

'Element of surprise' explains why motorcycles are a greater traffic hazard than cars

January 27 2014

"I didn't see it, because I wasn't expecting it there," might be the more accurate excuse for motorists who have just crashed into a bus or a motorcycle. The mere fact that such vehicles are less common than cars on our roads actually makes it harder for drivers to notice them, says Vanessa Beanland of The Australian National University. Beanland and colleagues conducted research at Monash University on how the so-called "low-prevalence effect" increases the likelihood of accidents. The study is published in Springer's journal *Attention, Perception, & Psychophysics*.

The impact that this low-prevalence effect has on a person's ability to search through static images, such as in airport luggage screening, has been the topic of previous research. However, Beanland's research team is the first to publish results on how it influences people's ability to safely perform dynamic tasks, such as driving.

They used a driving simulator experiment involving 40 adult drivers to investigate whether it is easier for drivers to detect and respond to specific types of vehicles when they occur more frequently in surrounding traffic. The drivers had to detect two types of vehicles: motorcycles and buses. The researchers varied how frequently these vehicles appeared. Half of the subjects were subjected to a high prevalence of motorcycles and a low number of buses, with the other half experiencing the reverse.

Although participants were explicitly instructed to search for both buses and motorcycles, the researchers found that the attention of the observers was biased toward whichever vehicle occurred more frequently during the simulated detection drive. This in turn affected the speed at which drivers were able to detect low-prevalence targets. In the simulated test in which motorcycles occurred more frequently, the car drivers were able to detect them on average from 51 meters farther away than in the tests where they occurred less often. In effect, at a driving speed of 60 km/h, this allowed the drivers an extra 3 seconds to respond. Similarly, drivers had an extra 4.4 seconds to react to buses in situations where they occurred more frequently.

The results suggest that drivers' inability to always notice motorcyclists is partially due to the fact that motorcycles occur relatively rarely on our roads, and that [drivers](#) are simply not on the look-out for them. It therefore appears that by increasing the prevalence of a visual search target it is possible to effectively yet temporarily make it stand out better within a specific visual environment.

"Drivers have more difficulty detecting vehicles and hazards that are rare, compared to objects that they see frequently," says Beanland, who believes that the ability to accurately perform visual searches is crucial to ensuring safe driving and avoiding collisions.

More information: Beanland, V. et al. (2014) Safety in numbers: Target prevalence affects the detection of vehicles during simulated driving, *Attention, Perception, & Psychophysics*. [DOI: 10.3758/s13414-013-0603-1](https://doi.org/10.3758/s13414-013-0603-1)

Provided by Springer

Citation: 'Element of surprise' explains why motorcycles are a greater traffic hazard than cars (2014, January 27) retrieved 10 April 2024 from <https://medicalxpress.com/news/2014-01-element-motorcycles-greater-traffic-hazard.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.