

Abstract

Every year thousands of people become lost or injured to the extent that a search and rescue (SAR) unit needs to step in and help. Through the ages, we have needed to look for people and things yet the theory behind searching goes back less than 75 years to World War II. The main idea is that to be successful, searchers need to search the right area, and be able to detect the person or thing. This research explored the utility of using a GIS-based mobility model to assist search planners in developing their search areas. A mobility model incorporates consideration of the speed with which a person can move across the landscape. The tool used here is an Esri ArcGIS template called Integrated Geospatial Tools for Search and Rescue (IGT4SAR). While it includes many SAR tools, this research focused on the mobility analysis component. This study specifically assessed IGT4SAR's ease of use, speed, and success rate at determining how far a person can travel in a given time. Nevada County provided detailed information on a few incidents used to gain familiarization with IGT4SAR and the state of Oregon provided a large database of historical and diverse SAR events that allowed for broader testing of the model. Ultimately, 44 incidents were used to test the model. The model itself is easy to use, but the template is complex. With preloaded data, the model creates a product in less than 15 minutes. Starting with an unrealistic assumption that the incident start time recorded in the database represented the time when the subject left the last known location, test runs resulted in a 30% success rate where the found location fell in a time band that was less than the amount of time between the start time and the found time recorded in the database. After adding a estimated three-hour delay in reporting time to the SAR notification times the model had a 75% success rate. These results suggest that IGT4SAR can assist in defining a containment area to limit a search radius and is worthy of continued development.