



**SEMINAR**

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The Hong Kong Polytechnic University - Department of Civil and Structural Engineering  
The Chartered Institute of Logistics and Transport in Hong Kong (CILTHK)

**SPATIAL FACTORS ASSOCIATED WITH  
PEDESTRIAN FATALITIES AND INJURIES**

by

**Prof. Robert Noland**

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Rutgers, The State University of New Jersey, USA*

**Abstract:**

Pedestrian fatalities and injuries are a growing concern in many countries, especially those that are rapidly transforming their cities to enable widespread car usage. This presentation will initially cover some of the fundamental theory associated with understanding road safety and mobility. A spatial analysis of pedestrian fatalities and injuries in the State of New Jersey will then be presented. Using geo-coded data on fatalities and injuries a maximum-likelihood negative binomial model is estimated to examine how various spatially defined variables, including road, demographic, and land use characteristics may be associated with fatalities and injuries. Due to suspected spatial correlation in the data we also employ a conditional autoregressive Bayesian model using Markov Chain Monte Carlo simulation, implemented with WinBUGS software. While the injury model did not reach a stable convergence, the fatality model is broadly similar to the maximum-likelihood estimate, but provides better inference on the distribution of parameter values. We supplement the statistical analysis with a demonstration of the power of Google Streetview™ as a visual analysis tool and discuss future research using this technique. Overall results suggest that areas with greater population density have fewer fatalities, and that those with more intense employment have both greater fatalities and injuries. Lower income areas tend to have more victims, but those from lower income areas also tend to be victims in different areas. Our visual analysis suggests that large roads are likely associated with pedestrian fatalities, as supported by the multivariate results. Implications for road development and policy are discussed.

**Biography:**

Robert Noland is a Professor at the Edward J. Bloustein School of Planning and Public Policy and serves as the Director of the Alan M. Voorhees Transportation Center. He received his PhD at the University of Pennsylvania in Energy Management and Environmental Policy. Prior to joining Rutgers University he was Reader in Transport and Environmental Policy in the Department of Civil and Environmental Engineering at Imperial College London, a Policy Analyst at the US Environmental Protection Agency and also conducted post-doctoral research in the Economics Department at the University of California at Irvine. The focus of Dr. Noland’s research is the impacts of transport planning and policy on environmental outcomes. This is defined very broadly to include not just air and water quality impacts, but also impacts on safety, climate, health, and other factors associated with overall quality of life. Active research areas include examining the impact of induced travel on vehicle emissions; understanding the policy implications of induced travel and behavioral responses to new transport capacity; investigation of policies to mitigate the climate impacts of aviation, in particular those associated with contrail formation; micro-simulation of pedestrian-vehicle interactions to provide an understanding of the costs and benefits associated with policies to improve pedestrian flow; analysis of behavioral issues associated with transport safety policies and empirical analyses of safety data, and assessment of the economic effects of transport investments. Dr. Noland’s research has been cited throughout the world in debates over transport infrastructure planning and environmental assessment of new infrastructure. Dr. Noland is currently the Associate Editor of Transportation Research-D (Transport and Environment) and the International Journal of Sustainable Transportation and is Chair of the Transportation Research Board Committee’s on Joint Sub-committee on Transportation and Global Climate Change.

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**Date:** 14 December 2009, Monday  
**Time:** 5:30 pm – 7:30 pm (5:30 - 6:00 reception)  
**Venue:** Room N001, The Hong Kong Polytechnic University

**\*\*\* ALL INTERESTED ARE WELCOME \*\*\***

**For further information call Prof. William H.K. Lam at Tel.: 2766-6045  
FREE Admission. Please reserve your seat with Ms. Connie Lam at Tel.: 2766-6070 or Fax: 2334-6389**

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