

## Briefing

### Weights and dimensions of heavy goods vehicles<sup>1</sup> - maximising safety

#### Introduction

ETSC strongly supports the need for the front end design of HGVs to be improved to reduce the current risks to both car occupants and vulnerable road users such as pedestrians and cyclists (VRUs). A change in design could have a significant impact on the number of deaths and serious injuries involved in collisions with HGVs.

However, as we explain below, testing procedures with strict conditions relating to safety will have to be carefully designed.

ETSC does not recommend a modification of the Directive to allow longer and heavier vehicles to circulate across national borders in the EU<sup>2</sup>.

#### Life saving potential: 300-500 lives per year

In the European Union 4,254 people lost their lives in collisions involving heavy goods vehicles (HGVs) in 2011<sup>3</sup>. HGVs have a higher mortality rate per billion km travelled than for the average vehicle and most of those killed are other road users rather than the drivers. The relatively large mass of an HGV translates into a higher severity of injury for other road users involved in a collision. According to the European Commission's impact assessment, based on a report by FKA<sup>4</sup>, changing the cabin design of HGVs could save 300 to 500 lives per year.

Across the EU the occupants of HGVs involved in collisions make up only 12% of deaths<sup>5</sup>. Unprotected road users amount to 28% of the road deaths recorded following collisions involving HGVs: 6% were riders of motorcycles and scooters (powered two-wheeled vehicles or PTWs), 7% were cyclists and 15% were pedestrians.

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<sup>1</sup>[EC Proposal](#) Amending Directive 96/53/EC laying down for certain road vehicles circulating within the Community the maximum authorised dimensions in national and international traffic and the maximum authorised weights in international traffic COM (2013) 195, April 2013

<sup>2</sup> See ETSC's [full position](#) on allowing LHVs to cross international borders, 2011

<sup>3</sup> ETSC [7<sup>th</sup> Annual PIN Report](#) Back on Track to Reach the 2020 Target Chapter 2 [http://etsc.eu/documents/PIN\\_Annual\\_report\\_2013\\_web.pdf](http://etsc.eu/documents/PIN_Annual_report_2013_web.pdf)

<sup>4</sup> FKA [Design of a Tractor for Optimised Safety and Fuel Consumption Report](#) 104190

<sup>5</sup> *ibid*

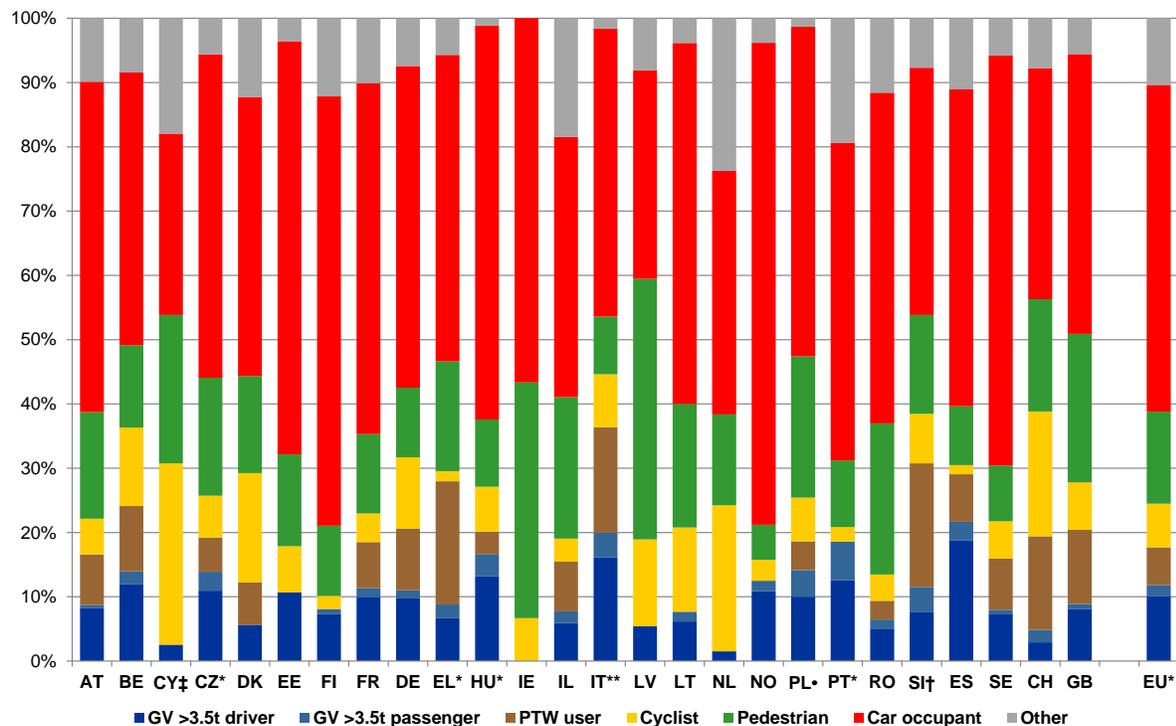


Fig.1 Percentages by type of road user of deaths in collisions involving a goods vehicle over 3.5 t in the last two or three years for which numbers are available (2009-2011 unless otherwise indicated). \*CZ, EL, HU, PT values for 2009-2010. \*\*IT 2008-2010, †SI 2010-2011, ‡CY values for 2009 and 2011. •PL data refers to all goods vehicles.

### Improving visibility and reducing blind areas

In today's HGVs, driver eye-level is around 2 metres or more above the ground. The dimensions of the windows at the front and sides also lead to large blind areas in the driver's field of view. Those blind areas change when the vehicle is turning, particularly because the trailer unit always turns along a shorter radius than the tractor (cab) unit. That results in the driver being unable to see pedestrians, cyclists and motorcyclists who are close to the vehicle, particularly when turning.

Improving the driver's field of view can be achieved by lowering the eye height, enlarging the size of the windows and extending the size and positioning of mirrors<sup>6</sup>. Installing video cameras and screens may also be an option but these are second best to direct vision<sup>7</sup>. Efforts should also be made to improve the vision of the passenger side both through the windscreen and through the side door window. Visibility of the back of the HGV is also of vital importance.

<sup>6</sup> FKA [Design of a Tractor for Optimised Safety and Fuel Consumption Report](#) 104190

<sup>7</sup> When considering mirrors, mounting height needs to take pedestrians/cyclists and their possible collision trajectory into account.

ETSC recommendations:

- Improve the driver's current field of view by lowering the eye height, enlarging the size of the window apertures, extending the size and positioning of mirrors<sup>8</sup>.
- Installing video cameras and screens may also be an option but these are second best to direct vision<sup>9</sup>.
- Improve the vision of the passenger side both through the windscreen and through the side door window and to the rear.

**Safer design: front end safety in collisions**

The characteristics of the front and side structures in terms of their geometrical and structural properties will affect how they strike either passenger cars or vulnerable road users. A rounded profile will be beneficial in reducing the actual change in velocity in frontal collisions between cars and HGVs by allowing the car to be deflected and not lock into the sharp corner of existing HGV bumpers. A rounded profile for HGV fronts which would deflect the pedestrian (or cyclist) sideways, will also be beneficial in reducing the risk posed to them.

ETSC recommendations:

- Introduce energy absorbing structures on HGVs.
- Support the FKA proposal to increase the length of the cab by 80 cm<sup>10</sup> as a reasonable compromise between safety, vision and aerodynamics.
- Devise a new simple deflection test procedure with separate impactors for the appropriate zones of the front end
- Develop a separate test using a simple uninstrumented standing dummy to assess the deflection laterally and the risk of the pedestrian being run over.
- Improve front, side and rear underrun protection of heavy vehicles to improve safety.

Further ETSC recommendations:

- Strengthen the current proposal to improve road safety as well as aerodynamics. Under Article 8 paragraph 1, support the inclusion of the same wording as under Article 9 "the aim of improving the aerodynamic performance *and road safety of vehicles.*".
- Support the extension of this enabling legislation to full type-approval legislation in the medium term.
- Under Article 8.2 (i), support the requirement to ensure that, in case of fitment of rear flaps for improved aerodynamics, these are secured in such a way as to reduce their risk of detachment.

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<sup>8</sup> FKA [Design of a Tractor for Optimised Safety and Fuel Consumption Report](#) 104190.

<sup>9</sup> When considering mirrors, mounting height needs to take pedestrians/cyclists and their possible collision trajectory into account.

<sup>10</sup> FKA [Design of a Tractor for Optimised Safety and Fuel Consumption Report](#) 104190

- Safety for all types of road users should not deteriorate through the attachment of these rear flaps.
- Under Article 8.2 (ii), support the requirement to include day and night markings to enable other road users to gauge the external bodywork of the vehicle.
- Develop common guidelines which include clearer criteria concerning the type, design and legibility of markings.
- Support the equipment of vehicles with onboard weighing devices to facilitate vehicle inspections and enforcement.
- Develop guidelines that set out one common set of criteria to ensure streamlining of inspection methods between all Member States.
- Ensure that the procedures for certification are clear to enforce common high standards throughout the EU especially in the areas relevant to safety.
- Consult with HGV drivers on the redesign of the cabin to take their comfort and safety into account.
- Ensure that the comfort and design of cabs contribute to improving the working environment and have a positive effect on road safety.
- Make reference to the Occupational Health and Safety Framework Directive 89/391, with its hierarchy of prevention, starting with elimination at source of issues such as whole-body vibration, and musculoskeletal disorders including back problems.

#### **Next steps**

- European Parliament Transport and Tourism Committee (TRAN) vote expected - February 2014
- Transport Council – common position expected – March/June 2014

#### **Acknowledgement**

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#### **For further information**

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The European Transport Safety Council (ETSC) is an independent, non-profit organisation dedicated to reducing the numbers of deaths and injuries in transport across Europe.