Analysis of Highway-Safety Data: 
Current and Future Methodological Challenges

FRED L. MANNERING

Charles Pankow
Professor of Civil Engineering
Purdue University

Thursday –May 22, 2014
4:00 - 5:00 pm
Refreshments available at 3:30 pm

Location:
Transportation Center, Chambers Hall
Lower Level, 600 Foster St., Evanston

Abstract: Worldwide, more than 1.2 million people die annually in highway-related crashes and as many as 50 million more are injured – which imposes an enormous economic toll as well as causing immense grief and suffering. This problem is only expected to become worse in the coming years with the World Health Organization projecting highway-related crashes to be the 5th leading cause of death in the world by 2030. Given these numbers, the proper analysis of highway-crash data is critical for developing effective policies to reduce the frequency and severity of highway crashes. However, highway-crash data present many complex methodological challenges that are far too often overlooked by governmental agencies and transportation-safety researchers alike. These methodological challenges include factors relating to cross-sectional and temporal unobserved heterogeneity (resulting from data limitations and other sources), endogeneity and self-selectivity (a reflection that accident outcomes are often tied to interrelated processes and driver decisions), and temporal and spatial correlations (the possibility that accidents may be tied over time and space).

In this talk, numerous examples of such methodological challenges (drawn from a variety of past studies) are used to show the often subtle issues involved in the analysis of highway-crash data as well as their implications if not appropriately addressed. The talk concludes with a discussion of potentially fruitful methodological directions and how these directions may help in the analysis of existing and emerging data sources.

BIO: Fred Mannering is currently the Charles Pankow Professor of Civil Engineering at Purdue University with a courtesy appointment in the Department of Economics. He received his BSCE from the University of Saskatchewan, MSCE from Purdue University and PhD from the Massachusetts Institute of Technology. Dr. Mannering’s expertise is in the application of statistical and econometric methods to study a variety of subject areas including highway safety, transportation economics, automobile demand, and travel behavior. His body of work has been cited over four thousand times in Scopus, over thirty-five hundred times in the Institute for Scientific Information (ISI) databases, and over eight thousand times in Google Scholar. Dr. Mannering has published over 100 refereed journal articles, 2 text books, over 60 other publications (conference proceedings, project reports, book reviews and commentaries), and has given over 120 invited lectures and presentations at professional conferences.