LOUISIANA TRANSPORTATION RESEARCH CENTER

LTRC

Hurricane Evacuation Modeling Package

POINTS OF INTEREST:

Problem Addressed / Objective of Research / Methodology Used Implementation Potential

PROBLEM

During a hurricane event, emergency managers must make crucial decisions. Should an evacuation order be issued? Should that order be voluntary or mandatory? Should contraflow be implemented? What impact will phased evacuation have on traffic flow? How many people remain in harm's way after each decision? Estimating future evacuation behavior as a function of management decisions is extremely important to emergency managers.

In the last decade, the Louisiana Transportation Research Center (LTRC) has developed models that are responsive to such decisions, as well as storm characteristics, evacuation network, population location, land use, and other factors. Emergency managers can use these models to estimate the consequences of alternative decisions before making them.

The problem is that these models currently operate independently and require manual execution. If the models can be simplified, automated, and integrated into a user-friendly computer package, they will become more accessible, coordinated, and rapidly executable.

OBJECTIVE

The overall objective of this study is to incorporate the LTRC hurricane evacuation models into a single, user-friendly computer package. The intent is for emergency managers to have a means for estimating consequences of alternative decisions prior to making a choice. Specifically, estimates of hurricane evacuation demand will be translated into statistics that emergency managers can use to make best-informed decisions.

METHODOLOGY

Initially, a suitable computer platform must be identified. Attributes of importance include strong graphic capabilities, ease of use, and technical support. Dynamic data, such as storm-related information, will be represented in discrete time intervals within which conditions are assumed to remain essentially static. When the package is used in real time, current data will be continuously recorded, and data for future time intervals will update based on most recent predictions.

For validation, the package will be applied to past hurricanes in the New Orleans area (where input data is already available) to test how well the combined models replicate observed behavior when actual management decisions are input. Then, the package can be used during an actual storm in the New Orleans area to test its performance in a real-time environment. Emergency managers and DOTD officials can assess the usefulness of the package and its assistance with management decisions regarding hurricane evacuation.

IMPLEMENTATION POTENTIAL

The developed computer package is primarily intended to be used by emergency managers in real time when a hurricane approaches, but it can also be used to analyze hypothetical future storms. This will allow for analysis of more management scenarios than is possible during real-time emergency operations. The modeling package can be used to build up a repository of preferred management decisions for different storm scenarios, while providing users with a convenient means to become familiar with the software and its application.