

The final report, Extension of the General Sensitivity Analysis, consists of three volumes.

Volume I,

Methodology, discusses the methodology derived for civil defense sensitivity analysis and the results of demonstration runs employing the methodology on a statewide basis.

Volume II,

Technical Appendixes, gives details on derivations of the analytical expressions in the model. Volume II also reports: (1) supplementary sensitivity analyses using the model on a limited basis and (2) sensitivity analysis of population exposure to nuclear weapons effects.

Volume III,

The ANCET Computer Program, reports on the detailed structure of the FORTRAN computer model used to calculate casualties for the sensitivity analyses.

The objective of the research reported is to perform Civil Defense System sensitivity analyses which are designed to indicate the relative importance of the parameters used in total civil defense systems evaluation.

The following questions must be answered for each parameter:

1. Is the ranking of the effectiveness of civil defense systems altered as the parameter is varied over its range of uncertainty?
2. When the answer to question (1) is affirmative, can further research clarify or narrow the range of uncertainty?
3. Can systems evaluation methodology be altered to reduce the importance of uncertainty?
4. Should systems analyses report effectiveness for several values of the parameter?

To assist in these analyses, a rapid-running computer model has been designed to estimate casualties from a nuclear attack. The model's main features and broad outlines of operation are presented. A demonstration sensitivity analysis for the state of Ohio shows that the model can be successfully applied to civil defense sensitivity analyses.