

# **Dr. Richard Tay**

## **Nomination for the Road Safety Engineering Award**

Dr. Richard Tay, the AMA/CTEP Chair in Road Safety of the Schulich School of Engineering at the University of Calgary, is impacting the safety of roads locally, provincially, nationally and internationally on three fronts:

1. research on various subjects related to road safety, such as road user behaviour, vehicle safety, roadside infrastructure, traffic enforcement, and signage and advertising;
2. road safety education for the engineers of tomorrow; and,
3. advocacy.

In September 2004, after a worldwide search to find an internationally renowned, senior researcher who had established an outstanding reputation in the area of road safety, Dr. Tay was appointed as the AMA/CTEP Chair in Road Safety at the University of Calgary. He joined the Schulich School of Engineering after a five-year period at Queensland University of Technology (QUT) in Brisbane, Australia.

Dr. Tay has extensive international experience in transport economics and policy. He has lectured at Nanyang Technological University in Singapore, Chinese University in Hong Kong and Lincoln University in New Zealand. He was also a visiting scholar at the Massachusetts Institute of Technology. He is currently an adjunct professor at the Centre for Accident Research and Road Safety at QUT.

As the AMA/CTEP Chair in Road Safety, Dr. Richard Tay leads a multidisciplinary team that focuses on the complexities of road engineering, vehicle design, driver behaviours, and other factors that make up the totality of the traffic safety model. The Alberta Motor Association (AMA) is an integral partner in the funding of the Road Safety Research Chair, having committed \$750,000 toward an endowment fund for this research chair, which is Canada's first in Road Safety.

"This is a timely and relevant appointment," says Don Szarko of the Alberta Motor Association. "Our partnership with the Department of Civil Engineering is a positive step towards increasing the safety of Alberta roadways."

The Centre for Transportation Engineering & Planning (C-TEP), which was created out of the "synergy" between public and private stakeholders in the transportation sector, is another partner of the Road Safety Chair. C-TEP strives to be a national leader in providing professional development and applied research in road transportation engineering and planning, to continually improve road systems in Canada.

Industry, governments, and academic institutions are beneficiaries of the Road Safety Chair, in terms of developing safety expertise that will serve Canada's needs. The general public, of course, ultimately benefits from any and every improvement in road safety. The Chair can also position Canada as a leader in road safety research and exporter of knowledge and expertise. Innovation in a variety of research areas will bring international recognition for the work conducted by the Chair. Further, it is expected that new initiatives in road safety will be tested within Canada, particularly Alberta.

Dr. Tay's research and teaching involves the application of engineering, health, economics, marketing, psychology and statistical models to analyze road crashes and evaluate road safety policies and programs, as well as the development, implementation and evaluation of multidisciplinary measures to improve road safety and reduce the social cost of road crashes.

## **Research**

Dr. Tay has been invited to present his research to many national and provincial government road safety committees in Canada and around the world, including the Alberta Department of Infrastructure and Transportation, Alberta Department of Seniors and Community Support, the Land Transport Safety Authority of New Zealand, New Zealand Police Service, the Parliamentary Committee Road Safety Committee and the Parliamentary Committee on Drugs and Crime Prevention from the Australian State of Victoria, the National Safety Council of Ireland, the Vietnamese Ministry of Health, the Malaysian Ministry of Health, and the Chinese Ministry of Health.

Dr. Tay has also been appointed to review many major road safety programs in Canada and around the world. These programs include motorcycle and driver training and licensing programs, bicycle helmet legislation, various road safety enforcement, advertising and education campaigns for drunk driving and speeding, as well as community initiatives, such as novice driver mentoring and bicycle helmet wearing incentive schemes.

Dr. Tay has published approximately 150 book chapters, monographs, scientific papers, and conference papers and presentations. He has served on the editorial boards of, and as a guest editor for, several scientific journals' special issues on road safety. He has also produced numerous other confidential reports for various governments and multinational corporations.

Some of Dr. Tay's current projects include:

- Understanding road user behavior: Developing and testing models, with a focus on the road safety implications, that examine the personal, social,

economic and environmental influences on various driver behaviors, including drunk driving, drunk walking, speeding, driving while fatigued, and aggressive driving.

- Vehicle demand and safety: Modeling consumer demand of vehicle safety and analyzing the impact of their choices on road safety, with special focus on the interactions between consumer choice and public policy.
- Road safety advertising: Developing theoretical models of persuasion for road safety publicity campaigns and evaluating the effectiveness of drunk driving, speeding and fatigue advertisements in changing driver attitudes, intentions and self-reported behaviours, as well as the overall impact on crashes.
- Traffic enforcement: Developing theoretical models of deterrence for traffic enforcement and evaluating the effectiveness of random breath testing and speed camera programs in changing driver attitudes, intentions and self-reported behaviours as well as the overall impact on crashes.
- Fleet safety: Modeling fleet safety culture in organizations and evaluating fleet management systems, performance based insurance, driver induction and training programs, driver safety discussion groups, fleet safety newsletters, driver alarm and security systems, and crash avoidance systems in several large fleets.
- Road safety programs and policy evaluations: Evaluating the process and outcome of various road safety policies and programs, as well as various community initiatives, such as a school based incentive program to increase the wearing of bicycle helmets and a young driver mentoring program.
- Intelligent transport systems (collaborative research): Examining the road safety effects of existing intelligent transport systems (ITS) and developing new technologies to improve road safety.
- Highway engineering (new area): Examining the effects of highway geometry and design on crashes and other performance indicators, with special focus on their interactions with different road users, and evaluating the impact of engineering treatments on road crashes.

#### *Recent Invited Seminars, Lectures, Workshops and Keynote Speeches*

- Effects of Street Patterns on Traffic Safety, Hong Kong Institution of Engineers, February 2008
- Creating a Culture of Safety, pre symposium workshop, *Intersect Symposium*, Edmonton, AB, January 2008

- Driver Licensing and Re-testing Research, *Roundtable on Seniors Transportation*, Edmonton, AB, November 2007
- Effectiveness of Mandatory Re-testing of Drivers in Alberta, *Roundtable on Seniors Transportation*, Edmonton, AB, November 2007
- Road Safety Management, *National Workshop on the Roles and Responsibilities of Government*, Dhaka, Bangladesh, April 2007
- Ageing Driver Testing and Licensing Research, *Mobility of Seniors*, Edmonton, AB, November 2006
- Road Safety beyond Engineering Border: Education Campaigns, *Transportation Association of Canada Annual Meeting*, Charlottetown, PEI, September, 2006
- Traffic Enforcement: Manned versus Automated Enforcement, *International Symposium of Road Safety*, Hong Kong, August 2006
- Targeting Education Campaigns for Risky Drivers, *UK Fire & Rescue Annual Conference*, Brighton, UK, July, 2006
- The Effectiveness of Road Safety Awareness Campaigns, *Canadian Institute of Transportation Engineers Conference*, Banff, AB, May, 2006
- Ageing Drivers: Storm in a Teacup? Invited Speaker, *Eye and Auto 2005 Conference*, Detroit, MI June 2005.
- Road Safety in Alberta, presentation to the Alberta Motor Association Annual General Meeting, 2004 onwards
- Comparison of Rider Characteristics in Two Motorbike Licensing Systems: Preliminary Results from the Evaluation of Q-Ride, *Zen and the Art of Motorcycle Safety Symposium* organised by the National Roads and Motorists Association, Sydney, Australia, October 2002

## Education

Dr. Tay is currently teaching the only undergraduate course on road safety in North America. The course, *Introduction to Road Safety*, is offered to fourth-year civil engineering students in the Schulich School of Engineering at the University of Calgary.

The course presents the theory and evidence in accident analysis and prevention. Topics include Haddon's matrix, crash data analysis, traffic enforcement, road safety advertising, fleet safety, road safety audits, vehicle safety and program evaluation. Students acquire an understanding of the fundamental concepts and methods used in road safety. On completion of the course, students are able to gather and interpret various road crash data, appreciate the role of multidisciplinary approaches in addressing road safety, understand the models for conceptualizing the factors influencing road crashes, understand the models used to develop preventive strategies, identify different approaches to implementing and evaluating road safety countermeasures, and appreciate the role of government, industry and community groups in road safety.

Dr. Tay also teaches a graduate level course, *Advanced Topics in Road Safety*, at the University of Calgary. This course is designed to provide graduate students with a strong theoretical and methodological foundation for road safety research. It focuses on the analysis of factors contributing to road crashes and the evaluation of road safety policies and programs. Topics include road design and roadside furniture, traffic control, vehicle design and protective devices, traffic enforcement and road safety campaigns. On completion of the course, the students are able to identify road safety problems through the analysis of road crash data and other information sources, use theoretical models to conceptualize the factors underpinning road safety problems and related countermeasures, and use qualitative and/or quantitative methods to analyze road safety problems

Dr. Tay has supervised and is supervising numerous postgraduate students in areas such as road safety advertising campaigns, traffic enforcement, fleet safety, highway engineering, driver behavior (speeding, drunk driving, aggressive driving, etc.), and accident analysis and prediction models.

## **Advocacy**

In addition to invitations to present his research to many local and national government road safety committees and appointments to review many major road safety programs, Dr. Tay has been invited to serve on many government panels, committees and task forces on road safety in Canada and around the world.

At present, he is a member of the Traffic Safety Plan Advisory Committee, as well as subcommittees on Enforcement, Communications, Engineering, First Nations, Research & Legislation and the Overall Traffic Safety Plan Working Committee for the Alberta government. At the national level, he is a blue ribbon member of the road safety round table organized by Transport Canada, Canadian Automobile Association and Canadian Council of Motor Transport Administrators. At the international level, he is a member of the Safety Workforce Subcommittee of the Transportation Research Board in USA and was a member of several government task forces in Australia and New Zealand.

Dr. Tay is an invited board member of the Centre for Transportation Engineering and Planning and the Alberta Traffic Safety Foundation. He is also a member of the Canadian Association of Road Safety Professionals, Institution of Transportation Engineers and its Transportation Safety Council, Australian College of Road Safety, Alberta Safety Council, Canadian Transportation Research Forum, Transportation Association of Canada, Canadian Safety Council, Chartered Institute of Transport and many other professional bodies in business and social sciences.

### *Recent Invited Government Dialogues, Committees & Panels*

- Policy Committee for the Study of Traffic Safety Lessons from Benchmark Nations, Transportation Research Board, National Academies of Sciences, USA, 2007-2008
- Policy Committee for the Study of Supply and Demand for Highway Safety Professionals in the Public Sector, Transportation Research Board, National Academies of Sciences, USA, 2006-2007,
- Task Force on Highway Safety Workforce Development, Transportation Research Board, National Academies of Sciences, USA, 2007 onwards
- Subcommittee on Highway Safety Workforce Development, Transportation Research Board, National Academies of Sciences, USA, 2006-2007
- Traffic Law Enforcement Committee, Transportation Research Board, National Academies of Sciences, USA, 2006 onwards
- Subcommittee on Safety Data Analysis, Transportation Research Board, National Academies of Sciences, USA
- Road Safety Standing Committee, Transportation Association of Canada, 2004 onwards
- Road Safety Awards Committee, Transportation Association of Canada, 2005 onwards
- Expert Advisory Panel, Community Mobilization, Office of Road Safety, Alberta Government
- Expert Advisory Panel, Communications, Office of Road Safety, Alberta Government
- Expert Advisory Panel, Highway Engineering and Infrastructure, Office of Road Safety, Alberta Government
- Expert Advisory Panel, Research and Evaluation, Office of Road Safety, Alberta Government
- Expert Advisory Panel, Business Plan, Office of Road Safety, Alberta Government
- Advisory Committee, Traffic Safety Plan, City of Edmonton, 2006
- Advisory Committee, Capital Region Intersection Safety Partnership, Alberta, 2006
- Petroleum Technology Alliance Canada Driving Safety Working Group, 2005 onwards
- Blue Ribbon Panel for Road Safety, Transport Canada, 2004-2005
- Main Advisory Committee, Traffic Safety Plan, Alberta Government, 2004-2005
- Research and Legislation Subcommittee, Traffic Safety Plan, Alberta Government, 2004-2005
- Enforcement Subcommittee, Traffic Safety Plan, Alberta Government, 2004-2005
- Communications Subcommittee, Traffic Safety Plan, Alberta Government, 2004-2005

- First Nations Subcommittee, Traffic Safety Plan, Alberta Government, 2004-2005
- Overall Plan Subcommittee, Traffic Safety Plan, Alberta Government, 2004-2005
- Inquiry into Violence with Motor Vehicle Use, Drugs and Crime Prevention Committee, Parliament of Victoria, Australia, July 2004
- Discussions on the efficacy of road safety campaigns in Australia, National Highway Traffic Safety Administration and Transportation Research Board, USA, 2002
- Road Safety Research Forum, Queensland Department of Transport, 2000-2002
- Road Safety Researchers Network, Queensland Police Services, 2000-2003
- Expert Panel, Queensland Road Safety Inventors' Forum, 2002
- Research Convention, Council of Australian Ambulance Authority, 2002.
- Discussion on road safety research and policy, Victorian Parliament Road Safety Committee, 2002
- Government Steering Committee, Evaluation of the Enhanced Advertising and Enforcement Activities during the Holidays Period: October 2001 - March 2002, Queensland, Australia
- Common Solutions for Common Problems Workshop, Victoria Department of Health, Royal Automobile Club of Victoria and Transport Accident Commission, 2001
- Road Safety Summit, Queensland Department of Transport May 2000

### *Commentary in Mass Media*

Dr. Tay is regularly invited to comment on land transportation and road safety issues for CBC Radio, QR77, BC Radio, QR77 segment on traffic reports, CTV News, A-Channel News, Global News, Calgary Herald, Canadian Press plus news media in Singapore, UK, Bangladesh, Hong Kong, Australia and Korea.