on YDs

- Alcohol reduces inhibition and since neurodevelopmentally YDs are not at full capacity the impulsive gain is greater

European Road Safety Observatory (2006)

Behavioural control – mot. vs inhibition

- Behavioural activation system – Go
  - Encourages behaviour participation
  - Risky behaviour usually leads to rewards for participation
- Behavioural inhibition system – Stop
  - Evaluates consequences of action and dissuades us from actions that might be harmful

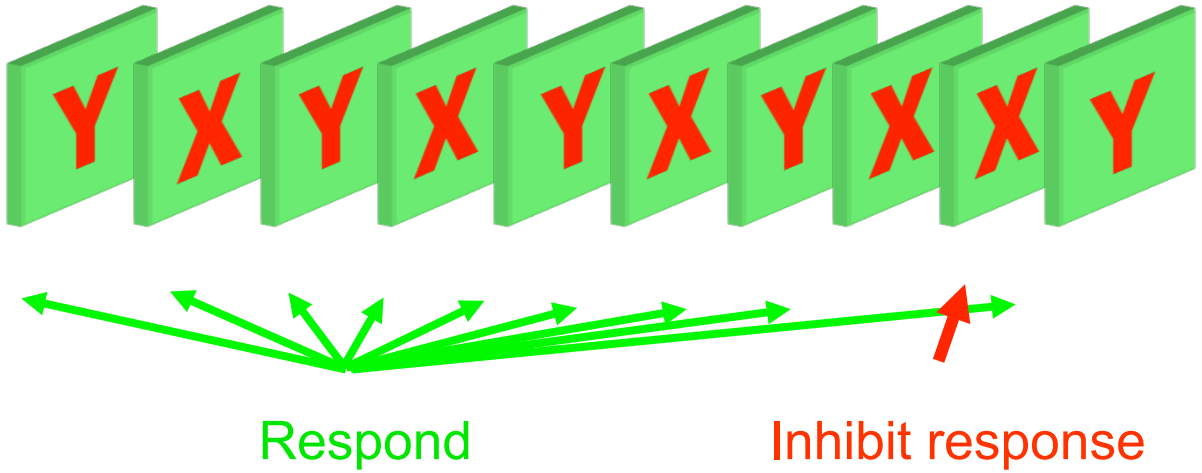
Young adult Go system

- Encourages sensation seeking or risk taking
  - Number of dopamine receptors peeks in areas such as NAcc and VS
  - Adolescence is a period of increased reward associated with novel/exciting experiences
- Sensation seeking correlated with wide range of risky behaviors:
  - Risky driving, taking drugs, unsafe sex, gambling, delinquency

Young adult Stop system

- Brain development ongoing
  - Increased myelination, especially in prefrontal cortex and increased inter-neuronal connectivity
  - Pruning and thinning of cortex
- The young brain does not develop fully until mid/late 20s
  - Has lead to speculation that maturational lag in the prefrontal cortex leads to poor impulse control found in young drivers, particularly males

Evidence for the impact on YDs



- Offenders produced more commission errors than non-offending age matched controls
- More sensitive to group differences than psychometric measures

O'Brien & Gormley, 2013

'Maladapted' behavioural control

Go

Stop

- Likely consequence is the participation in risk related behaviours

Steinberg, 2008

Impact of Alcohol on YDs

- Alcohol reduces inhibition and since neurodevelopmentally YDs are not at full capacity the impulsive gain is greater
- YDs progress from collisions caused by a skill deficit to collisions caused by risky decisions *(Clarke, Ward & Truman, 2005)*
  - Alcohol increases the frequency and severity of this risk taking

Impact of Alcohol on YDs

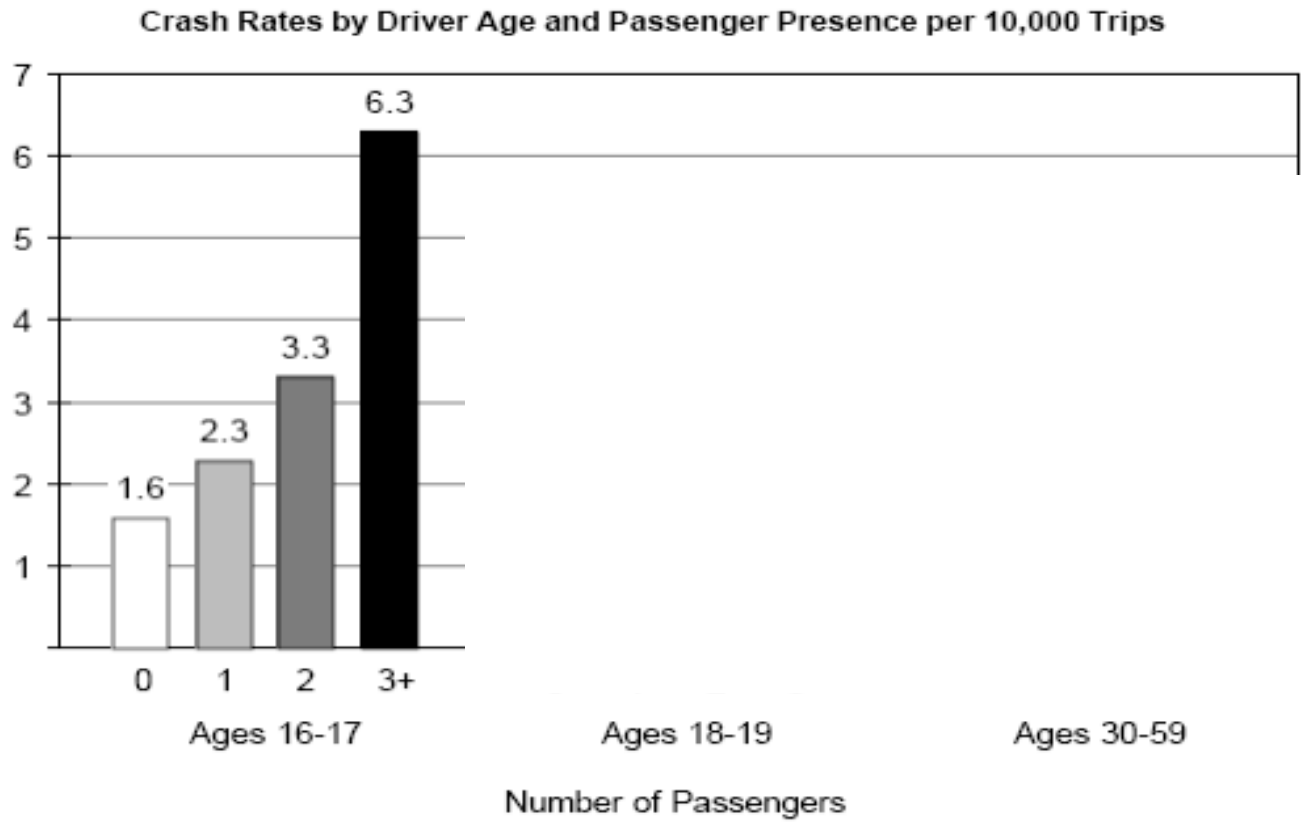
- Combined with other risky behaviours such as driving at night, driving with passengers from peer group, speeding and lack of seat belt use *(Williams, 2003)*

Peer influence

- Simulated driving recorded in the presence or absence of peers
- In the presence of peers participants:
  - Took more risks
  - Focused more on benefits than costs
  - Made riskier decisions
- Peer influence stronger in adolescents (13-16) and youths (18-24) than in adults

Gardner & Steinberg, 2005

Peer influence



Williams, 2001

Impact of Alcohol on YDs

- Combined with other risky behaviours such as driving at night, driving with passengers from peer group, speeding and lack of seat belt use *(Williams, 2003)*
- Poor sleep hygiene is a particular problem for YDs and when combined with alcohol the impact is exacerbated

Antecedents

- Higher incidence of self-reported drink driving convictions reported by YDs whose parents used alcohol and those whose peers used alcohol
- Being drunk in the previous year significantly increased the odds of a self-reported drink driving conviction

O'Malley & Johnston, 1999

Antecedents

- Drivers aged 17-25 with initial conviction for drink driving had highest relative risk of all age groups of involvement in future alcohol related crash *(Ferrante, Rosman & Marom, 2001)*
  - Underlines the importance of dealing effectively with offenders to reduce recidivism

Antecedents

- Novice drivers who reported illegally driving 6 or more times prior to obtaining license were nearly 3 times more likely to report drink driving in first year post license *(Palamara, Stevenson, Morrison & Ryan, 1999)*

Antecedents

- Link between early onset drinking and early onset driving while under the influence *(Zhang, Wieczorek, Welte, 2014)*
- Drink/drug driving was predicted by adolescent marijuana use, greater alcohol misuse and tolerance of deviant behaviours *(Bingham & Shope, 2004)*

Counter measures

- Reduced BAC for novice drivers
- 20mg/100ml
  - Reduces possibility of false positive associated with a zero level
  - Does not require the withdrawal of enforcement capacity away from high risk categories which could potentially increase alcohol related crashes

Interventions

- Programmes relating to alcohol misuse prevention containing an element of refusal skills training had a positive effect on novice drivers' first year serious driving offenses
  (Shope, Elliott, Raghunath, 2001)

Interventions

- "Alcohol-free on the road" – drive round circuit first sober and then intoxicated
  - Intervention group showed more awareness of the dangers of DD than a control group
  - .7% of intervention group vs 4% for control group were subsequently convicted of DD related offences *(Brookhuls, De Waard, Steyvers & Bijsterveld, 2011)*

Recommended aims of interventions

- Promote good decision making particularly when faced with risky situations
- Clear evaluation of the consequences of behaviour on self and others
- Recognition of undue influence of peers
- Encourage help seeking rather than consumption of alcohol

Recommended aims of interventions

- Recognition of impact of alcohol
  - Why it has a greater impact on YDs
  - How it exacerbates the impact of poor sleep hygiene

Thank you for your attention