5th conference
Transport Solutions:
from Research to Deployment
Innovate Mobility, Mobilise Innovation!
Paris - La Défense CNIT, 14 - 17 April 2014

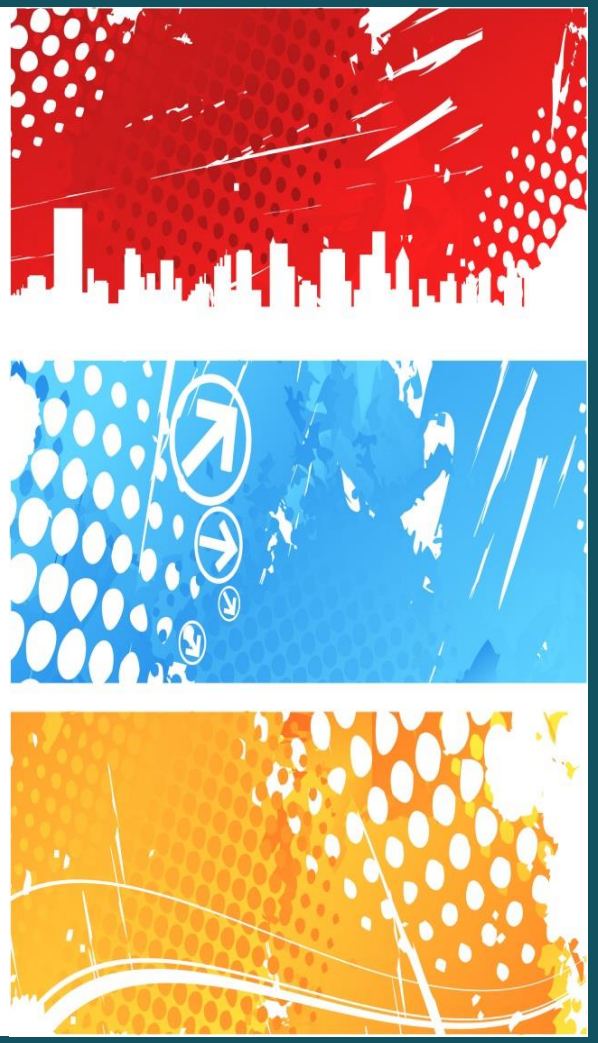
Mobility and safety of powered two-wheelers in the OECD countries

Pierre Van Elslande, IFSTTAR, France
Veronique Feypelle-de la Beaumelle, OECD/ITF
James Holgate, VicRoads, Australia
Kris Redant, CRR, Belgium
Hélène de Solère, CERTU, France
Dimitris Margaritis, CERTH, Greece
George Yannis, NTUA, Greece
Eleonora Papadimitriou,, NTUA, Greece
Saskia de Craen, SWOV, the Netherlands
Lars-Inge Haslie, Road Directorate, Norway
Juan Muguiro, ATOS Consulting, Spain
Per-Olov Grummas Granström, Swedish Transport Administration, Sweden

*geyannis@central.ntua.gr

Objectives

- Review and synthesis of current know-how for **motorcycling safety**.
- Review and synthesis for **crash configurations** and mechanisms of motorcycles.
- Implementation of **measures** for improvement of PTWs' safety.
- Progression towards the **safe system approach** for PTW.



Background

- A research was carried out by a working group of the **OECD ITF**, composed of experts from several countries.
- PTW becoming **a true mobility tool**.
- **Increase in PTW fatalities** in OECD countries; decrease in other road users fatalities.
- **Higher Share** of PTW fatalities than their share in the vehicle fleet.

Mobility and safety figures of PTW (1)

- PTW mobility and use
  - **Higher growth** rate of PTW fleet than passenger car fleet.
  - PTWs an important **component** of the transport system.
  - National transport **strategy** for PTWs only in few countries.

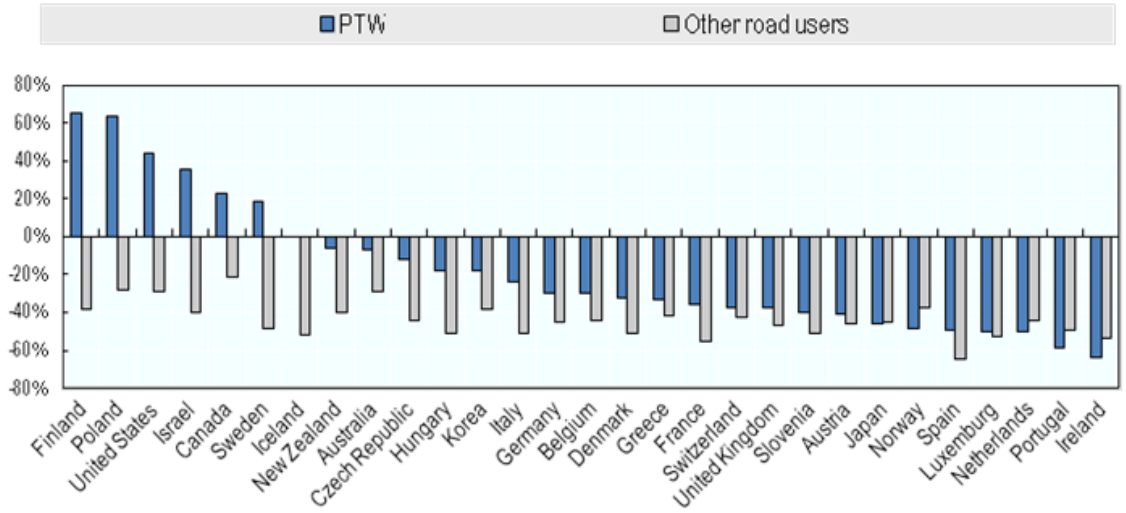
Fleet evolution (2001-2010, %)

	Passenger cars	Mopeds	Motorcycles
Australia	25%	-	88%
Czech Republic	29%	10%	35%
France	11%	-22%	48%
Great Britain	13%	-27%	28%
Greece	52%	-14%	76%
Japan	11%	-20%	14%
Spain	22%	27%	82%
Sweden	8%	84%	91%
United States (excl. SUVs)	5%	-	67%

Mobility and safety figures of PTW (2)

- Safety development over time
  - **Deterioration** of the situation of motorcyclists.
  - No analogy between PTW trends and overall fatalities decrease in OECD countries.
  - Importance of appropriate **counter measures**.

Road fatalities Evolution (2001-2011, %)



Mobility and safety figures of PTW (3)

- Crash characteristics and scenarios
  - Motorcyclist is 9 to 30 times more likely to be killed in a traffic crash than a car driver.
  - PTWs riders and passengers represent 16.5% of all road fatalities whereas PTWs constitute 8% of the fleet.
  - Increase in average age of motorcyclists killed.
  - Majority of PTW crashes are single vehicles crashes on rural roads.
  - Almost 1 out of 3 fatalities occur at junctions.

Contributory factors of PTW crashes

- Higher risk of injury due to greater vulnerability.
- Key factors:
  - Conspicuity
  - Road-user rationality
  - Road-user vulnerability
  - System forgiveness
- Factors:
  - Speeding
  - Drink and drive

Integrated road safety strategy for PTW (1)

- Safe system approach
  - Situational analysis
  - Definition of strategic objectives
  - Determination of strategies and actions
  - Establishment of supporting arrangements

Integrated road safety strategy for PTW (2)

- PTWs in the safe system
  - Improving safety of PTWs is **shared responsibility**.
  - **Support of measures** by broader community and motorcyclists.
  - Focus on **strategies avoiding crashes**, rather than mitigating their effects.

Measures for PTW safety improvement (1)

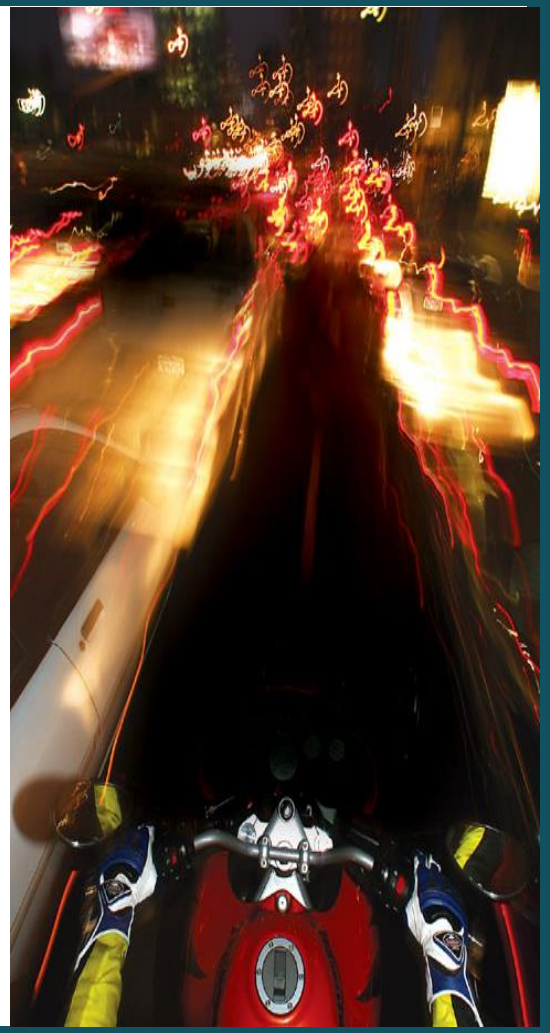
- **Licensing, training and education**
  - Access to PTWs should be gradual.
  - Novice riders should be trained.
  - Other road users should be aware of PTWs vulnerability and crash patterns.
- **Enforcement and communication**
  - Equal application and enforcement of traffic rules.
  - Effective combination of enforcement – communication campaigns.

Measures for PTW safety improvement (2)

- **Infrastructure and traffic management**
  - Development of self – explaining roads
  - Dual purpose of traffic management measures
    - facilitation of PTW traffic;
    - Increase of safety

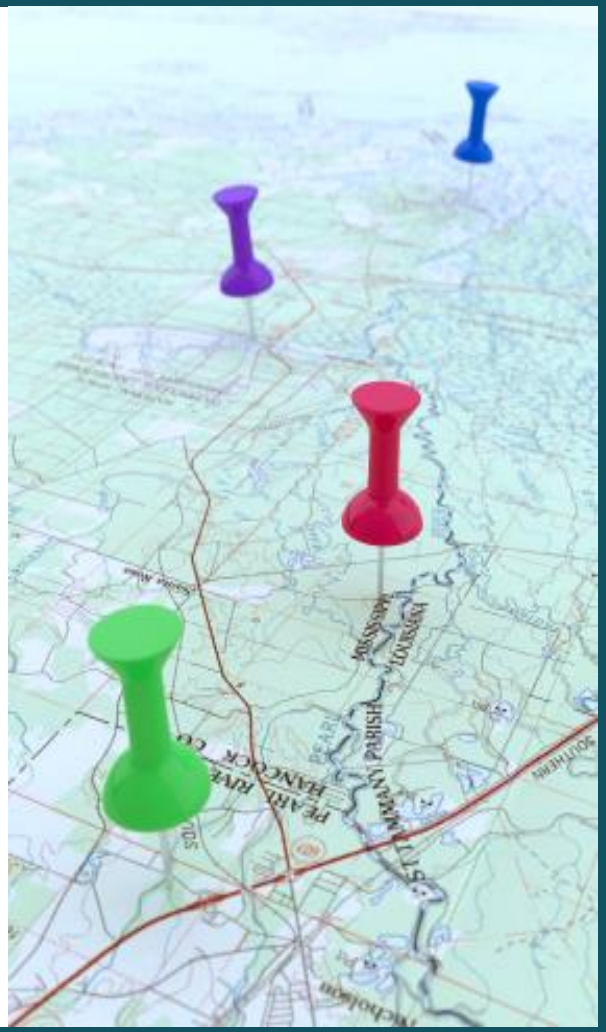
Measures for PTW safety improvement (3)

- **Vehicles, ITS and protective devices**
  - Improvement of passive and active safety of PTWs.
  - ABS should become a standard.
  - Safety improvement via Motorcycle ADAS (e-Call, blind spot detection, curve and collision warning systems).
  - Promotion and regulation of the use of helmets and other protective equipment.



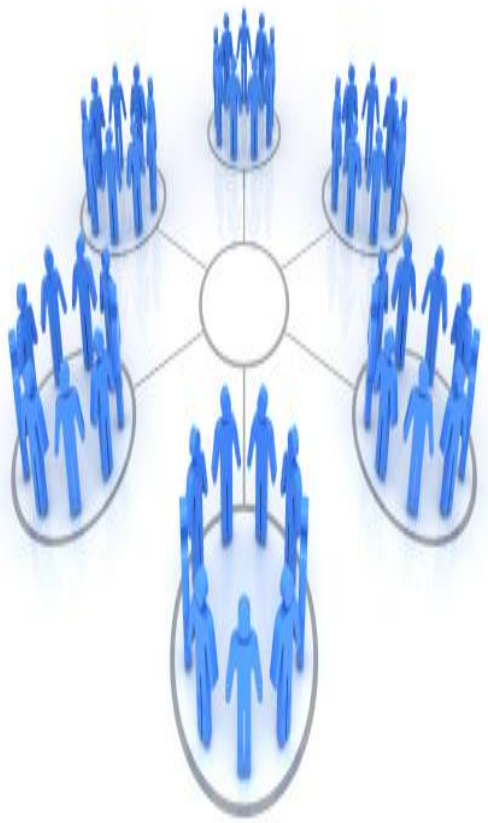
Key messages and recommendations (1)

- PTWs have a significant role in **mobility** (due to increase of PTWs population).
- Greater **risk** of PTWs than car drivers.
- PTW crashes are mainly due to **perception** and control failures.
- Requirement of a **safe system approach** for safety improvement of PTWS.
- Requirement of a **toolbox** of measures for safety improvement of PTW riders.



Key messages and recommendations (2)

- Promotion of appropriate **behaviours** for all road users is a prerequisite.
- Contribution of **self-explaining and forgiving** roads to lower crash risk.
- **Protective equipment** and vehicles with enhanced safety features save live
- Extension of **knowledge** on PTW mobility and crash mechanisms is essential.



5th conference
Transport Solutions:
from Research to Deployment
Innovate Mobility, Mobilise Innovation!
Paris - La Défense CNIT, 14 - 17 April 2014

Mobility and safety of powered two-wheelers in the OECD countries

Pierre Van Elslande, IFSTTAR, France
Veronique Feypelle-de la Beaumelle, OECD/ITF
James Holgate, VicRoads, Australia
Kris Redant, CRR, Belgium
Hélène de Solère, CERTU, France
Dimitris Margaritis, CERTH, Greece
George Yannis, NTUA, Greece
Eleonora Papadimitriou,, NTUA, Greece
Saskia de Craen, SWOV, the Netherlands
Lars-Inge Haslie, Road Directorate, Norway
Juan Muguiro, ATOS Consulting, Spain
Per-Olov Grummas Granström, Swedish Transport Administration, Sweden

*geyannis@central.ntua.gr