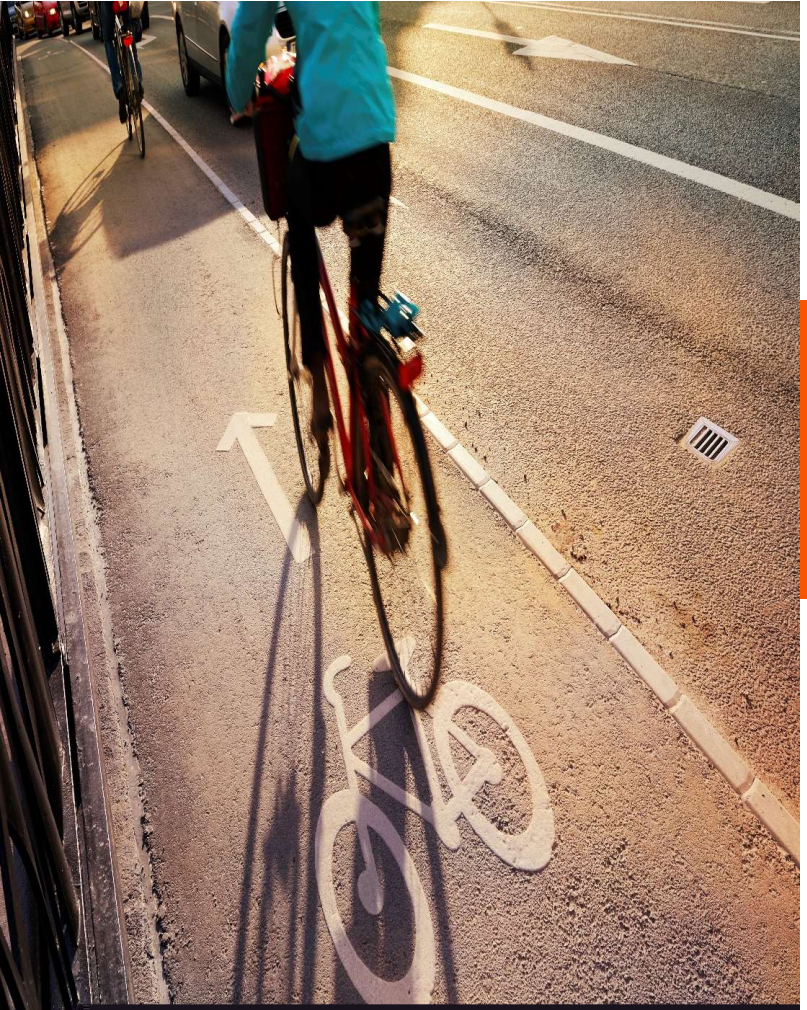

9th INTERNATIONAL CONGRESS ON TRANSPORTATION RESEARCH

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Impaired Cycling and Crash Involvement: A Survey Across OECD Countries on Data Availability and Legislation

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Context

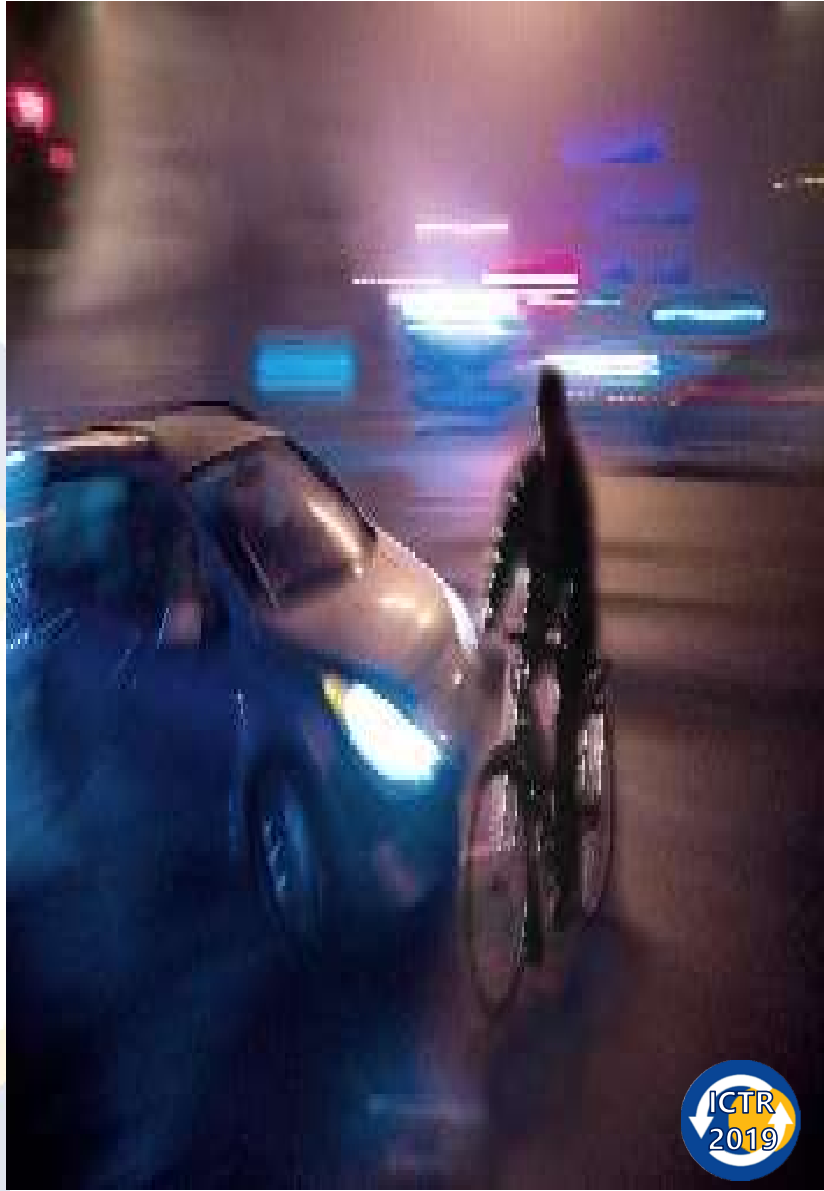
- Bicycle kilometers in urban and peri-urban contexts have recently increased due to:
  - availability of self-service systems,
  - widespread use of bicycles to make deliveries,
  - use of bicycle for sightseeing tours,
  - a change in mentality especially of young people who favor active modes and who are less and less motorized,
  - all major cities being in the process of studying or setting up extensive networks of cycle paths.

Context

- A large part of this mileage is realized by young people (<30 years old) for leisure and night outings.
- Young people also consume alcohol and drugs at a much lower frequency.
- It is reasonable to assume that there are drinking problems and drugs that could make these cyclists more vulnerable.
- However, BACs rarely target cyclists and the legislation does not seem to be adapted to the particularities of the subject.

The problem

- Drivers who have consumed alcohol and other substances are over-represented in the statistics of involvement in serious and fatal accidents.
- Cycling is more challenging than driving because it involves more skills such as balance, physical activity and night vision.
- Cyclists are more vulnerable less visible to other drivers, more exposed to weather conditions and have less means of protection against shocks.
- The effects of blood alcohol levels are increased for cyclists.



The Velivr' project

- *Velivr' - Cycling under the influence of alcohol and drugs: current state and risks*
- Project partners:
  - French Institute of Science and Technology for Transport, Planning and Networks (IFSTTAR)
  - National Technical University of Athens (NTUA)
- Project duration: September 2018 – July 2019
- Carried out for the Interministerial Delegate for Road Safety (Délégation à la Sécurité Routière – DSR) of the French Ministry of the Interior.

Project objectives

Velivr' is an exploratory study that made a first diagnosis of the situation on cycling under the influence of alcohol and/or drugs (CUI) in France and a benchmark on international good practices.

The objectives of the project included:

- ✓ identifying the problem in a broader context,
- ✓ measuring its magnitude,
- ✓ observing and analyzing the behavior of the persons concerned,
- ✓ identifying factors of risk behavior (age, socio-professional profile, possession or no car ...).

Methodology

Two complementary methodological approaches:

- A bibliographic and statistical approach to exploit existing knowledge and databases, situate the problem of CUI in an international context and identify elements for the French territory.

- Direct observation through a survey of cyclists in Paris followed by statistical modeling of their responses.

Outcomes of the project

- Better understand the decision-making mechanism for CUI.
- Allow the formulation of proposals to implement public, education and training actions to tackle CUI.
- Indicate the magnitude of the CUI problem and serve as a decision aid for future investments.
- Identify future avenues for research, both to deepen the issue (e.g. through simulation studies) and to widen its scope (e.g. to other vehicle types such as segway and electric scooter and other cities).

Survey across OECD Countries

- Rules and data concerning CUI were recorded through a survey among IRTAD countries.
- A total of 15 IRTAD members responded to the survey
(Austria, Chile, Czech Rep., France, Germany, Greece, Hungary, Ireland, Luxembourg, Netherlands, Serbia, Slovenia, Spain, Sweden, Switzerland).
- Results from the survey have been reported "by topic", and for each topic of the questionnaire aggregated results are provided.

Survey questionnaire topics

- Minimum age for allowing cycling (accompanied or not)
- Obligatory equipment for cyclists and the bicycle
- Areas / road types where bicycles are allowed to travel
- BAC limit especially for cyclists
- Fine or other type of penalty especially for CUI
- Results of police controls on CUI
- Specific measures applied to prevent or to reduce the consequences of CUI
- Study(ies) or research on CUI
- CUI Related road safety outcomes
- Cycling exposure data
- CUI performance indicators data

Minimum age for allowing cycling

Country	Cycling alone	Cycling accompanied
Austria	older than 12 y.o. (older than 10 y.o. with cycling license)	younger than 12 y.o. (younger than 10 y.o. with cycling license)
Chile	no minimum age	no restriction
Czech Rep.	older than 10 y.o.	younger than 10 y.o.
France	no minimum age	no restriction
Germany	outside footways: older than 8 y.o.	no restriction
Greece	no minimum age	no restriction
Hungary	for main roads only: older than 12 y.o.	no restriction
Ireland	no minimum age	no restriction
Luxembourg	older than 10 y.o.	from 6 y.o. to 10 y.o.
Netherlands	no minimum age	no restriction
Serbia	for public roads: older than 12 y.o. for pedestrian zone, slow traffic zone, zone "30", school area, unclassified road: older than 9 y.o.	for pedestrian zone, slow traffic zone: younger than 9 y.o.
Slovenia	older than 8 y.o (with cycling card)	younger than 14 y.o. (without cycling card) younger than 6 y.o. (only on pedestrian zone)
Spain	no minimum age	no restriction
Sweden	no minimum age	no restriction
Switzerland	for main roads: older than 6 y.o. for other roads: no minimum age	for main roads: younger than 6 y.o.

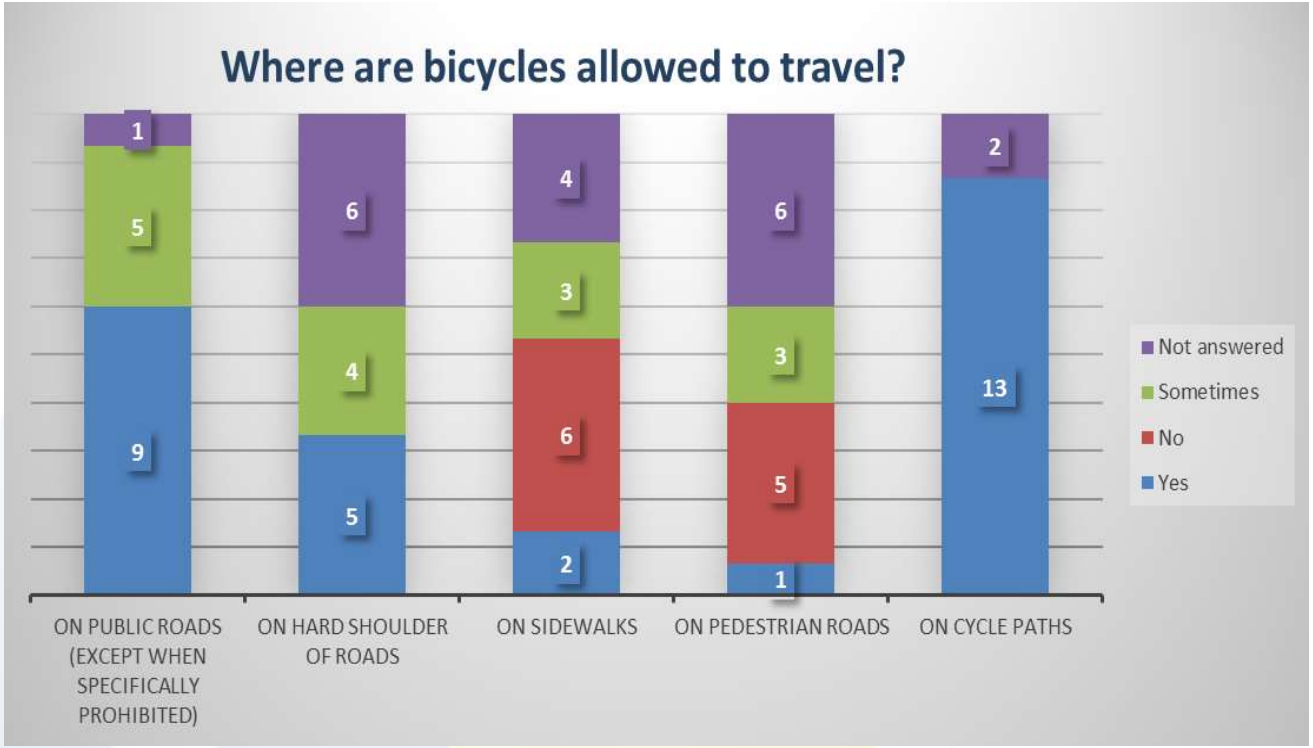
- Several countries do define a minimum age for allowing cycling on the road.
- In most of these countries accompanied cycling is also foreseen.
- Ten to twelve y.o. is a common age range for allowing independent cycling.

Obligatory cyclist / bicycle equipment

Country	Mandatory equipment for cyclists	Mandatory equipment for the bicycle
Austria	helmet up to 12 y.o.	2 independent brake systems, reflective elements on the front, rear, pedal and wheels, sound device
Chile	helmet, reflective vest, harness or shoulder strap	frontal light, rear red light, reflective elements, sound device
Czech Rep.	helmet up to 18 y.o.	brakes, lights
France	helmet up to 12 y.o., reflective vest under conditions (outside cities, night, low visibility)	Lights, sound device, reflective devices on the pedals and the wheels
Germany	no	2 independent brake systems, lighting, spotlights, sound device
Greece	no	2 independent brake systems, white/yellow front light, red light, reflective backlight, side and pedal reflectors
Hungary	helmet and reflective vest under conditions (outside cities, low visibility)	2 independent brake systems, lights, reflectors, sound device
Ireland	no	2 brakes, white front - red rear light, sound device
Luxembourg	no	white/yellow front - red rear light, rear, pedal and wheel reflectors
Netherlands	no	lights (front/rear), wheel/tyre/fender, pedal and rear-reflection, sound device
Serbia	no	2 brakes, white front - red rear light, wheels reflectors, sound device
Slovenia	helmet up to 18 y.o.	front and rear brake, white front - red rear light, rear, wheels and pedal reflectors, sound device
Spain	helmet	lights, reflectors
Sweden	helmet up to 15 y.o.	brake, lights and reflectors only in darkness, sound device
Switzerland	no	2 brakes, lights, reflectors, tyres of approximately the same elasticity

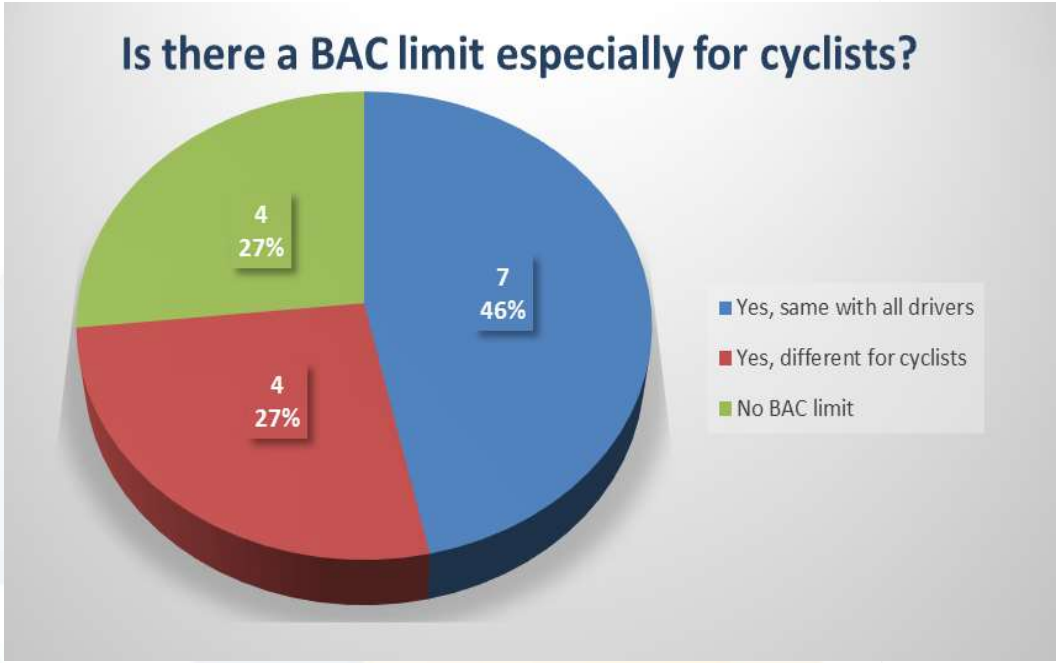
- In half of the countries a helmet is mandatory but only up to a certain age.
- In all countries almost the same bicycle equipment is required.

Areas/road types allowed for bicycles



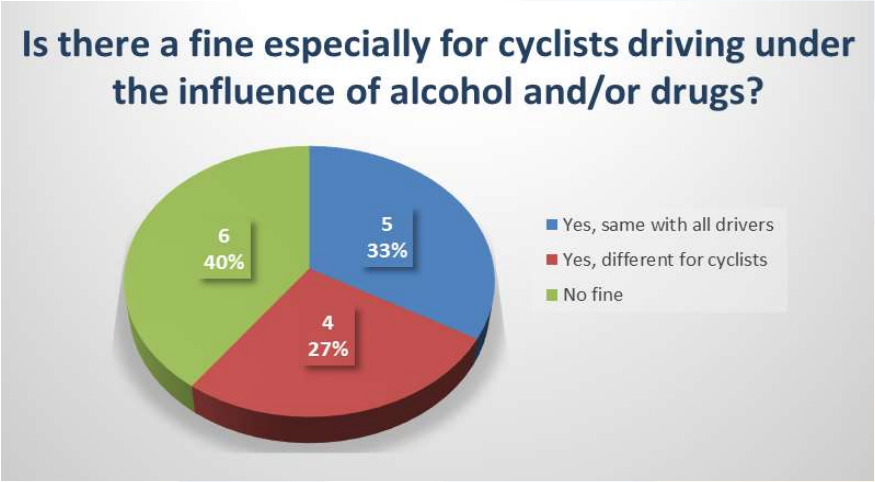
- In most countries there is provision for the safe movement of bicycles on dedicated paths or at least on specific areas/roads.

BAC limit for cyclists



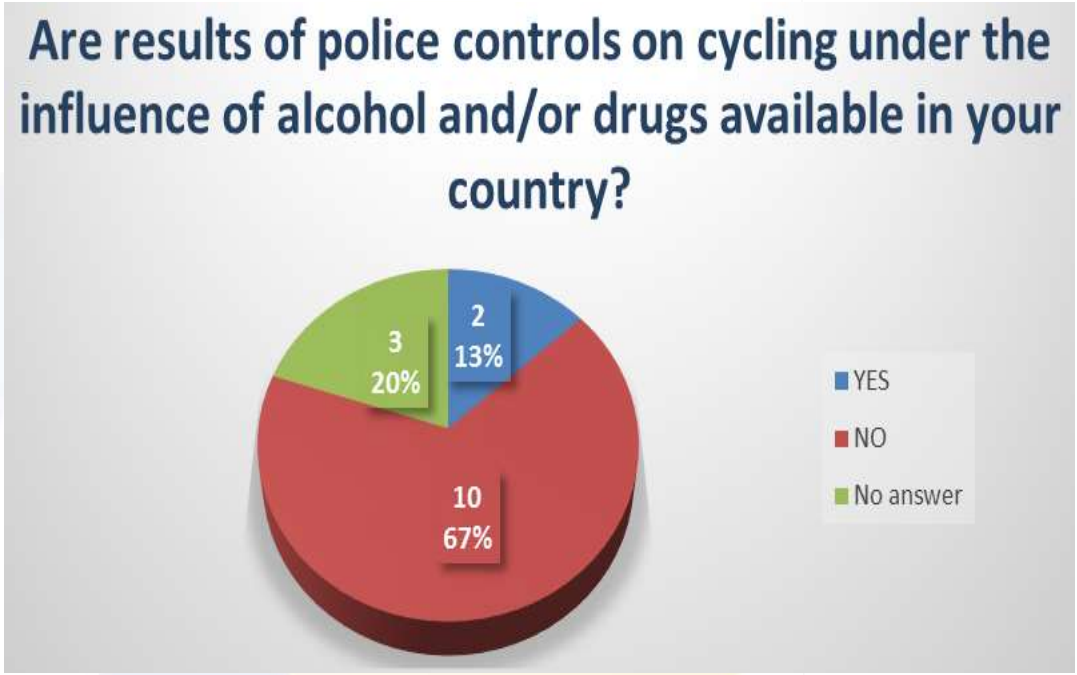
- Almost all responding countries have defined a BAC limit for cyclists.
- BAC limit for cyclists may be higher (Austria, Germany) or lower (Slovenia) than the standard limit for drivers.

Foreseen fine/penalty for CUI



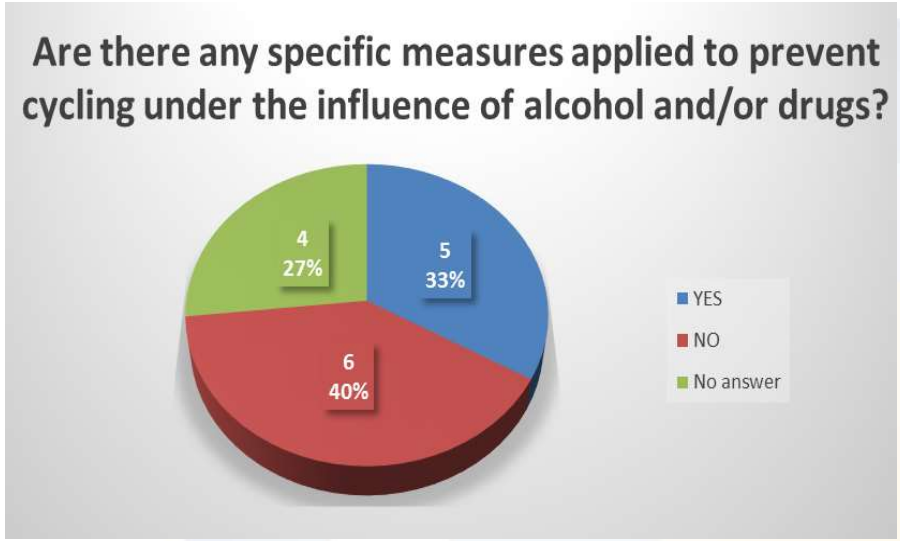
- **Fines** for CUI are applied in most countries but other types of penalties are scarce.
- Other types of applied penalties include: cycling license revocation, driver improvement, medical/psychological assessment and penalty points.

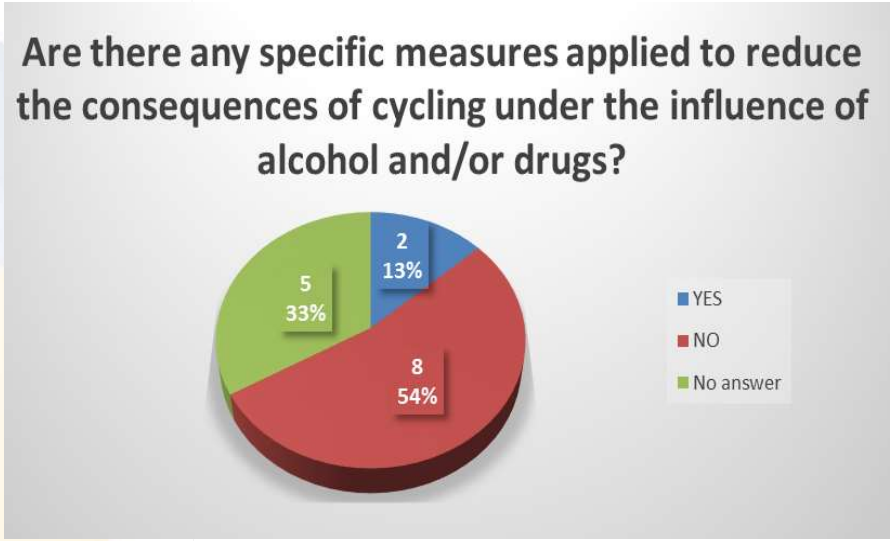
Available CUI police controls results



- In most countries data concerning the results obtained by police controls on CUI are either not available or not distinguished from other police control data.

Measures to prevent/reduce CUI consequences





- Measures concerning CUI are implemented in few countries.
- Reported measures concerned education and information of all drivers but not cyclists in particular.
- The high number of no answers also indicates a lack of activity in the field.

Availability of CUI statistical data

Country	Accidents	Fatalities	Injuries	Exposure data	Performance Indicators
Austria	not answered	not answered	not answered	not answered	not answered
Chile	no	no	no	no	no
Czech Rep.	yes	yes	yes	no	no
France	yes	yes	yes	not answered	not answered
Germany	yes	yes	yes	yes	no
Greece	yes	yes	yes	no	no
Hungary	yes	not answered	not answered	not answered	not answered
Ireland	yes	yes	only serious	no	no
Luxembourg	yes	yes	yes	not answered	not answered
Netherlands	no	no	no	yes	no
Serbia	yes	yes	yes	not answered	not answered
Slovenia	yes	yes	yes	specific municipalities	not answered
Spain	no	no	no	no	no
Sweden	yes	yes	yes	yes	yes
Switzerland	yes	yes	yes	yes	no

- Road safety outcomes concerning CUI are available in the majority of countries.
- Cycling exposure data (i.e. cycle-kms, person-kms) are limited.
- Cycling performance indicators data are almost totally missing.

Synthesis

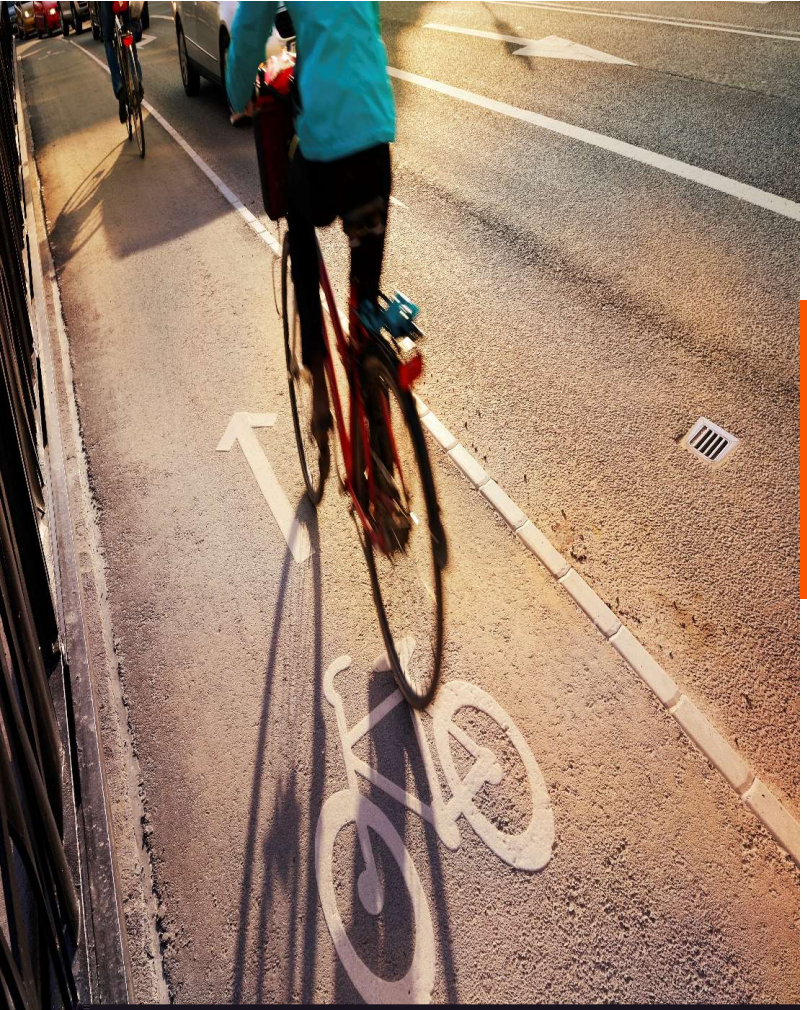
- In many countries safe cycling attracts growing attention as indicated by the adoption of rules and legislation concerning various aspects of it (delimited cycle paths, bicycle equipment).
- The need for cycling skills is partially recognized as implied by the minimum age restrictions.
- However, the vulnerability of cyclists is not fully realised (i.e. lack of mandatory protective equipment and special BAC limit).
- The CUI problem is not appropriately addressed through insufficient enforcement and provision for measures to prevent it.

Conclusion

- Cycling under the influence of alcohol and/or drugs is a problem growing in parallel with cycling itself.
- The legislative treatment of cycling issues can help tackle the problem of CUI and reduce its consequences.
- Analyses of the existing data on CUI related road safety outcomes and collection of cycling exposure data and performance indicators are necessary to better understand the problem of CUI and identify evidence-based solutions.

Indicative list of studies related to CUI

- Martínez Ruiz, V., Jiménez Mejías, E., Amezcua Prieto, C., Olmedo Requena, R., Pulido Manzanero, J., & Lardelli Claret, P. (2015). *Risk factors for provoking collisions between cyclists and pedestrians in Spain, 1993-2011.* Gaceta Sanitaria, 29, pp.10–15.
- Ariane von Below (2016). *Road safety of cyclists - Analysis of motives relevant for security, settings and behaviour patterns.* ISBN: 978-3-95606-234-6.
- *Analyse der Velounfälle 2005 bis 2014 - Personen- und infrastrukturbezogene Auswertungen* (Chapter 4.3)
- *Forschungspaket VESPA*, especially Massnahmen und Potenziale im Bereich Verkehrsteilnehmende (especially pp. 62, 88 ff.)
- https://www.bfu.ch/de/bestellen/alles#k=2.092 (pp.98ff)



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