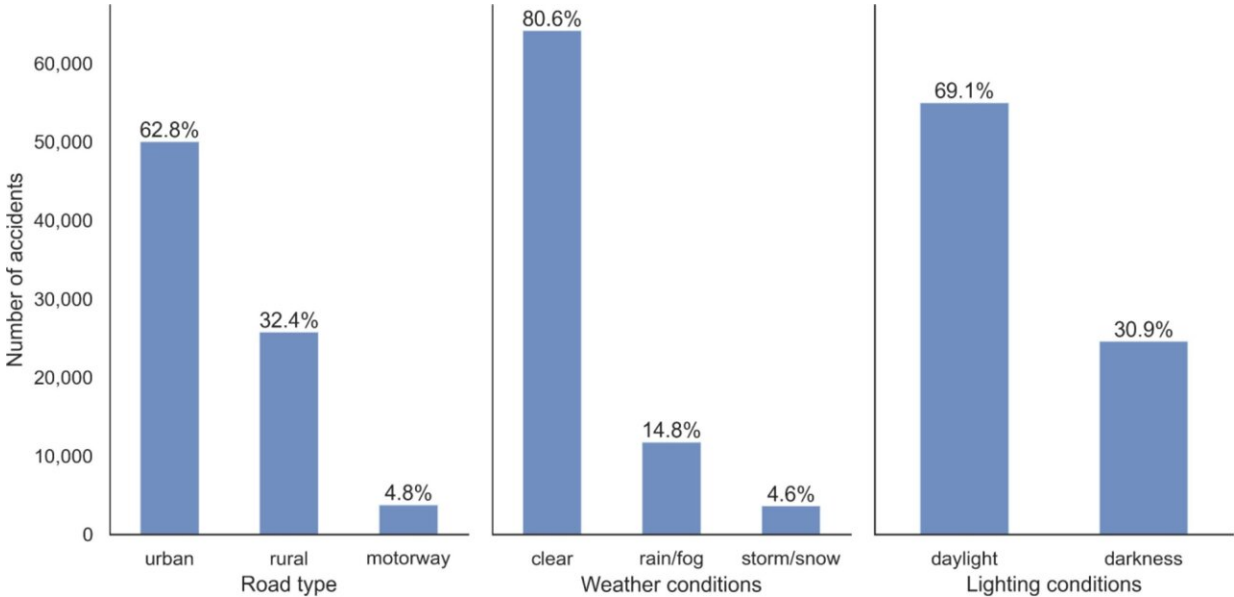


Fitting advanced driving assistance systems to all UK cars could prevent 24% of road crashes

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Proportion of contextual variables in the UK’s road safety reports for the year 2019 in collisions involving only light and heavy vehicles (UK Department for Transport, 2021a). Left: proportion of road types; center: proportion of weather conditions; right: proportion of lighting conditions. Total number of accidents: 79,656. Credit: *Transportation Research Interdisciplinary Perspectives* (2022). DOI: 10.1016/j.trip.2022.100670

Installing Advanced Driver Assistance Systems (ADAS) on all cars in the United Kingdom could reduce car crashes by 24%, researchers in

Ireland and Luxembourg have found.

The researchers from Lero, the Science Foundation Ireland Research Center for Software at University of Limerick (UL), Ireland and Motion-S, Luxembourg, also found Automatic Emergency Braking (AEB) is the most impactful technology, reducing three out of the four most frequent accident categories—intersection (by 28%), rear-end (by 27.7%), and pedestrian accidents (by 28.4%).

Based on publicly available [road safety](#) reports from the United Kingdom (U.K.) for 2019, the research team estimates that a full deployment of ADAS would reduce accident frequency in the U.K. by 23.8%, representing an annual decrease of 18,925 accidents.

Dr. Barry Sheehan of Lero at UL said, "Our research suggests that introducing ADAS across all vehicles would lower the number of [road](#) crashes by almost one quarter (23.8%). Furthermore, accidents happening in the two most frequent contexts can be reduced by 29%. That means a reduction of 7,020 accidents on urban roads with clear weather and daylight conditions and 3,472 on [rural roads](#) with clear weather and daylight conditions."

Existing research shows that connected and automated vehicles (CAV) are expected to improve road safety substantially, including reducing accident frequency and severity. According to the American Automobile Association, as of May 2018, 92.7% of new vehicles in the United States have at least one ADAS.

In the U.K. and the EU, vehicles with ADAS, including Automatic Emergency Braking (AEB), are becoming more common. Although these systems provide considerable societal benefits, this research, published by the journal of *Transportation Research Interdisciplinary Perspectives* (TRIP), has revealed their potential impact on accident

numbers across various driving contexts.

Lead author Leandro Masello, Data Scientist at Motion-S and Ph.D. Candidate at the Emerging Risk Group, UL, said that although ADAS provides considerable road safety benefits, its performance is often constrained by challenging conditions, like [adverse weather](#).

"The driving environment affects [vehicle](#) dynamics and sensor capabilities. A system that suddenly brakes to avoid a crash will perform better in dry weather conditions than in adverse conditions like heavy rain and ice, which reduce tire traction and can cause the vehicle to skid.

"Similarly, inclement weather also impairs the sensors' ability to perceive the environment accurately. For example, a snowstorm could obstruct the camera vision system or cover lane boundaries," added Mr Masello.

Dr. German Castignani, co-author and CEO of Motion-S S.A., said road safety reports are a fundamental source of information for the continuous development of the car industry as they help study the distribution of the accidents' environmental conditions.

"They provide information about the vehicles and casualties involved and the accident circumstances (e.g., geographical, temporal, and road information). Our work leverages such data to estimate the potential reductions in accidents that ADAS can mitigate," he added.

More information: Leandro Masello et al, On the road safety benefits of advanced driver assistance systems in different driving contexts, *Transportation Research Interdisciplinary Perspectives* (2022). [DOI: 10.1016/j.trip.2022.100670](https://doi.org/10.1016/j.trip.2022.100670)

Provided by Lero

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