



Traffic collisions often result in injury, disability, and death—leading to significant financial costs to both society and the individuals involved.

## The road to reducing traffic accidents in China

*As epidemiological experts look for measures to fight a disease that's causing hundreds of thousands of deaths worldwide, could the same approach be taken to keep drivers safe on the road? By Sarah O'Meara*

Since the outbreak of the novel coronavirus, defensive measures such as handwashing and social distancing, derived from epidemiological research into the spread of viruses, have begun to play a fundamental part in our everyday lives. However, in China, epidemiologists have been working for decades to tackle another widespread public health problem: road traffic accidents—similarly viewing them as a noncommunicable “disease” that claims the lives of tens of thousands of citizens each year.

In 2018, 63,194 traffic accident fatalities were recorded by the country's National Bureau of Statistics (1). Since 1990, China has ranked first in the world for traffic fatalities (2), explains Wannian Liang, an epidemiologist at the country's **National Health Commission**, who is also leading China's efforts to fight the spread of COVID-19.

“The increase in traffic accidents has brought huge disasters to countless families,” says Liang.

Since China's reform and opening period at the end of the 1970s, when the country shifted away from a planned economy toward a market-based model with Chinese characteristics, it has experienced rapid growth. China is now the world's largest auto market. In 2018, it produced approximately 23.5 million passenger cars and claimed a 27.6% share of total global vehicle production (3).

However, such explosive growth resulted in a dramatic rise in traffic accidents. In the 1980s, Chinese epidemiologist Huiqing Jin took the lead in conducting epidemiological studies on car accidents (4). Shenyong Wang of **Jinan University** and other researchers at multiple institutions soon followed him, carrying out several relevant studies in a cross-disciplinary effort to better understand how, why, and when these accidents occurred—and how government policy could help ensure better health outcomes for drivers and passengers. Their work led to the adoption of China's first road traffic safety law in 2003.

According to Jihong Zhou, director of China's Institute for Traffic Medicine, this law, among several others, helped curb the rapid increase of traffic accidents and fatalities in China. The number of serious traffic accidents (i.e., resulting in death or disability) dropped from 49 per year on average before 2008 to 2 in 2019, a drop of more than 90%, says Liang.

Kumares Sinha, professor of civil engineering at **Purdue University** in Lafayette, Indiana, thinks China's approach to prevention and control of major traffic crashes is similar to its prevention and control of the COVID-19 virus.

“The country has employed a public-health based program involving a series of measures including driver screening, along with enforcement of vehicle inspection and traffic laws, and improved roadway features and surveillance,” says Sinha. “This concerted effort has achieved remarkable results, and may be useful for other countries to learn and adopt.”

### A fast-moving nation

The causes of traffic accidents in China have changed over time in line with the country's economic growth. In the 1980s, most were related to push bikes and pedestrians, says Zhou. As new modes of transportation were introduced, they were accompanied by a high casualty rate, he explains. In the 1990s, there was a rise in motorbike accidents in the southern city of Guangzhou, where many of China's economic changes were being rolled out in pilot form. By the start of the following decade, as China's road system was developed, 45% of those who died in highway accidents in China were pedestrians, unused to the new infrastructure. In 2020, China faces the challenges posed by the uptick in the use of domestically manufactured electric bikes (e-bikes), which have risen in production from 56,000 in 1998 to 32 million in 2018 (5, 6). Between 2013 and 2017, more than 56,000 traffic accidents were caused by e-bikes, resulting in over 8,000 fatalities and 63,000 injuries (7).

### Challenge for epidemiologists

China faces a unique set of challenges when it comes to road safety. Changjun Wang, director of the **Traffic Management Research Institute** of China's **Ministry of Public Security**, says that the country entered **cont.**

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