



MarTREC UTC Project Information Form
 USDOT Tier 1 University Transportation Center
 Agency ID or Contract Number DTRT13-G-UTC50

Project Title: Economic Impacts of Lock Usage and Unavailability
<p>Project Abstract (Brief Description): Freight statistics should provide an objective baseline for transportation policy decisions, and national economic benefits of maritime transport necessitate improving inland waterways infrastructure. Proposed work includes consolidating and learning from Lock Use, Performance, and Characteristics data collected by the USACE and published by the navigation Data Center. The objective is to estimate statistical models of annual tons locked by commodity group and lock, as a function of lock usage and unavailability (1993-2013), to discover knowledge of relationships between system disruption and economic consequences.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented): This research will estimate annual tons locked by commodity group and lock, as a function of lock usage and unavailability. Estimation would require consolidation and statistical models of Lock Use, Performance, and Characteristics published by the USACE Navigation Data Center. Results would include effects of lock usage and unavailability on tons locked by commodity group. Consolidated Lock Use, Performance, and Characteristics data collected by the U.S. Army Corps of Engineers (USACE). Estimated statistical models of annual tons locked by commodity group and lock, as a function of lock usage and unavailability, to learn about economic consequences of system disruption. Separated large dataset into meaningful subsets for analysis, with respect to interdependence among usage and unavailability variables, and missing data.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated) Twenty-two out of the 42 datasets resulted in at least one useful subset where we could employ our alternative to stepwise regression to find a linear model which is efficient and practically appropriate according to our definitions of those characteristics. Soon we will extend this project to Climate Impacts on Lock Use and Performance. The objective of that work will be to integrate resilience planning and climate change preparedness for water-resource infrastructure. Statistical models of Climate Impacts on Lock Use and Performance should help DOT and USACE integrate Climate Change Adaptation with Lock Operations and Marine Services by quantifying fixed route infrastructure vulnerability.</p>
Web Links: martrec.uark.edu
Budget (Funding) Amounts & Source(s) (US DOT +Match(s) =Total Costs): \$75,000 MarTREC + \$26,500 salary release and \$11,000 AR Economic Development Commission = \$112,500
Project Start and End Dates: 08/18/14-06/30/16. Project Complete
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Principal Investigator Institution (University): University of Arkansas