



Analyzing Terrorism Using Spatial Analysis Techniques: A Case Study of Turkish Cities

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Summary

This article is from a chapter on evidence-based counterterrorism policy. The researchers investigate cities in Turkey, considered a high-risk location for terrorism due to the concentration of political and religious groups, concerning target vulnerability, population characteristics, crime, and physical infrastructure for 2016. They use a risk assessment based on events and correlates of terrorism divided into three different categories of risk, attractor, infrastructure, and crime terrains. Location Quotients (LQ) were used to identify cities at the highest risk for a terrorist attack. The researchers find that even with the limited data, the model accurately identified terror locations almost half of the time. The researchers suggest that more accurate street level/address data would strengthen terrorism risk models.

Methods

The researchers use a Turkish terror incident dataset from the Turkish National Police (TNP) for 2016 with a total of 87 events as the dependent variable. They identified two attractor terrain variables, number of assembly members and number of mosques. Four infrastructure variables, socioeconomic development, net trade, city development, and population. There was one crime variable, number of murder convictions. A contextual risk index for all Turkish cities with all data classified into quartiles of risk from 1 to 4 was used. Location quotients were mapped and used to assess relative risk, identifying areas at highest risk for a terrorist attack. Logistic regression and an odds ratio were used as well.

Results

The model was found to have predictive validity and correctly identified a city at risk of future terror attacks nearly half the time, which the authors find significant. Only about 9% of the variance is accounted for in the model meaning that other factors might be affecting results outside of the variables used in this study. Nineteen of the 81 cities had the highest relative risk of a future terrorist attack according to the LQ while eight cities had less than proportionate relative risk of a future terrorist attack. The rest of the cities had relatively normal risk of future terrorist attack. Finally, 53% of the cities projected to have heightened risk of future attack did indeed have a future attack.

Implications

This study shows that a risk framework can be used in defining where problems or terror events are likely to occur and where counterterrorism efforts and resources may be most effective although the researchers suggest that more precise geographic data is needed to improve the strength of terrorism risk models.