ABSTRACT

Savolainen, Peter T. Ph.D., Purdue University, May, 2006. An Evaluation of Motorcycle Safety in Indiana. Major Professors: Fred Mannering and Andrew Tarko.

Since experiencing a modern-day low of 44 motorcycle-related fatalities in 1997, the State of Indiana has seen a serious safety problem develop, culminating with 104 fatalities in 2005. Unfortunately, it is unclear exactly what is causing this problem due to the number of interrelated factors involved. Since 1997, the number of registered motorcycles in Indiana has increased by over 50%. In addition, the characteristics of the riding population have changed and bikes have been designed to be faster and more powerful than ever before. In recent years, numerous motorcycle safety studies have focused on the effects of specific factors, such as alcohol and helmet use. However, in order to determine the true impacts of such factors, a multivariate analysis is necessary. The purpose of this research was to conduct such an analysis and to develop potential countermeasures aimed at improving motorcycle safety. The research utilized data from the Indiana Electronic Vehicle Crash Records System (eVCRS) and the results of a November motorcycle safety survey. Discrete outcome models were developed to identify those factors associated with increased propensities for crash involvement and severe injury. The state rider training program was examined, as well as the effects of various rider, motorcycle, and environmental characteristics. The methodological framework presented in this study provides a starting point for similar studies on the regional or national level.