CE 890 Graduate Seminar

SPEAKER: Mohammad Saad Shaheed   (Advisor: Dr. Sunanda Dissanayake)

TOPIC: "Helmet Law and Other Factors Contributing to Motorcycle Fatalities at State Level"

DATE: March 24, 2010

TIME: 4:00 p.m. (refreshments at 3:45 p.m.)

PLACE: 2144 Fiedler Hall

ABSTRACT

With the rapid increase in the number of motorcycle fatalities in the United States, motorcycle safety is a major concern in improving overall highway safety experience. Motorcycles made up of only 3 percent of all registered vehicles of 6.7 million in the Unites States for the year 2006 and had a share of only 0.4 percent of all vehicles miles traveled of 12,401 millions. However, the motorcycle fatalities in the year 2007 consisted of 14.5% of the total fatalities in the Unites States. As the roadways are getting safer for other vehicles, motorcyclists are becoming the vulnerable group making it necessary to pay immediate attention to improve the safety of the motorcycle riders. This study aimed to investigate the state-level motorcycle rider fatality rates while considering various factors including helmet law. There are three types of helmet laws in the United States as mandatory, partial, and no helmet law. Mandatory helmet law requires all motorcycle riders to wear helmets irrespective of age whereas partial helmet law requires persons under a specific age, usually 18 years in most of the states to wear helmets. At the end of the year 2007, there were 20 states having mandatory helmet law, 27 states having partial helmet law and 3 states having no helmet law at all.

Generalized Least Squares regression modeling of motorcycle rider fatality rates was carried out while utilizing data for the 50 states and Washington, DC, covering the period 2005-2007 in this study. Two types of motorcycle fatality rates were used for the modeling purpose. Those were motorcycle fatalities per 10,000 motorcycle registrations and motorcycle fatalities per 100,000 populations. Number of motorcycle rider fatalities for all the 50 states and the District of Columbia were obtained from the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS) for the years 2005, 2006, and 2007. Various sources were used for collecting data for the factors considered for modeling such as statistical abstract of U.S. Census Bureau, annual highway statistics of Federal Highway Administration, National Climatic Data Center, National Institute of Health etc. Results revealed that in comparison with the experience under the partial coverage or no helmet law, states with mandatory helmet law had 5.13 percent fewer motorcycle fatalities per 10,000 registered motorcycles, and 7.15 percent fewer motorcycle fatalities per 100,000 populations, respectively as indicated by the models. Results also revealed that motorcycle rider fatalities also had statistically significant relationships with other factors. Motorcycle fatalities per 10,000 registered motorcycle registrations was found to be negatively correlated with per capita income, and highway mileage of rural roads, whereas annual daily mean temperature and percentage of African Americans were positively related. Motorcycle fatalities per 100,000 populations was found to be negatively correlated with population per square mile, percentage of population with at least a bachelor degree, and highway mileage of rural roads. Motorcycle registrations per person, annual daily mean temperature, percentage of whites, and percentage of African Americans were positively correlated with motorcycle fatalities per 100,000 populations.