Safe & Sober: Reducing deaths and injuries from drink driving

LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL

Driving under the influence in Portugal and available interventions

Condução sob o efeito de álcool em Portugal e medidas disponíveis

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ANSR AUTORIDADE NACIONAL SEGURANÇA RODOVIÁRIA

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NUMBER OF ROAD DEATHS

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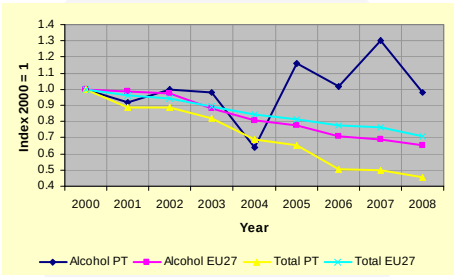
	Alcohol related		Not alcohol related	
	Portugal	**EU27**	**Portugal**	**EU27**
2000	50	6718	1827	47029
2001	46	6627	1624	45085
2002	50	6542	1618	44366
2003	49	5921	1493	42004
2004	32	5434	1262	39725
2005	58	5226	1189	38155
2006	51	4771	918	36537
2007	65	4622	909	36082
2008	49	4374	836	33271



Sources: ANSR, ETSC

DATA

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Annual reduction road deaths
(2000/2001 to 2008)

Country	Alcohol	Other
PT	1.1%	-9.7%
EU23	-5.8%	-4.2%

Roadside alcohol tests

	Total	Positive (+0.50g/l)	
		#	%
2006	503900	37011	7.3%
2007	590549	32956	5.6%
2008	670354	39802	5.9%

Sources: ANSR, ETSC

DATA

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DRUID – Driving Under the Influence of Drugs, Alcohol and Medicines

Objective: to give scientific support to the EU transport safety policy by establishing science based guidelines and measures to combat impaired driving.

Survey regarding the prevalence of psychoactive substances such as alcohol, drugs and certain medicines in the driving population of Spain, Portugal, Czech Republic and Poland. In Portugal 4000 random roadside controls were carried out (by *Instituto de Medicina Legal*).

Only a few surveys have been carried out in Europe.
In Germany, 1% of passenger car drivers took illicit drugs (primarily cannabis/stimulants), and about 4-6 % took licit drugs (primarily stimulants, hypnotic or anxiolytic drugs, or drugs without impairing effect.

Source: DRUID project

ALCOHOL EFFECTS ON DRIVING SKILLS

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Driving task levels:

- Control (operational)
  - *Reaction times* *(deteriorates at 0.6 g/l)*
  - *Tracking performance* *(0.18 g/l)*
  - *Distance keeping* *(0.54 g/l)*
  - *Preceding vehicle speed changes* *(0.3 g/l)*
  - *Visual detection* *(0.8 g/l)*
- Guidance (tactical)
  - *divided attention* *(0.3 to 1.0 g/l)*
  - *scanning capabilities* *(small quantities)*
  - *information processing* *(small quantities)*
- Navigation (strategic)
  - *travel mode and vehicle choice*
  - *route choice*
    - No experimental studies; explanatory mechanism based on the Theory of Planned Behaviour (attitudes, subjective norms and perceived behavioural control). Alcohol consumption has an effect on PBC.

Source: ERSO

ALCOHOL PREVALENCE IN FATAL AND SERIOUSLY INJURED VICTIMS

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> Germany – fatality rate in accidents involving one alcohol offender are twice the one for accidents without alcohol offender

> Finland – 24% of driver fatalities have +0.5 g/l

> Sweden – 28% of driver fatalities have +0.5 g/l

> France – 29% of driver fatalities have +0.5 g/l

> Netherlands – 25% of severely injured drivers have +0.5 g/l

> UK – 39% fatally injured pedestrian have +0.8 g/l

Source: ERSO

SAFETY INTERVENTION: causal mechanisms

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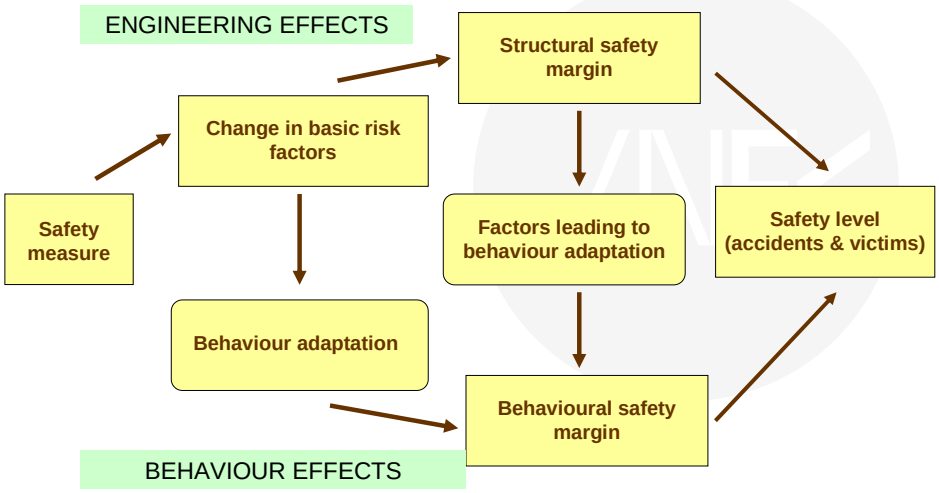

Elvik, R. (2004). AA&P, Vol. Nº 36

ALCOHOL EFFECTS ON ACCIDENT RISK AND SEVERITY

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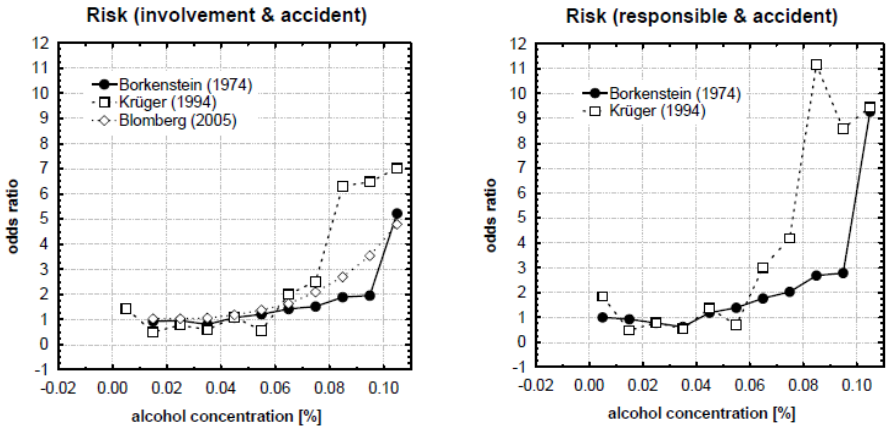

0.10% ≡ 1.0 g/l

Source: DRUID

ALCOHOL EFFECTS ON ACCIDENT RISK AND SEVERITY: social vs. heavy drinker

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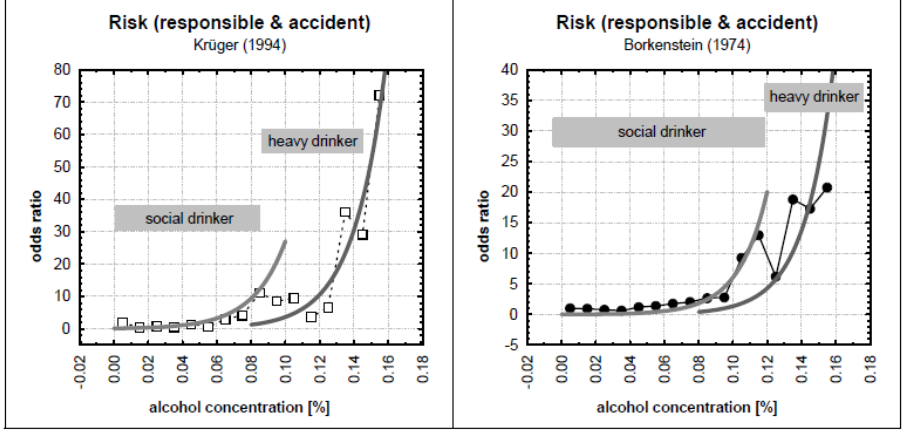
Krüger 1994	Borkenstein (1974)



0.10% ≡ 1.0 g/l

Source: DRUID

ALCOHOL EFFECTS ON ACCIDENT RISK AND SEVERITY: young vs. old drinker

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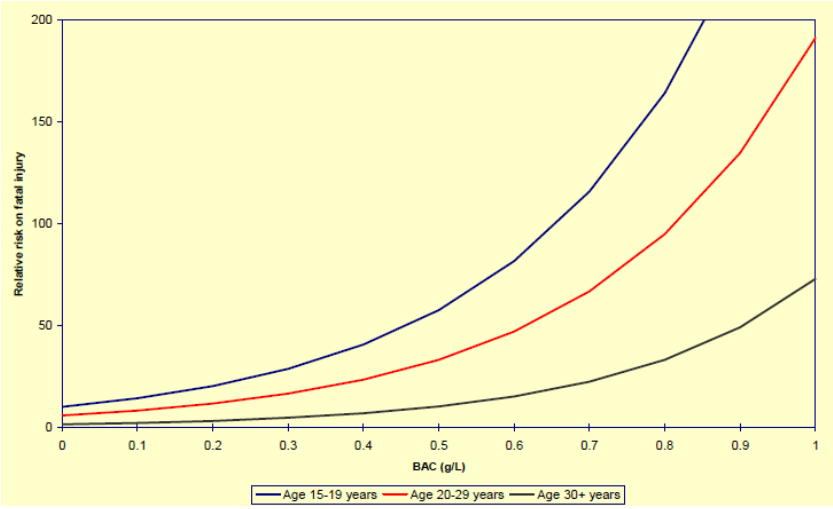

Source: DRUID

RISK GROUPS

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> **Heavy drinkers**
- 0.2% of driving population vs. 25% offenders
- ¾ of drivers involved in severe crashes had +1.3 g/l alcohol

> **Young drivers (especially males)**
- 18-24 year old males are 4% of driving population vs. 23% severely injured drivers
- 3% of 18-24 year old male drivers found positive for alcohol-drug or drug-drug vs. 0.6% of all drivers

> **User of several drugs**
- 1.5% of driving population vs. 10% severely injured drivers

Source: SWOV

SAFETY INTERVENTIONS

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> Police enforcement
- o *Legal limits*
- o *Random roadside breath tests frequency*
- o *Sanctions (level of sanction less important than probability of being caught)*

> Reduce alcohol availability
- o *Restrict selling points (near roads)*
- o *Raise alcohol prices*
- o *Raising the minimum drinking age*

> Separate drinking from driving
- o *Alcohol ignition interlocks*
- o *Designated driver programmes and cheap public transport*

> Education
- o *Education programmes on alcohol in schools and in driver training*
- o *Driver improvement courses (rehabilitation courses)*
- o *Promotion of safety culture (companies)*

> Information
- o *Public campaigns*

LEGAL THRESHOLDS

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> Recommendation of thresholds for different substances.
  - Ethical considerations
  - Political considerations
  - Accident risk in traffic dependent on different concentrations of alcohol (and other single substances)
    - *Direct information about the accident risk in traffic can only be gained by conducting epidemiological studies (most relevant information)*
    - *Indirect information can be obtained by experimental data*
    - *Representative studies on prevalence in accident-free and accident populations are difficult and expensive.*

> Too low a limit may be
  - Unfair vs. other risk taking behaviour
  - Inefficient, by diverting police from heavy drink drivers enforcement
  - Hamper self-control (of one's alcohol)

> 0.1 g/l for novice drivers → 17% decrease in the number of crashes involving drivers with +0.8 g/l (Austria)

Source: ERSO

ENFORCEMENT LEVEL & SANCTIONS

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> Doubling the number of roadside tests → -25% decrease in the number of alcohol offenders (Netherlands)

> Self-report frequency of alcohol tests in previous 3 years in Portugal
  - Never – 65% vs. 62% (Netherlands); 85% (Denmark)
  - Once – 20% vs. 22% (Netherlands); 9% (Denmark)
  - More than once – 15% vs. 15% (Netherlands); 6% (Denmark)

(Sartre3)

> Driving license suspension → -16% accidents
  - *Possible increase in illegal driving*

> Imprisonment not effective: change to graduated fine and license suspension → -4% accidents (Norway)

Source: ERSO

ALCOHOL AVAILABILITY

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> Restrict alcohol sale at roadside commercial areas, petrol stations and transport cafes; or limit to a certain time period

> Increase tax/price of alcohol

> Increase minimum age for alcohol consumption

- Increase from 18 to 21 → -24% fatal crashes in age group 18-21
- → -31% injury crashes (18-21 years)

SEPARATE DRINKING FROM DRIVING

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> Alcolocks

- More efficient than license suspension to prevent recidivism
- Effective against heavy drinkers. 65% reduction in recidivism (USA); no residual effect if removed.
- Effective against non usual heavy drinkers serious offenders
- Expensive

> Designated driver programmes

- Bob campaign

> Cheap public transport and other private alternatives

SEPARATE DRINKING FROM DRIVING

Cheap public transport and other private alternatives

EDUCATION

> Education programmes on alcohol in schools
  - includes pedestrians and cyclists
  - To inform on dangers before road users have access to vehicle
> Education programmes in driver training
> Driver improvement courses (rehabilitation courses)
  - Recidivism may be reduced by 50% (no problem drinkers)
  - Increased knowledge on effects of alcohol; no effect on recidivism
> Promotion of safety culture (companies)
  - *clear safety policy (the management promotes this policy; the managers themselves act accordingly)*
  - *analyses crashes and near misses made in the past, and is willing to learn from these crashes and near misses (no blame intended)*
  - *Takes measures that tackle the detected root causes of crashes*

INFORMATION

> Use of using mass media, aiming at raising awareness of the dangers of drink driving

> Public campaigns intended to change attitudes, in order to keep behaviour forced on drivers by legislation and enforcement

> Long term actions, usually associated with enforcement

CURRENT PORTUGUESE ROAD SAFETY STRATEGY

> Preventing driving under the influence of alcohol and drugs is one Strategic Objective (in a total of 10 strategic objectives)
- Does not include actions concerning vehicles (alcolocks)

> 5 Operational Objectives:
- (08)Enforcement as regards, alcohol, drugs, speed, use of safety devices and safe inter-vehicular distances
- (23) Statistical data on road accidents
- (24) New Highway Code
- (29) Safety performance indicators and road user behaviour
- (30) Social and economical costs of road accidents

Source: ANSR

COMPARATIVE RISKS: DRINK DRIVING vs. SPEEDING

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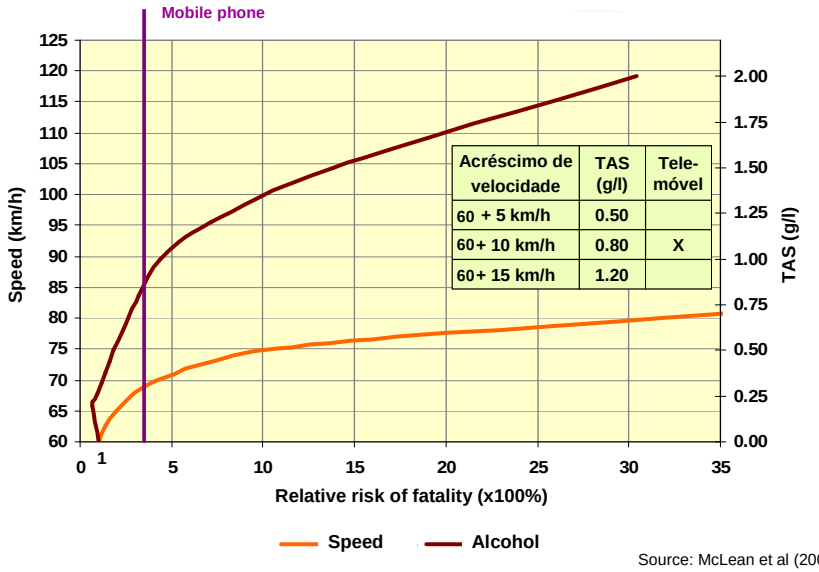

Acréscimo de velocidade	TAS (g/l)	Tele-móvel
60 + 5 km/h	0.50	
60+ 10 km/h	0.80	X
60+ 15 km/h	1.20	

Source: McLean et al (2002).

CONCLUSION

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- Data collection and dissemination on alcohol related safety issues need improvement:
  - To know the extent of the drink driving problem
  - To monitor developments in the prevalence of drink driving over time
  - To allow for rational decision making as regards safety interventions to mitigate drink driving accidents
- Current data points toward small changes in drink driving problem, since 2000.However, there are indications that social attitudes towards drink driving have improved.
- Current 0.5 g/l legal limit seems to be largely accepted by driver population.
- Some legislative developments are possible, as regards safety interventions directed at high risk groups – lower levels for novice drivers and alcolocks.