SUVs pose greater risk of death or serious injury to pedestrians and cyclists, study shows

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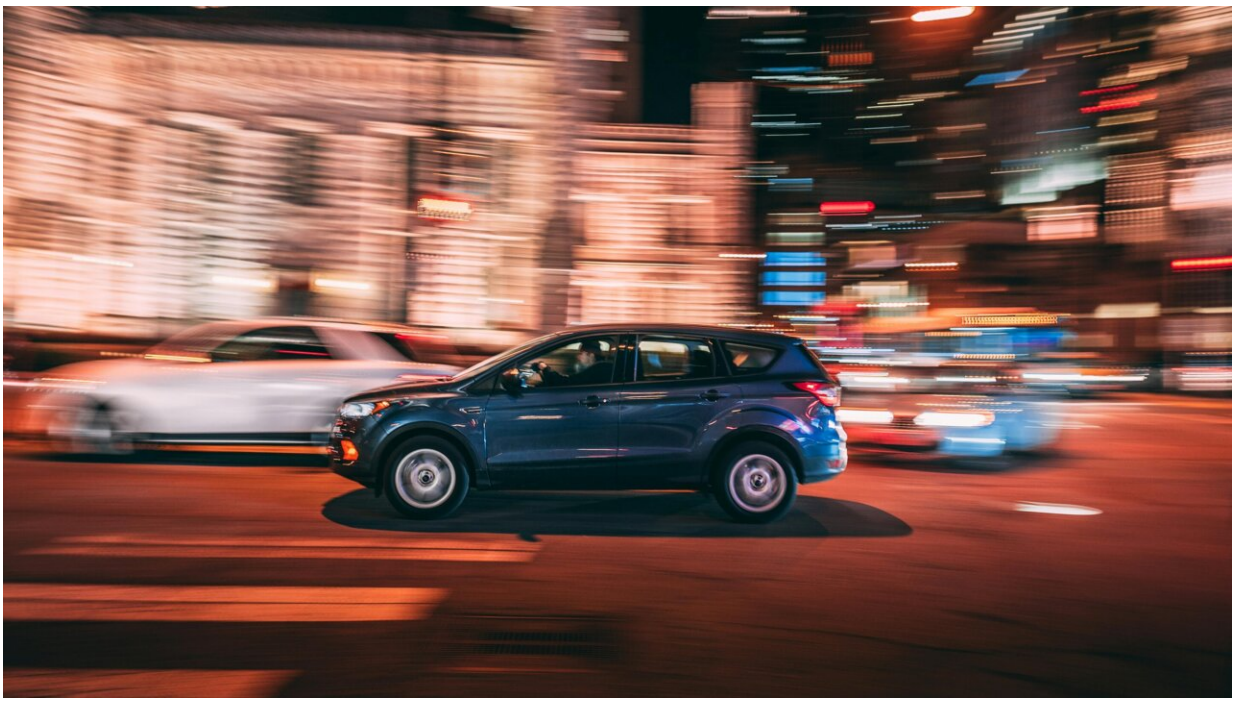

Credit: Chait Goli from Pexels

The likelihood of a pedestrian or cyclist being fatally injured is 44% higher if they are hit by a sports utility vehicle (SUV) or light truck vehicle (LTV) compared with smaller passenger cars, new research shows. For children there is an even larger effect, with a child hit by an

SUV or LTV being 82% more likely to be killed than a child hit by a passenger car.

As part of a new analysis of existing studies, researchers at the London School of Hygiene & Tropical Medicine (LSHTM) and Imperial College London gathered real-world collision data from over 680,000 collisions from the last 35 years.

They compared the severity of injuries suffered by pedestrians or cyclists struck by SUVs or LTVs with the injuries of pedestrians or cyclists struck by passenger cars. LTVs are a category of vehicle that covers SUVs, small vans and pick-up trucks – the researchers found similar increases in risk when they looked at SUVs only.

The research is published in *Injury Prevention*.

SUVs and LTVs are typically taller, wider and heavier than traditional passenger cars, such as sedans or hatchbacks. Globally, SUVs are growing in popularity, with SUVs making up 48% of new car sales globally in 2023, up from 15% in 2010.

Multiple cities worldwide have recently introduced, or are currently considering, policies that discourage the use of these large vehicles.

In the study, the authors found that in the case of a crash, pedestrians or cyclists struck by an SUV or LTV suffered more severe injuries than those hit by a passenger car. The odds of fatal injury increased by 44% for people of all ages struck by an SUV, compared with those hit by a passenger car. Among children, the odds of fatal injury increased by 82%, and among children under the age of 10 it increased by 130%.

When looking at the likelihood of having a fatal or a serious injury, as compared to a slight injury, the likelihood increased by around a quarter

(odds 24% higher in adults and 28% higher in children) for those hit by an SUV or LTV. These effects were all similar for both pedestrians and cyclists.

Previous research indicates that a key mechanism for this increased risk is likely to be the taller and blunter profile of the front end of SUVs and LTVs. A taller front end means that a pedestrian or cyclist is struck higher up on their body (e.g. the pelvis not the knees for an adult, or the head not the pelvis for a child).

A taller and blunter front end also means that the pedestrian or cyclist is more likely to be thrown forward onto the road, at which point the striking vehicle may hit them a second time or roll over their body.

Of the 24 studies analyzed, all were conducted in high- or middle-income countries, with the majority (16/24 studies) undertaken in the US. There were also studies from countries including the Netherlands, Germany and France, but none from the UK. Analyses that compared the studies from the US to the studies from the rest of the world showed broadly similar results, suggesting that the findings are relevant to other settings.

As SUVs become more common, there is an increase in their impact at the population level. At present, the authors estimate that the proportion of car crashes involving an SUV is around 45% in the U.S. and around 20% in Europe.

If all SUVs were replaced with passenger cars, the number of pedestrians and cyclists killed in car crashes would decrease by an estimated 17% in the U.S. and by 8% in Europe. The number of child pedestrians and cyclists killed in car crashes would decrease by 27% in the U.S. and by 14% in Europe.

Elsa Robinson, who worked on the study as an MSc Public Health student at the London School of Hygiene & Tropical Medicine (LSHTM), said,

"Analyzing over half a million crashes from countries from across the world tells us that SUVs and other similarly large vehicles are much more likely than traditional passenger cars to cause serious harm if they strike a pedestrian or cyclist.

"Our findings also highlight that these larger vehicles are particularly dangerous for children, especially young children. This could be because children are shorter in height, and are therefore more vulnerable to the risks of being hit by vehicles with a tall front end."

Anna Goodman, Assistant Professor at the London School of Hygiene & Tropical Medicine (LSHTM) and senior author of the study, said,

"Around the world, we have seen a huge increase in the sale of ever-larger cars. Previous research has found that this trend is substantially undermining progress towards net zero goals. Similarly, our findings indicate that this proliferation of larger vehicles threatens to undermine all the road safety gains being made on other fronts.

"Cities and countries around the world are starting to introduce measures to discourage the use of these large vehicles, and our study strengthens the road safety rationale for this."

A limitation of the research is that the individual studies analyzed relied on manufacturers' classification of what constitutes an SUV or LTV as there is no agreed legal definition. The authors say that further research is needed into the unique characteristics of these vehicles and what makes them more dangerous to pedestrians and cyclists.

More information: Do sports utility vehicles (SUVs) and light truck vehicles (LTVs) cause more severe injuries to pedestrians and cyclists than passenger cars in the case of a crash? A systematic review and meta-analysis, *Injury Prevention* (2025). DOI: 10.1136/ip-2024-045613

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