TEMPLE UNIVERSITY®
Center for Security and Crime Science

RESEARCH FINDINGS

THE PREDICTIVE POLICING CHALLENGES OF ARMED STREET ROBBERIES

PURPOSE OF THE STUDY

This study aimed to answer questions about the space-time concentration of armed street robbery in Philadelphia. First, does armed street robbery follow a near repeat pattern? A near repeat armed street robbery pattern would mean that for a short period of time after a street robbery occurs, there would be an increased likelihood that another armed street robbery would occur in the immediate area. Second, if a near repeat armed street robbery pattern could be detected then how long would this short-term outbreak in armed street robbery continue? Finally, if chains of armed street robbery are found then what impact do these chains have on the formation of armed street robbery hot spots? **These questions are central to rapid police response to crime problems identified during Compstat meetings**.

IS THERE A NEAR REPEAT PATTERN?

Philadelphia armed street robbery events (i.e., UCR codes 300-304) from 2009 were analyzed using a specialized analysis method. The method requires the researcher to specify spatial and temporal distances that would demonstrate that events occurred 'close together in space and time' (7 days and 400 feet, average length of street block in Philadelphia were used in this analysis). A near repeat pattern was identified. Once a robbery occurred, there was an increased risk of another robbery within 7 days and three blocks of the originator event. Within the first 400 feet (one block) the risk of another robbery was 80% higher within the first week.

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HOW MANY NEAR REPEAT CHAINS CAN BE IDENTIFIED?

All armed street robbery events within 7 days and 1200 feet (the statistically significant parameters from the first analysis) were then linked into chains and the number of events and days between the chains' initiation and termination were summarized. In total, 888 (25%) of the 3,556 armed street robberies from 2009 were either an originating or repeat event in the near repeat pattern. These 888 near repeat armed street robbery events made up 363 individual chains of near repeat armed street robberies. Of these 363 chains, 251 chains contained only 2 events, 79 chains contained 3 events, 21 chains contained 4 events, 8 chains had 5 events, 3 chains had 6 events, and 1 chain had 7 events. On average, these chains terminated after about 4 days. **Only 38 of the 363 (consisting of a total of 154 events) chains persisted beyond seven days. Of the 154 events in these 38 chains, only 58 actual repeat events occurred beyond seven days (from an initial sample of 3,556).**

DO NEAR REPEATS CREATE ROBBERY HOTSPOTS?

Finally, a clustering analysis identified 52 armed street robbery hot spots. **These 52 areas contained 20% of citywide robberies, but only 3% of intersections**. In the 52 armed street robbery hot spots identified, the percentage of near repeat armed street robberies within each hotspot ranged from 0 to 80 percent. The majority of armed street robbery hotspots (≈60 percent; *n*=31) were made up of less than 50 percent of near repeat armed street robbery events. On the other hand, a total of 21 (≈40 percent) armed street robbery hotspots were identified where greater than 50 percent of the total events within the hot spot were part of a near repeat process.

Nonetheless, the temporal stability statistic across all 52 hot spots indicated that the robbery events that formed the hot spots were dispersed throughout the year. Also, a correlation between the percentage of events part of a near repeat chain within each hot spot and the temporal stability statistic was found to be weak and insignificant. These findings suggest that the near repeat armed street robbery chains never lasted long enough to form a hot spot and the identified hot spots had a consistent occurrence of armed street robberies during 2009.

SUMMARY

The statistically significant near repeat pattern suggests that past armed street robberies can be useful for forecasting the occurrence of future robberies. This provides police with two options; a tactical short-term reaction and a strategic long-term response. Unfortunately, the evidence suggests a tactical short-term response would be difficult to muster within the time frame of even the longest near-repeat chains. The organization must have:

- A surveillance mechanism adequate enough to monitor crime events with sufficient frequency,
- An analytical regime capable of recognizing a chain of events quickly and against a background noise of unrelated crimes,
- A decision-making framework capable of identifying the need for, and coordinating, a suitable tactical response, and
- The operational flexibility to adapt to changing conditions and implement a new tactic.

The evidence in this study suggests this organizational response has to occur within less than one week. In the vast majority of cases, the results from this work suggest that more holistic strategies designed to reduce crime opportunities in armed street robbery hot spots are likely to be more fruitful than chasing short-term crime outbreaks.

FURTHER INFORMATION

Please see Haberman, C.P., and Ratcliffe, J.H. (2012). The predictive policing challenges of near repeat armed street robbery. *Policing: A Journal of Policy and Practice*, 6(2): 151-166.