SPATIAL ANALYSIS OF DRIVING BEHAVIOR, ENVIRONMENTAL FACTORS, AND CRASH RISK BASED ON MOTORCYCLE TRAJECTORY DATA

Bimo Tedjo[*1], Pei Fen Kuo[1]*

[1] *National Cheng Kung University*

This study uses motorcycle trajectory data to investigate the relationship between aggressive driving behavior, environmental factors, and crash frequency. Most existing studies focus on passenger cars, and relatively few focus on motorcycles. Unlike the typical car driver, motorcyclist tends to drive over-speed and sharp turn. We define several aggressive driving behaviors using a one-month motorcycle GPS trajectory dataset. In addition, more detailed environmental factors (such as POIs) are chosen as candidate predictor variables related to motorcycle crashes. Network Kernel Density Estimation (Network KDE) is used to transfer the crash count to crash risk, while a Multiple Geographically Weighted Regression (MGWR) based model will be used to predict. These findings should help improve traffic management to reduce the number of crashes.

Keywords: Driving Behaviors, Convenience Store, Traffic Crash, Network Kernel Density Estimation, Multiple Geographically Weighted Regression.