Loughborough University research pinpoints most dangerous HGV designs

HGVs with high cabs have the most blind spots and pose the greatest risk to vulnerable road users, research by Loughborough University has found.

Transport for London (TfL) commissioned the study to understand blind spots across HGVs as they are disproportionately involved in collisions involving pedestrians, cyclists and motorcyclists in the capital city.

The research team from the Loughborough Design School analysed 19 of the most popular HGVs, including construction, distribution and long haul vehicles and those with high and low cab designs.

They digitally scanned all 19 vehicles to create exact CAD models that could then be accurately assessed. Then using real accident data they were able to recreate scenarios involving vulnerable road users, placing them in a number of defined locations adjacent to all 19 vehicles and plot exactly where blind spots existed.

The team is now calling for a new standard which defines what should be visible through direct vision from a HGV. Such a standard does not currently exist, and is seen by them as a key mechanism for improving future vehicle designs.

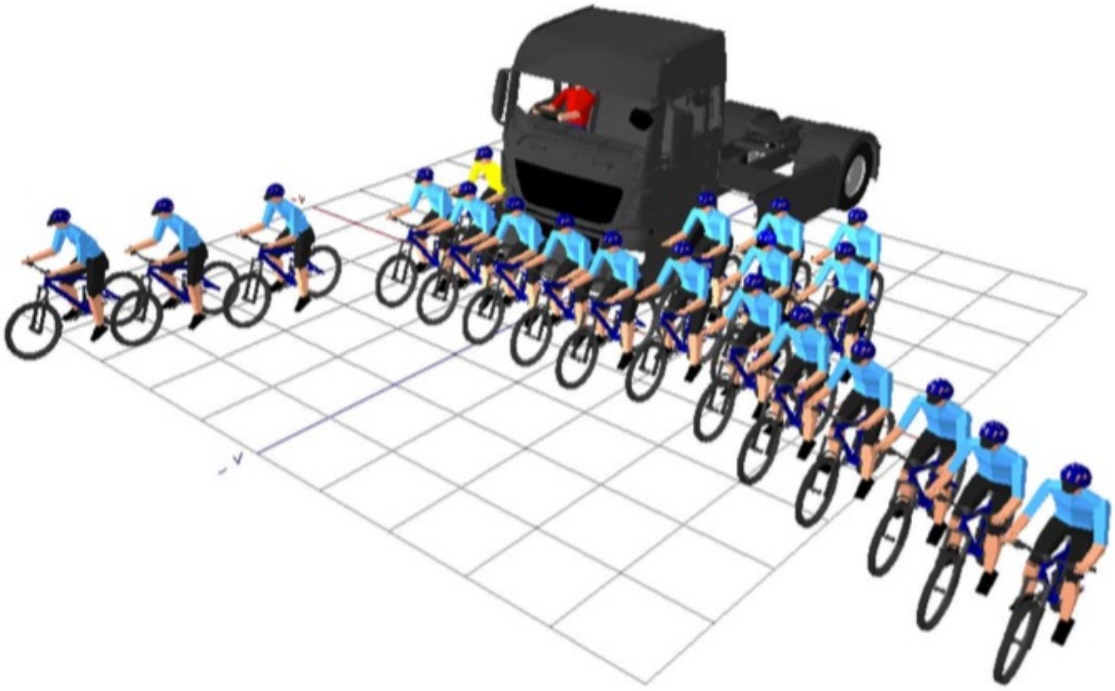
Discussing the research findings, project leader Steve Summerskill said: “We found that all standard vehicle configurations have blind spots which can hide vulnerable road users from the driver’s direct vision.

“However **the height of the cab above the ground is the key vehicle factor** which affects the size of direct vision and indirect vision blind spots. Low entry cab designs, which are the lowest of the 19 vehicles tested, demonstrated real benefits in terms of reducing direct vision blind spots when compared to standard vehicle designs.

“If you seriously want to reduce the number of collisions involving vulnerable road users and HGVs you have to improve the direct field of vision for drivers – and from our research this means lowering HGV cab designs or adopting low entry cab designs.”

Ian Wainwright, Head of Freight and Fleet at TfL, added: “The best decisions are those based on evidence, and the research that we commissioned Loughborough to undertake is another tool in the box to make the right choices to improve road safety. This research into comparing direct vision of HGV drivers will create the platform to take efforts on road safety further.”

In high work load situations when multiple cyclists and pedestrians are moving round the vehicle in city centre locations, the task for the driver is difficult. As an example of this, all of the cyclists shown in Figure 25 are not visible to the driver through the windows, with the eye point being determined by a standard sitting position (i.e. without leaning to improve the field of view).



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Loughborough University is one of the UK's leading universities, with an international reputation for research, excellence in teaching, strong links with industry, and unrivalled achievement in sport and its underpinning academic disciplines.

It has been awarded five stars in the independent QS Stars university rating scheme, putting it among the best universities in the world, and was named the best in the country for its student experience in the 2016 THE Student Experience Survey. Loughborough was ranked 4th in theGuardian University League Table 2017 and 7th in The UK Complete University Guide 2017 and was also named University of the Year in the In the What Uni Student Choice Awards 2015. Loughborough is consistently ranked in the top twenty of UK universities in the Times Higher Education's 'table of tables' and is in the top 10 in England for research intensity. In recognition of its contribution to the sector, Loughborough has been awarded seven Queen's Anniversary Prizes.