

Mathematicians calculate the safest way home

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A mobile app that guides pedestrians along the safest instead of quickest route to their destination is being developed by researchers at Cardiff University.

Maths and computer science experts have devised a way of scoring the safety of any given area using sophisticated mathematical algorithms, which they believe could easily be implemented into a navigation [mobile app](#) to help reduce [road](#) traffic casualties.

Each year about 1.24 million deaths worldwide result from [road traffic crashes](#), making this the eighth leading cause of death globally.

According to the UK Department for Transport, pedestrians accounted for 24 percent of all road deaths in Great Britain in 2015.

At the moment, apps such as Google Maps do not account for pavements and will only give people the quickest route to their destination. These apps do not take into account the characteristics of pavements and roads and the dangers associated

with them.

In a new study, published in the journal *Accident Analysis and Prevention*, researchers have shown how a novel system for scoring the safety of an area can successfully predict the likely number of road casualties.

The computer algorithm takes into account a number of factors, such as the types and number of crossings, the type of street, the possibility of jaywalking and the [speed limits](#) of each road in a given area.

The scoring is done automatically by simply feeding in the raw data from a map of any given area, and has been tested on 15 cities in the UK – Bath, Bedford, Blackpool, Bristol, Coventry, Leeds, Leicester, Liverpool, Manchester, Nottingham, Reading, Salford, Sheffield, Swindon and York.

Of those 15 cities, Liverpool was ranked as having the most unsafe roads whereas Bath was deemed to have the safest.

The researchers believe this novel system could be of great value to city planners and developers, specifically when assessing how changes to a city's infrastructure may affect [road safety](#), such as the pedestrianizing of roads or the changing of speed limits.

In the nearer term, the team are looking at developing an app which people could use to tell them the safest possible route to their destination.

Lead author of the study Dr. Pdraig Corcoran, from Cardiff University's School of Computer Science and Informatics, said: "Google Maps is used millions of times a day to get people from A to B, yet it completely overlooks the safety of the routes that it offers to pedestrians.

"Our next aim is translate this research into a

product that the public can use. We envisage something very similar to Google Maps in which a user can input their destination and then choose a [route](#) that utilises our algorithm and gives them the safest possible journey instead of the quickest. This could definitely save lives and would go some way to reducing the high levels of casualties both here in the UK and across the world."

More information: Charlotte Hannah et al. A computational model of pedestrian road safety: The long way round is the safe way home, *Accident Analysis & Prevention* (2018). DOI: 10.1016/j.aap.2018.06.004

Provided by Cardiff University

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