

# REPORT OF RESEARCH RESULTS

A. Title:

The Behavior of Alien Workers Using Electric Bicycles in Taiwan

B. Primary Researcher: T. Hugh Woo, Affiliation: National Yang Ming Chiao Tung University

Co-researcher: Jsu-Mei Hsu, Affiliation: Department of Transportation, Hsinchu City Government

C. Summary:

In recent years, electric bicycles have become a significant mode of transportation for alien workers from Southeast Asia in Taiwan. However, in 2020, electric bicycles emerged as the vehicle involved in the highest number of traffic accidents among foreigners. Despite the growing concern over the dangerous driving behavior and escalating accident rates among alien workers using electric bicycles, limited research has focused on their usage behavior. Drawing upon the Theory of Planned Behavior (TPB), this study developed a behavioral model for foreign users of electric bicycles. It examines the influence of Attitude, Subjective Norms, Perceived Behavioral Control, and Risk Perception dimensions on Risky Driving Behaviors. Questionnaires were distributed to alien workers from the four Southeast Asian countries with the highest influx into Taiwan: Vietnam, Indonesia, the Philippines, and Thailand. A total of 446 valid responses were collected, including 179 from Vietnam, 114 from Indonesia, 113 from the Philippines, and 40 from Thailand. Considering the variances in driving behaviors among different ethnic groups, both an overall model encompassing all four Southeast Asian countries and individual models for each country were developed for subsequent analysis. Structural Equation Modeling (SEM) was employed for analysis. The findings revealed that Behavioral Beliefs significantly and positively influenced Risky Driving Behaviors, whereas Risk Perception had a significant and negative impact on such behaviors in the overall model across the four Southeast Asian countries. Furthermore, through the mediation of Risk Perception, the results indicated that Behavioral Beliefs, Motivation to Comply, and Control Beliefs were influential factors for Risky Driving Behaviors. When comparing the four Southeast Asian models, it was evident that each country's model had distinct significant influencing factors, thus affirming the differences

in driving behavior models among nations. The outcomes of this study serve as valuable insights for policymakers and administrators in formulating electric bicycle management policies, enhancing supervision systems, revising regulations, and conducting educational and promotional activities regarding the use of electric bicycles.

D. Aim of Research:

The number of traffic accidents involving electric bicycles ridden by alien workers in Taiwan has been steadily increasing. Driver behavior has been identified as the primary cause of these accidents. This study focuses on electric bicycle usage among foreign migrant workers from Vietnam, Indonesia, the Philippines, and Thailand. It adopts the Theory of Planned Behavior (TPB) as the research framework to investigate the cycling and driving behavior patterns of foreign electric bicycle users in Taiwan. The study aims to analyze the factors influencing the riding behavior of foreigners on electric bicycles and assess their willingness to pay insurance premiums. The findings of this study can provide valuable insights for government agencies and insurance companies in formulating policies related to electric bicycle management and revising regulations.

E. Method of Research & Progression

Building upon the Theory of Planned Behavior (TPB), this study has constructed a behavioral model for foreign electric bicycle users. It investigates the impact of various dimensions, including Attitude, Subjective Norms, Perceived Behavioral Control, and Risk Perception, on Risky Driving Behaviors.

F. Results of Research

The study utilized Structural Equation Modeling (SEM) analysis. The findings revealed that Behavioral Beliefs significantly and positively impacted Risky Driving Behaviors, while Risk Perception had a significant and negative effect on these behaviors in the overall model across the four Southeast Asian countries. Furthermore, when Risk Perception was introduced as a mediator, the results demonstrated that Behavioral Beliefs, Motivation to Comply, and Control Belief were influential factors for Risky Driving Behaviors, mediated by Risk Perception. Upon comparing the four Southeast Asian models, it became evident that each country's model exhibited different significant influencing

factors. This underscores the presence of variations in driving behavior models among nations.

#### G. Future Areas to Take Note of, and Going Forward

The findings of this study can serve as valuable references for government officials and administrators in formulating policies and establishing supervision systems related to electric bicycle management. Additionally, these results can inform the revision of existing regulations and the implementation of educational and promotional campaigns regarding the use of electric bicycles. Furthermore, the insights gained from this study can guide traffic safety education efforts tailored to different demographic groups based on the identified findings.

#### H. Means of Official Announcement of Research Results

The topic of this study was proposed as a thesis for the Degree of Master in Traffic and Transportation within the Department of Transportation and Logistics Management at the College of Management, National Yang Ming Chiao Tung University. Furthermore, there are intentions to disseminate the findings through publication in a conference or journal, as deemed appropriate.