MarTREC
Maritime Transportation Research & Education Center

BIL MarTREC Tier 1 UTC Project Request Form
Completed form should not exceed 2 pages
Return to Amy Shell at shell@uark.edu

Submission Date: 2/1/2024
Lead Recipient/Grant Number: University of Arkansas / 69A3552348331
Principal Investigator Institution: Dr. Brian Wolshon
Center Name: Maritime Transportation Research and Education Center
USDOT Research Priority: Preserving the Existing Transportation System
Primary USDOT Strategic Goal (*select drop down*): Economic Strength and Global Competitiveness
Principal Investigator(s) with ORCID(s) and Contact Information: Dr. Brian Wolshon, ORCID: https://orcid.org/0000-0002-1703-2995, Email: brianw@lsu.edu
Project Partners: *NA*
Project Type (*select drop down*): Advanced Research
Project Research Topic Type (*select drop down*): Disruption Response and Transportation Planning for Coastal and River Valley Communities
Transportation Modes Involved (*check all that apply*): ☐Waterway ☒Road ☐Rail ☐Pipeline ☐Other
Research Project Funding: **$**265,000 (USDOT) + $132,500 (Match) = $397,000 (Total)
Project Start and End Dates (Format month/day/year to month/day/year): February 1st, 2024, to February 28th, 2025
Project Title: Modeling Drivers' En-route Diversion Behavior During Congestion: A Pilot Study
Project Abstract (Brief Description): This research will focus on modeling drivers' diversionary behavior during disruptions in coastal road networks. In recent years, climate change dramatically increased the frequency and intensity of potential disruptive events such as Floods, and sea-level rise along U.S. coastlines. Such unexpected events can trigger extensive disruptions and road closures in dense coastal regions. This situation particularly can be more drastic if it occurs during an emergency evacuation because of unbalanced demand and oversaturated routes. When faced with these cause-specific disruptions, many drivers, particularly those familiar with routine traffic patterns and alternate routes, will seek out and take advantage of alternative paths. While they may not be as efficient as their intended travel path, drivers use diversionary routing to reduce the travel time from paths that they know will be delayed. Various studies investigated the effect of this diversionary behavior during non-recurrent events on various scales. For example, Knoop et al., (2009,2010) in a series of studies, investigated the microscopic and macroscopic impacts of incidents on drivers' behavior and transportation network. However, little to no effort has been made to identifying behavioral influential factors and modeling the traveler's rerouting behavior during congestion Thus, the main objective of this research study is to investigate the driver's rerouting behavior during congestion and disruptive events in coastal communities and evaluate the spatiotemporal impact on transportation system by using trajectory data and assessment of traffic dynamic variations.
USDOT Priorities: By identifying alternative paths and optimizing rerouting decisions during disruptive events, this research aids in maintaining a consistent flow of goods and services, essential for the resilience of supply chains. Moreover, the insights garnered from studying the spatiotemporal impact on transportation systems enhance overall system reliability and

connectivity. Effective rerouting strategies, informed by this research, not only improve the efficiency of transportation networks but also contribute to the reliability of the overall system.
Outputs (results of the work performed): 1.) an advancement in the understanding of driver trip-making behavior and choice influencers; 2.) the creation of a theoretical framework to aid in the identification and graphical representation of diversion behavior and decision-making in congested traffic; and 3.) Development of a model to predict drivers diversion decision during congestion.
Outcomes/Impacts: The findings from this study could aid coastal communities to preserve and improve the efficiency of current transportation networks as one of the most important vital infrastructure systems and for better planning during adverse events.
Technology Transfer Activities: At least one article will be generated for scholarly journals and the findings will be presented at conferences.
Final Research Report: Upon completion of the project, provide a URL link to final report will be provided.
Project Deliverables: ☒ PI agrees to submit all deliverables within 4 weeks after the project end date.
Data Management Plan (DMP): ☒ PI has reviewed and agrees to adhere to MarTREC DMP. Proposed project DMP must be attached to the submission email along with this form.
Center Director Approval Signature and Date:  02.12.24