

ABSTRACT

The Determination of Resource Allocations and the Formation
of Decision Sets for Disaster Situations
as Studied through Simulation. (August 1968)

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The major objective of this research is the development of a disaster simulation model for use in the training of disaster recovery planners. The impact of a disaster upon a community and the resources of the community is determined by means of a functional representation of the disaster within a computer. Available resources are allocated to the distressed areas and survival or recovery of the injured is determined as a function of the level of care received.

The specific model is constructed in modular form with each module performing a specific function as implied by the name of the module. These modules are the Availability Module, Requirements Module, Reaction Module and Analysis Module. A library of stored data serves as the foundation for model operation. This library contains population information, resource inventories and disaster representation data. As a particular disaster is specified, its impact is determined in terms of number of people

injured, the extent of injury and the number of resources of each type remaining after the disaster.

A disaster recovery planner examines the disaster reports and allocates available resources in what he deems to be the better procedure. The allocated resources are interacted with the post disaster resources and the number surviving is determined. Various allocation methods may be attempted to determine which procedure results in the largest number of lives saved. In this manner a set of actions may be planned for varied situations.

A restricted sensitivity analysis is conducted to determine the effects of various resources on the number of deaths in a specified area. The analysis is restricted to travel time constraints such that the time factor is essentially blocked in the analysis.

An example simulation is presented to illustrate the model and to present the necessary forms and computer format for implementation of the model. The example simulation illustrates the completed forms and the results obtained using the data entered.

Another area of interest in the field of disaster recovery planning is examined in the chapter concerning location of emergency facilities. In many areas of the country, vast highway networks exist with only a single medical facility to service accident

victims. The procedure for establishing optimum facility location is described for the less complex systems. A simulation model is suggested for the complex problem and a possible flow diagram for this model is illustrated.