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Heavy vehicles and vulnerable road users, a conflict to be solved

TOWARDS ZERO: THE EU'S ROAD SAFETY AMBITION BY 2050

"Vision Zero" is the ambitious road safety goal adopted by the European Union (EU) to eliminate all road traffic fatalities and serious injuries by 2050. This target aligns with the broader EU commitment to protecting citizens' health and wellbeing, as embedded in the European Pillar of Social Rights and the Sustainable Development Goals (notably SDG 3.6 on halving road traffic deaths). As early as 2018, the EU set an interim milestone **to reduce road fatalities by 50% by 2030**, reinforcing its commitment through the European Commission's[1] Strategic Action Plan on Road Safety and the EU Road Safety Policy Framework 2021–2030. These frameworks are deeply embedded within key EU mobility and urban development policies, including the Sustainable and Smart Mobility Strategy, the revised TEN-T Regulation, and the **Urban Mobility Framework**, which together aim to create a safer, greener, and more efficient transport system. In parallel, since July 2022, the new General Safety Regulation (GSR) has mandated the integration of advanced safety technologies—such as intelligent speed assistance and emergency braking systems—into all new vehicles sold in the EU . **Furthermore, the IURC North America (IURC-NA) programme actively contributes to these objectives by facilitating peer learning on sustainable and safe mobility solutions between EU**[2] and North American cities, placing traffic safety at the core of its thematic cooperation.

GRIM NUMBERS BEHIND THE WHEEL

Despite progress, road traffic remains a leading cause of preventable death in both the European Union and North America. **In 2024, the EU recorded 19,800 road fatalities**, **equal to 44 deaths per million inhabitants**, with notable disparities across its Member States[3]. Encouragingly, this figure **reflects a 3% reduction compared to 2023 and a 15% drop from the pre-pandemic average (2017–2019)**, indicating a slow but steady move in the right direction.

Across the Atlantic, **the United States registered 39,345 road deaths in 2024, a 3.8% decrease from 2023** and—crucially—the first time in recent years that fatalities dropped below 40,000[4]. However, with an estimated 115 deaths per million inhabitants, the U.S. rate remains significantly higher than the EU average. Canada, meanwhile, recorded an **estimated 1,964 fatalities in 2023, with a rate of approximately 50 per million inhabitants**, slightly above the EU average but below that of the U.S., and showing an upward trend in recent years[5]. The specific structure of these vehicles results in numerous blind spots for drivers.

URBAN DANGER ZONES: THE HEAVY VEHICLE THREAT

Cities, as dense and dynamic environments, present a disproportionate share of road traffic risks. **In the EU, 38% of road fatalities occur in urban areas[6] —a figure mirrored by 33% in Canada and dramatically exceeded by the 59% reported in the United States[7]** . Within these urban fatalities, vulnerable road users (VRUs) including pedestrians, cyclists, users of powered two-wheelers (PTWs), and personal mobility devices—represent nearly **70% of total deaths** in the EU[8]. The risk to VRUs is exacerbated by their interaction with heavy vehicles, particularly large trucks, which account for a disproportionate number of fatal collisions due to visibility limitations and vehicle mass.

In 2023 alone, 7% of urban road deaths in the EU involved heavy vehicles colliding with VRUs[9]. In the U.S., while trucks represent just **4% of vehicles** on the road, they were involved in **8% to 11%** of pedestrian and cyclist fatalities, according to federal data from 2021[10] . The challenge lies not only in vehicle size but also in vehicle design, especially limited driver visibility due to blind spots and high cabs. For this reason, since 2022, the European GSR has introduced new safety features required for trucks, including detection and alert mechanisms for identifying nearby pedestrians or cyclists. Looking ahead, between 2024 and 2029, the GSR will also require direct vision improvements through design changes and advanced sensor technologies, echoing objectives outlined in the **Urban Mobility Framework and the Vision Zero strategy.**

LEARNING FROM SUCCESFUL CASE STUDIES

MILAN – SAFETY BY ENFORCEMENT

In 2023, after several incidents resulting in the deaths of five cyclists due to collisions with heavy vehicles caused by drivers' limited visibility from blind spots, the City of Milan (Italy) decided to anticipate some of the provisions

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introduced by the European Union. As of 1st October 2023, all heavy vehicles operating within the municipal territory were required to be fitted with "acoustic, visual, or tactile warning systems capable of alerting the driver to the presence of pedestrians and cyclists in front of the vehicle or on the pavement side" (**ADAS – Advanced Driver Assistance System**), or at least to have ordered them for later installation by 31 December 2024[11]. The measure was strongly opposed by transport associations (such as Assotir), as the municipality was accused of attempting to regulate a matter that falls under national jurisdiction[12]. Subsequently, the municipal decision was overturned by the Administrative Court (TAR) in November 2023. However, the City of Milan later prevailed in the appeal to the Council of State, reintroducing the obligation from 1st January 2025 to incorporate the measure into the traffic regulations of Area B (the Low Emission Zone covering most of the municipality) and Area C (the Congestion Charge Area in the city centre). The Court essentially acknowledged that municipalities may regulate specific, urgent road safety issues as part of their **Sustainable Urban Mobility Plan (SUMP)** policies, such as **Low Emission Zones (LEZs) and cycling uptake**[13]. This case represents a significant example of how regulatory conflicts can be challenged to accelerate the path towards Vision Zero, in accordance with EU legal provisions. The delay caused by the legal proceedings prevents a full assessment of the measure's effectiveness at this time, but the case stands as an important precedent for cities wishing to take firm action on road safety in Europe.

BOSTON – SAFETY BY KNOWLEDGE

With the Direct Vision Study (DVS), the Massachusetts Department of Transportation (MassDOT) and the Volpe Center of the US Department of Transportation (USDOT), conducted a detailed **analysis of 60 different vehicle types** (light, medium, and heavy) in the fleets of the State of Massachusetts and 10 municipalities[14]. **The DVS deliberately uses the term "blind zones" instead of "blind spots" to emphasise the extent of the problem.** The vehicles' characteristics were measured in three phases:

1. Field measurements with a custom rig to simulate standard eye height.
2. Post-processing using an open-source program from the Insurance Institute for Highway Safety (IIHS) called OGRE.
3. Creation of blind zone polygons using ArcGIS.

The study produced a five-star rating system, assessing both front and passenger-side direct vision in terms of how far a child could be seen by the driver. **Only 27% of heavy vehicles analysed scored three stars or higher for front vision, and just 9% for side vision.**

The study has strong educational and awareness value and has been presented through several public initiatives (e.g. the Truck's Eye View experience and the Try-and-Drive campaigns organised by MassDOT). The rating system also has practical applications: **fleet managers can assess their current situation and adopt "countermeasures" such as cameras, specific mirrors, and sensors. It also serves as a guide for future vehicle purchases.** As a result, the State of Massachusetts has approved the **"Act to Reduce Traffic Fatalities",** which now makes it mandatory for state-owned, leased, or contracted vehicles to be equipped with four types of safety devices: lateral protective devices, convex mirrors, crossover mirrors, and a backup camera[15].

TORONTO VISION ZERO – SAFETY BY NUDGING

Toronto is one of the North American cities that has invested the most effort and resources into urban road safety at both a strategic and operational level. **Since 2019, it has adopted the Vision Zero Road Safety Plan**[16], an operational document outlining various types of interventions, including redesigning dangerous intersections and roads, creating safety zones around sensitive areas, introducing speed limits and traffic-protected zones, raising awareness about risky driving behaviour, and educating road users to respect VRUs. A constantly updated dashboard enables monitoring of the achieved results, including the establishment of **1,156 community safety zones and 629 school safety zones**[17].

Regarding cyclists and the risks posed by heavy vehicles, the Toronto plan includes several educational initiatives. The **"Bumper Magnets"** campaign involved producing vehicle interior magnets to remind drivers of safe behaviours towards cyclists and pedestrians. **This was followed by a public and social media campaign titled "Driving Safely Near People Cycling,"** aimed at spreading tips and best practices for drivers, especially those operating the most dangerous types of vehicles when distracted. In the absence of specific federal or provincial laws, and as part of its nudging strategy, Toronto has also recommended that all heavy vehicles operating in the city be fitted with side guards by 2026, already implementing this requirement for its municipal fleet. The actions laid out in Toronto's Vision Zero strategy are consolidating a clear downward trend in pedestrian and cyclist fatalities, **which decreased from 43 in 2015 to 39 in 2019 (the first year of the plan) and to 30 in 2024**[18].

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1. The European Commission is the main executive arm of the European Union (EU). Like a federal government department in Canada or a U.S. federal agency, it is responsible for proposing new laws, enforcing EU treaties, and making sure all EU Member States follow agreed-upon rules and policies. The Commission also manages the EU's overall budget and represents the EU in negotiating international agreements.
2. New rule on vehicles safety and automated mobility
3. European Commission – Mobility and Transport
4. National Highway Traffic Safety Administration (NHTSA)
5. "The year 2023 saw increases in the number of fatalities and serious injuries (compared to 2022), while the number of total injuries decreased. The 1,964 fatalities in 2023 marked the highest count in the past 10 years, the 9,261 serious injuries marked the highest count in the last 5 years, while the total injuries were around the average for the past 5 years" - Government of Canada - Transport Canada.
6. European commission – Mobility and transport
7. Fatalities Facts 2022 – Urban/rural comparison
8. European Road Safety Observatory
9. European Road Safety Observatory
10. Pocket Guide to Large Truck and Bus Statistics
11. Comune di Milano
12. News from Assotir website (language: Italian)
13. News from Assolombarda website (language: Italian)
14. Direct Vision Study
15. MassDOT - Truck Safety Devices
16. Toronto Vision Zero Road Safety Plan
17. Vision Zero Dashboard
18. Vision Zero Dashboard

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