

11th World Conference on Transport Research Safety Tracks Report: a broad array of safety topics as the world becomes more motorized



More than three dozen papers on various aspects of traffic safety were presented at the [11th World Conference on Transport Research \(WCTR\)](#) in Berkeley in June. The conference, hosted by the [University of California Transportation Center](#) and the [Institute of Transportation Studies, Berkeley](#), is held every three years, draws managers, policy analysts, advisers, operators and academics with an interest in transport research from around the globe. The 2007 conference was the first to be held in the United States. The Traffic Safety Center coordinated the event's eight sessions devoted to traffic safety, which ranged from discussions of safety laws and enforcement to truck and rail safety, pedestrian safety, and motorcycle safety. A representative sampling of the papers presented follow, with links to the papers themselves where they have been provided.

803

[Framework for Analysis and Modeling of Driving Behavior Incorporating In-Vehicle Data Recorders](#) (MS Word)

Researchers created a hypothetical framework for using In-Vehicle Data Recorders (IVDRs) to provide feedback to drivers on their driving behavior. They propose a study whereby traditional methods of data gathering, like self-reports, are combined with IVDR data, environmental data, driver characteristics, and drivers' perceptions and attitudes towards driving in order to provide a more comprehensive tool for monitoring and analyzing driver behavior.

619

[Automated Speed Enforcement \(ASE\)](#)

This presentation on Automated Speed Enforcement (ASE) examined technology for improving dangerous driving behaviors. ASE combines radar and video technology to issue citations. It is increasing in popularity and is used in 23 states and Washington D.C. Researchers found ASE caused a two to 15 percent reduction in speed and a nine-to-50 percent reduction in crashes though it is not certain what effects ASE had on more serious crashes. Another positive aspect is that it is financially self-sustaining and requires no subsidy and in some states actually generates revenue. Some, however, worry that ASE threatens an individual's right to privacy and freedom of association, though legal scholars say this complaint is unwarranted. There are also concerns about its effectiveness and accuracy.

877

[Cost-Benefit Analysis of Vehicle Safety Regulations](#) (216K PDF)

Vehicle safety regulations revealed that manufacturers are far ahead of regulations, according to the authors. For the most part, safety

patents precede regulations by five years. By the time regulations come into play, many vehicles are already in compliance. Unfortunately, driver behavior has not improved with the new safety measures; the safer the car is, the more dangerous the driving tends to be. So, while manufacturers are ahead of governing agencies in creating safer cars that decrease fatalities, these measures have the unintended and undesired effect of increasing accident rates.

616

Identification of the Most Effective Factors Affecting Average Seatbelt Usage Rates in the United States (MS Word)

This study examined seatbelt usage and patterns in rural areas, where accidents account for 74 percent of fatalities. The researchers found that there are obvious legislative and enforcement measures that could increase the rate at which people wear seatbelts. For example, if fines for lack of compliance are raised by just \$10, the rate of usage goes up by almost five percent. Higher levels of education and higher socio-economic populations also have a higher seatbelt usage rate. One interesting finding: People in high crime neighborhoods tend to buckle up more than usual, too, perhaps because there is a greater police presence or because drivers feel at greater risk in these neighborhoods. African Americans as a whole and young African American men and young Hispanic men have especially low rates of seatbelt usage.

58

Safety Corridor Signing Program (Presentation Abstract MS Word)

Does special signage increase safer driving? This group of researchers found that the only aggressive driving characteristic that decreased was speeding. Based on evidence gathered from video footage, there was no benefit at all from the signing. Law enforcement officials found that drivers did not slow down, and the doubling of fines merely meant that drivers were more likely to contest their tickets.

1090

Passengers Evacuating in Rail Tunnels: A Simulation Study to Predict Evacuation Times (MS Word)

Using the microscopic pedestrian simulation tool NOMAD, the authors provide insights into passenger evacuation of trains in tunnels. They examined influences of vehicle load, calamity location, escape path width, escape door capacity, distance between escape doors and passenger walking speed on total evacuation time. Other important conditions to be considered were fire characteristics and smoke diffusion, procedures and standardization of train evacuation, human behavior, the alarm, injuries, and ventilation. The ability to model evacuations could help implement safety measures for new trains and tunnels.

1068

A Methodology to Investigate and Visualize the Geographical Provenance of Road Traffic Casualties in Deprived Areas (MS Word)

Do poorer neighborhoods experience a greater number of pedestrian traffic deaths? Apparently not. This study found that people have accidents in neighborhoods of basically the same economic level as the one in which they live, contradicting the economic deprivation theory.

697

Study on Socialized Management Solutions to Traffic Safety for Urban Migrants (MS Word)

Urban migrants' traffic safety was the focus of this study in Kushnan City, China. In 2005, migrants were responsible for 127 accidents and 130 deaths in this city of 689,000 migrants and 640,000 locals. The authors found that migrants' trips were mainly to work, on non-motorized vehicles, by walking, or on motorcycles, with an average travel time of about 18 minutes. The hours when most accidents occurred were between 6 and 8 a.m. and between 5 and 9 p.m. Because migrants are most often injured going to and from work, the authors propose that work places create on-site dormitories for their staff. They also recommend trip management, whereby safe routes of travel are created for migrants, as well as education in traffic rules and proper maintenance of vehicles to improve traffic safety for migrants.

171

Accident Risk Factors of Young Drivers and Targeted Countermeasures (MS Word)

After examining the risks faced by young drivers in Greece, the researchers came up with an intriguing set of countermeasures. To combat the higher risks of weekend driving, they suggest young drivers should not be behind the wheel on Saturdays and Sundays, although an alternative mode of transport should be provided. And, since larger engine size leads to more accidents, smaller engines should be mandatory for younger drivers. Education, insurance cost incentives, and a graduated licensing scheme, starting with a one-year provisional license could also reduce the risks young drivers face on the road. Monitoring and enforcement would need to be part of the program too.

502

Modelling the Relationship Between Child Pedestrian Accidents and Land Use (MS Word)

Though accident rates for child pedestrians have gone down in England, the rate is still higher than that of other European countries and is the leading cause of accidental death for children. The authors examined land use and child casualties in 26 wards of Newcastle. They found that secondary retail, low-density residential land use and educational sites had higher rates of child pedestrian casualties. High density residential and areas with a high concentration of street junctions showed lower child casualty rates.

1387

Effects of the Existence of Pedestrian Signal at the Signalized Intersection (MS Word) The researcher set out to determine if the existence of a pedestrian signal at a signalized intersection helps drivers to make more balanced decisions about when to begin slowing down. He found that pedestrian signals help drivers anticipate the change of a vehicle signal, which led to lowered speeds and lowered acceleration at intersections. This is particularly important in snowy conditions, where the study took place, as abrupt stopping easily leads to skidding and more rear-end collisions.

450

Accident Reconstruction of Pedestrian-Vehicle Collisions (MS Word) Pedestrian/vehicle collisions account for 40 to 50 percent of India's traffic fatalities, compared to the U.S. where they account for only 13 percent. In urban Indian areas, up to 75 percent of fatalities

involve a pedestrian. The researchers' model focuses on determining the speed that a vehicle is going prior to hitting a pedestrian. They were able to estimate the speed the car was traveling by looking at how far a pedestrian was thrown and by examining the launch angle of the person and the road gradient. The researchers argue that this is a more precise model than what has been available to date, because the road gradient has been ignored previously, leading to overestimation of a vehicle's speed.

173

Contributory Factors to Pedestrian Injury Severity in Traffic Crashes (MS Word) Pedestrian safety is an important issue in Hong Kong as pedestrians account for 30 percent of casualties and 63 percent of fatalities. In response to these high percentages the researchers have presented a predictive model for pedestrian injury risk in Hong Kong. The injury, demographic, crash, environmental, geometric, and traffic characteristics of 73,746 pedestrian casualties from 1991 to 2004 were analyzed. The researchers suggest that road safety campaigns, pedestrianization, and traffic calming strategies be used to reduce the high rate of pedestrian deaths and fatalities.

994

Pedestrian Accident Risk Assessment in Urban Systems Using Virtual Laboratory SAMU (MS Word) The researchers describe a virtual laboratory they have developed to simulate the interactions between cars and pedestrians in a city. They found that by running simulations and controlling general traffic conditions for cars and pedestrians, it is possible to count the number of accidents on cells of the network or on the aggregate network for an ecological analysis of the risk.

488

Modeling motorcyclist injury severity under various traffic control measures at T-junctions in the UK (MS Word) Researchers have found that T-junctions are particularly dangerous for motorcycle riders in the U.K., causing more severe and more frequent accidents. In his study, the authors investigate factors and draw recommendations for motorcycle safety. They also examine aggressiveness toward motorcyclists and the impacts various crash configurations have on injury severity.

490

Behavioural and Analytical Considerations in Transport Safety Policy (MS Word) Robert Noland gave a presentation on human behavior and its unanticipated effect on traffic safety. He argues that a theoretical framework for guidance is needed if researchers want to improve decision making, save lives, decide where to spend money, evaluate policies, test hypothesis, test forecasts, and conduct cost-benefit analysis. In his presentation and paper Noland discusses various "risk" theories that could be part of this framework.

For example, risk compensation theory (Peltzman, 1975), which Noland discusses, would suggest that drivers will trade off between reductions in risk and increases in the consumption of other goods, primarily mobility, i.e., any regulatory measure to reduce risk would lead to a response by the driver that either reduces or negates the measure. For example, if a lane is widened to make it safer for travel, drivers may choose to go faster since they feel that it is safer to do so. Noland goes on to critique road safety studies, lamenting that most are not grounded in theory and may make use of inappropriate statistical models. They become statistical dumps with no guidance, which makes interpretation difficult, he says. Studies often don't control for "other" policies, other explanations to explain a trend. Also, many interesting results are often hidden because researchers are not sure what to do with unexpected results and these results often do not get published.

723

The Role of Medical Care and Technology Improvements in Reducing Motorcyclist Fatalities (Title in Presentation - Income and Traffic Fatalities: An Analysis of Effects on Different Groups of Road Users) (MS Word) Though traffic fatalities have decreased by 55 percent per capita in countries of the Organization for Economic Cooperation and Development (OECD), motorcycle fatalities have decreased only 44 percent. Motorcycle death rates are actually disproportionately high around the world. A pattern emerges that shows a dramatic increase in fatalities as a country develops, and as it stabilizes these high death and casualty rates decrease. This study examines the effects on traffic fatalities of improved medical care and technology. Researchers examined the average length of inpatient stay in the hospital, physicians per capita and infant mortality rate. They found that improved medical care and technology reduced fatalities.

1400

A Comparison of the Kinematical Features between Motorcycles and Passenger Cars in Urban Networks (MS Word) Motorcyclists are viewed as lacking in discipline, aggressive, risk taking, and vulnerable. Examples of motorcyclists' unruly driving include filtering through traffic, traveling alongside another vehicle, oblique following, and moving to the head of the traffic queue. This study provides a kinematical comparison between motorcycles and cars and uncovers why it is that motorcyclists behave aggressively when they are actually more vulnerable on the road. The researchers find that in urban networks motorcyclists do behave more aggressively. They travel closer to other vehicles and at higher speeds. They conclude that motorcyclists are really no more aggressive than other drivers, as the agility of the motorcycle allows riders to take more risks.

1490

Added Risk by Rainy Weather on the Roads of Normandie-Centre Region in France (MS Word) This study measured how much risk is added to driving conditions during rainy weather in the Normandy region just northeast of Paris. Researchers found it difficult to acquire reliable data. Challenges included inconsistencies in human observation, obtaining thorough police reports, and finding the exact location of an accident in relation to a meteorological station.

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