

A Multi-Level Analysis of Risky Streets and Neighbourhoods for Dissident Republican Violence in Belfast

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Theory

Routine activities theory suggests that crimes occur when a motivated offender, a suitable target and a lack of a capable guardian coalesce in time and space. Crime pattern theory extends on this, theorising that as an individual navigates their city or town on their journeys to and from their daily activity nodes (including their home, places of work/education, leisure and recreation venues, etc.) they will become more familiar with certain areas. Over time, their increased knowledge and familiarity with these areas means they become part of an individual's awareness space. A city's street network determines the routes that people can take during their daily lives, and therefore shapes their awareness space. Offences will occur when this awareness space overlaps with an opportunity for criminal activity. Typically, more accessible streets, where urban movement will be highest, experience more crime.

Method

In this study, graph theoretical measures are used to analyse the street network to identify risky streets for dissident Republican violence in Belfast. In particular, we examined the relationship between violent incidents and the network metric 'betweenness'. This metric measures the frequency with which parts of the street network feature in the shortest paths through the network and approximately represents which locations are most likely to be traversed in terms of traffic.

Findings

The results indicate that along with other factors, the street network plays a role in shaping terrorist target selection. Streets that are more connected and more likely to be traversed will experience more incidents than those that are not. The count of incidents was significantly and positively associated with the level of betweenness. Specifically, for every 10% change in the betweenness value of a street segment, the segment is expected to experience 1.32 times as many incidents by dissident Republicans in the time period. In other words, the segment with the largest betweenness value is expected to suffer from 23.7 times as many attacks as the segment with the smallest value.

The number of police stations, Protestant churches and premises on each street segment were all found to have a significant and positive effect on the expected number of attacks. Specifically, for every related building on a street segment, the expected count would be 22.05 times as many, 6.19 times as many, and 1.44 times as many, respectively. The number of Catholic churches on a street segment was not significantly related to the number of dissident Republican incidents.

The percentage of residents in a 'small area' who were Catholic was found to be significantly positively associated with the count of attacks: This is such that for every 10% change, the number of incidents is expected to be 4.45 times as many.