Spatio-temporal Analysis of Civilian, Coalition, and Enemy Deaths in Afghanistan

From 2004-2009

John Buerhaus

University of Tennessee, Knoxville, TN, 37919

Dr. Richard Medina

Oak Ridge National Laboratory, Oak Ridge, TN 37830

The ongoing war against terrorism has resulted in the successful capture and/or death of thousands of terrorists over the ten years of military operations in Afghanistan. Although the United States and coalition forces have ended widespread Taliban control, Afghani civilians and coalition soldiers are still experiencing casualties. In this study, the spatio-temporal distribution of civilian, coalition, and enemy deaths, and insurgent Improvised Explosive Device (IED) attacks from 2004-2009 are illustrated and examined using open-source data from the British news agency, *The Guardian*. Using the SaTScan software, the space-time permutation method was used to calculate clusters of activities associated with terrorist and counterterrorist conflict. A cluster signifies that there were a significantly high number of deaths/IEDs in that area and time, compared to the entirety of the data set, thus indicating the degree of danger presented to civilians, coalition forces, and terrorists, based on areas and times of heavy targeting. The results of the space-time permutation analysis suggest that there were different geographical and temporal areas when civilians, terrorists, and coalition forces were most at risk for attacks. Additionally, the results of the analysis exemplify how insurgents are using IEDs as a tool to create destruction and terror at any time and against anyone, without a specific target. Six significant clusters of IED “elevated risk” activity spread throughout Afghanistan were identified. The cluster analysis of IED activity shows how active and dangerous IEDs are for coalition forces and Afghan civilians. My research presents the results of the analysis which identify areas where civilians and coalition forces were most vulnerable to injury and death, and areas where coalition forces were most effective in combating insurgents. Further, my research can be used to determine areas in which clusters were created in the data set are still being characterized as dangerous for civilians and coalition forces now. Mapping terrorist activity over space and time can provide vital information to help stabilize regions throughout the world.