Proceedings of the 2020 Annual General Donald R. Keith Memorial Capstone Conference
West Point, New York, USA
April 30, 2020
A Regional Conference of the Society for Industrial and Systems Engineering

Decision Support Tool for CBRN Capabilities

Christian De Pinto[1], Eurica Diego[1], Christopher Landin[1], Darryl Vincent[1], Benjamin Vollbach[1], Jose Jimenez[1], and Nicole Goetze[2]

[1]Department of System Engineering
United States Military Academy, West Point, NY
[2]Joint Program Executive Office, Chemical Biological Nuclear Defense (JPEO-CBRND)
Aberdeen Proving Ground, MD

Corresponding Author: benjamin.vollbach@westpoint.edu

Author Note: All authors are fourth year cadets at the United States Military Academy. Cadets De Pinto, Diego, Landin, and Vincent are Systems and Decision Sciences majors. Cadet Vollbach is a Systems Engineering Major.

Abstract: Chemical, biological, radiological, and nuclear (CBRN) capabilities have progressed a great amount since the beginning of the United States Army Chemical Corps; however, the progression of time demands the progression of CBRN technology. Creating a decision support tool assisted the decision-making process of developing and utilizing CBRN capabilities. The tool is an R Studio model that gives recommendations for CBRN capability configurations, and statistical analysis to compare different alternatives based on performance and resource variables. Stacked bar charts are used to visually depict the comparison of alternatives and show the effect on mission readiness. The intent of this project was to create a decision support tool which would allow JPEO-CBRND and military commanders to determine which configuration of an NBCRV would best perform in each combat situation.

Keywords: CBRN, Decision Support Tool, Sensitivity Analysis, R Studio, Stacked Bar Chart