

## **Optimization of Emergency Transportation Network Management of Tehran Metropolis after Natural Hazards with Future Research Approach**

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### **Extended Abstract**

#### **Introduction**

The city of Tehran is located in a seismic prone area in an active part of Alpine-Himalayan Orogenic belt (Alborz Mountain Range) and has surrounded by several active faults. This city has also experienced some destructive earthquakes in its history. Tehran is a city with about ten million people living or commuting in and out of it on a daily basis. The history of the region indicates strong earthquakes with magnitude of 7.0 and higher, with a return period of 175 years. With the constant threat of strong earthquakes, the city of Tehran and the scientific body have joined together to prepare and implement a comprehensive plan for different aspects of the earthquake reduction policies. This is necessary to focus on disaster mitigation strategies for the city.

In the common transportation and traffic literature, optimization of transport management structure under emergency conditions as a kind of designing non-continuous traffic management network in terms of systematic management has not been regarded enough in the development of the city. Thus, the main goal of this article with the purpose of pre-accident future prediction is to improve performance and reduce time of conceptual optimization of emergency transport management structure so that we can offer initial facilities and necessary rescues to cover all requests in the related districts in different levels, and select routes with possibility of blocked routes in natural accidents by sufficient facilities as soon as possible.

#### **Methodology**

The main goal of formulation and implementation of the disaster management master plan for Tehran is to secure the lives and properties of the citizens against a possible devastating earthquake. This is an applied, descriptive- analytical research and the data were collected in a documentary (library) method. The necessary information and statistics were gathered from some government centers such as Tehran general traffic studies center and Tehran crisis management. This research tries to suggest a model for optimization of structure for emergency

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transport management of trips relative to the total network after earthquake in a district by passing the following steps: First phase, in this phase, we used existing maps of Tehran fault seismicity history of futures research approach to assessment of natural hazards in 22 districts of Tehran. Second phase, this is to identify highways within the mind. Third stage, in this stage, the risk analysis of transportation networks vulnerable to earthquakes is investigated in Tehran. Fourth stage, in this stage, the means of emergency transportation were obtained by selecting a subset of a given set of curves of the highway networks so that the objective function is optimized within the limits of travel time. Step five; finally, a conceptual model of emergency transportation management system is presented for optimization of Tehran.

### **Results and discussion**

Transportation has strategic and critical importance for relief of earthquake injuries. Therefore, the first thing to be immediately prepared and amended is the access routes for rescued persons. Logic prediction of traffic demand after earthquake is principal foundation of possible transportation performed before programming and traffic control, which is a kind of guarantee for a successful rescue and saving. The principle of emergency response is the recognition and evaluation of potential risk, type of accidents, and possibility of occurrence and the effect of accident intensity. In emergent urban plans, a definite headquarter framework and integrated operational chart shall be available after earthquake, especially in metropolitans, for local emergency transport programs and management centers.

### **Conclusion**

Due to high congestion and high mobility of population, buildings and cars, urban settlement and public places, Tehran Metropolitan has a considerable intra city trips. The limitations and problems arisen from deficiencies and lack of a dynamic and stable, and however, effective transport navigation shows necessity of an advanced network in urban transport navigation. It shall be moreover noted that emergency transport management is not limited to the framework of routing methods and reduction of rescue time. The savior's ideas and maneuver in emergency develops this fact that the emergency transport management and optimization of the management of efficiency improvement will be considered as the main elements of transportation to provide a flowing traffic movement in highways and streets in emergency in shortest time to reduce and omit serious damages of earthquake.

**Keywords:** emergency transport, future studies, natural disaster, optimization, Tehran.