Interrupting ‘Near Repeat’ Burglary Patterns: Rapid Identification and Interaction with At-Risk Residents After a Burglary

Research Brief (Summary Report)

June 2018

Karen L. Amendola  Project Director  Police Foundation
Elizabeth R. Groff  Principal Investigator  Temple University
Travis A. Taniguchi  Principal Investigator  RTI International
This project was supported by Award No. 2012-IJ-CX-0039, awarded by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice to the Police Foundation. The opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect those of the Department of Justice. Any errors are our own.
# Table of Contents

**Project Team**  
1

**Introduction and Past Research**  
2

- Prevalence of Residential Burglary  
2
- The Near Repeat Phenomenon  
2
- Preventing Near Repeat Burglary  
2
- Past Research  
3
- Calculating High Risk Zones and Times of Greatest Risk  
3

**Methodology and Design**  
4

- Our Study  
4
- Research Questions  
4
- Methodology and Protocols  
4
- Random Assignment  
5
- Treatment  
5

**Data Collection and Analysis**  
6

- Data collection  
6
- Analysis  
6

**Results**  
6

- Effect of the Treatment on Near Repeat Burglary  
6
- Effect of the Intervention on Residents  
7
- Reasons for Null Findings  
7
- Final Summary  
7

**Limitations and Implications**  
8

- Limitations of Study  
8
- Implications for Policing  
8

**References**  
9
Project Team

Elizabeth Groff, PhD
Associate Professor
Department of Criminal Justice
Temple University
1115 W. Polett Walk, 531 Gladfelter Hall
Philadelphia, PA 19122
E-mail: groff@temple.edu
Tel: (215) 204-5164

Travis Taniguchi, PhD
Research Criminologist
Policing Research Program
RTI International
3040 E Cornwallis Rd
Research Triangle Park, NC 27709
E-mail: taniguchi@rti.org
Tel: (919) 248-8501

Karen L. Amendola, PhD
Chief Behavioral Scientist
Police Foundation
1201 Connecticut Ave NW, Suite 200, Washington, DC 20036
Email: kamendola@policefoundation.org
Tel: (202) 833-1460

1 The Advisory Board for this project consisted of Professors: Kate Bowers (University College London), Shane D. Johnson (University College London), Jerry Ratcliffe (Temple University), & David Weisburd (George Mason University).

Introduction and Past Research

Prevalence of Residential Burglary

According to the FBI, there were over 1.5 million burglaries in the U.S. in 2016, with almost 70% residential (FBI, 2017a). Combined, the victims of burglary suffered over $3.6 billion in lost property (about $2,400/burglary). Yet, only about 13% of burglaries reported to the police were cleared (FBI, 2017b). While more prevalent than violent crime, burglary rarely generates attention and headlines. Yet, the sense of violation and vulnerability typical of residential burglary victims is considerable, and so prevention would seem the best solution.

The Near Repeat Phenomenon

The biggest challenge facing crime prevention in policing is the need to correctly anticipate where and when crime will occur (Pease & Laycock, 1999). Hot spots policing focuses on the locations where crimes occur frequently, though knowing when they will occur can help law enforcement effectively deploy personnel. Repeat victimization occurs when the same target is victimized again. However, the “Near Repeat” (NR) phenomenon (Morgan, 2001) is when those that live near to a burglary victim are victimized soon after; in other words, when one home is burglarized, for a particular time period afterwards, homes nearby are at an elevated risk of burglary.

“A particular time period shortly after a residential burglary occurs, nearby homes are at an elevated risk of burglary. This is known as the Near Repeat Burglary Phenomenon.”

Empirical research has clearly confirmed the existence of NR burglary patterns. The exact spatial and temporal extent of increased risk varies; however, we know the increased risk level that occurs after a burglary is temporary, suggesting police must act quickly to maximize the potential for reaping crime prevention benefits.

Preventing Near Repeat Burglary

The potential of using patterns in repeat victimization to prevent burglary has been recognized and tested. Indeed, even in 1997, researchers noted that “the question is not now whether policing should take account of repeat victimization, but how” (Chenery, Holt, & Pease, 1997, p. v). Yet, most research has focused on repeat, not “near repeat” patterns, and on the use of multiple crime prevention strategies at the same time. This approach makes it extremely difficult to identify which of the strategies were effective and which were not. While many researchers acknowledged this, they were more interested in maximizing the possibility of reducing crime as opposed to testing the efficacy of specific strategies.

Attempts to encourage the public to be responsible for the co-production of public safety (Innes & Roberts, 2008) through efforts like the campaigns “If You See Something, Say Something” and “Is That Your Bag?” are part of a community policing engagement process. The idea is that by raising crime awareness, residents may take steps to prevent themselves from being victimized. In fact, some research regarding “citizen watch” programs implemented after a specific incident demonstrated that they may be effective at reducing crime (Sorensen, 2003). By providing burglary prevention resources to residents, it
is expected that at least some of the residents will act upon them. While provision of information via personal contacts with citizens may seem expensive, that cost can be reduced by relying on uniformed volunteers and/or auxiliary officers to distribute the information.

**Past Research**

Research on using Near Repeat patterns to address residential burglary is limited, and that which has been published relied upon case studies or quasi-experimental designs to examine NR patterns. Yet, in order to specifically test the efficacy of an intervention designed to interrupt the NR pattern, an experimental study is necessary. Furthermore, past studies were conducted outside the U.S., suggesting a possible problem with generalizability in the United States. Despite early funding by the National Institute of Justice to support the development of the publicly available Near Repeat Calculator (Ratcliffe, 2007) to allow law enforcement agency personnel and researchers to easily calculate the space-time risk profile for their jurisdictions, a randomized experiment had not been carried out until we engaged in this randomized control trial in the U.S. to test an intervention designed to interrupt the near-repeat burglary pattern. Nevertheless, during the same time period, Johnson and colleagues conducted their own experiment in the U.K. which was recently published (Johnson et al., 2017).

**Calculating High Risk Zones and Times of Greatest Risk**

Knowledge of the near repeat phenomenon provides police with a way to “shorten the odds of being in the right place at the right time to deflect or detect crime” (Johnson, Bernasco et al., 2007; Pease & Laycock, 1999, p. 2). Burglary interventions that target specific areas (known as High Risk Zones, or HRZs) and which occur soon after a burglary provide important benefits (Pease & Laycock, 1999). However, such interventions should not only address the crime that has been committed but work to prevent subsequent victimizations to those in the HRZ.

Using the Near Repeat Calculator, an estimate of the distance and time over which patterns persist in any particular jurisdiction can be calculated using previously captured data. The results are distance (in feet or meters) and time periods which represent a specific jurisdiction’s parameters of potential risk. Some of the demonstrated results of near repeat calculations in various jurisdictions are provided in Table 1.

**Table 1. Research on the Near Repeat Burglary Phenomenon**

<table>
<thead>
<tr>
<th>Study site</th>
<th># of months of prior data</th>
<th>At-risk Distance</th>
<th>At-risk time frame</th>
<th>Author(s)/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brisbane, Australia area</td>
<td>34</td>
<td>656 ft.</td>
<td>2 months</td>
<td>Townsley et al., 2003</td>
</tr>
<tr>
<td>Merseyside, UK</td>
<td>12</td>
<td>984 – 1,312 ft</td>
<td>1 - 2 months</td>
<td>Johnson &amp; Bowers, 2004</td>
</tr>
<tr>
<td>Philadelphia, PA, U.S.</td>
<td>n/a</td>
<td>656 ft.</td>
<td>2 months</td>
<td>See Groff &amp; Taniguchi, 2018</td>
</tr>
<tr>
<td>Cross-national*</td>
<td>Varied</td>
<td>At least 656 ft.</td>
<td>14 days</td>
<td>Johnson, Bernasco, et al., 2007</td>
</tr>
</tbody>
</table>

The data in the table demonstrate that there is a limited space-time window for which households near to a victimized home are at an elevated risk of being burgled. The space and time profile does vary but is most often within 656 feet to 1,328 feet (200 to 400 meters) and 2 to 4 weeks of the initial burglary incident, after which the risk typically declines to its pre-burglary level (Bowers & Johnson, 2005; Johnson, Bernasco, et al., 2007; Johnson & Bowers, 2004).

---

5 In meters: All except Merseyside = 200 meters; Merseyside = 300 – 400 meters
6 Australia, the Netherlands, New Zealand, the U.K., and the U.S.
Methodology and Design

Our Study

Our study, the first U.S.-based randomized control trial designed to test the efficacy of an intervention to interrupt Near Repeat burglary patterns, was conducted in two very different U.S. jurisdictions: the Baltimore County (MD) and Redlands (CA) police departments during the period of September 10, 2014 through December 31, 2015. The purpose was to determine whether providing timely crime prevention information to neighbors of a residential burglary victim could interrupt the near repeat pattern. The study targeted the delivery of crime prevention to the micro-level space-time window of significant risk rather than to an entire neighborhood. Figure 1, depicts the model that served as the basis for our study and the expected patterns of interruption of Near Repeat.

Research Questions

While we addressed several questions in this research, our two primary questions were: 1) Does providing crime prevention material quickly after a burglary reduce the number of burglaries that occur in the near-repeat-high-risk zone over the near-repeat-high-risk period and beyond? 2) What impact does notification of increased risk have on actions taken by residents and their perception of safety?
Methodology and Protocols

To answer these primary research questions, our project involved rapid identification of at-risk locations (within high risk zones), as well as deployment of personnel (mostly uniformed volunteers) to communicate the occurrence of a close-by burglary and provide resources in order to prevent a NR burglary. The researchers specifically tested whether residences within the HRZs that received the notification had fewer subsequent burglaries than those that did not.

The first step was to identify the space-time window over which the risk of residential burglary was significant. The next step was to dynamically create near repeat high risk zones (NR-HRZs) around each burglary as they occurred. Customized software was developed to randomly allocate the NR-HRZs to treatment or control. We also examined resident and treatment provider perceptions of the program which are discussed in more detail in the full Monograph (referenced in footnote 1). The final step was to implement the treatment intervention (described below).

Random Assignment

Randomization presented a unique challenge because we could not identify the potential study participants in advance. Burglaries occurred daily and needed immediate assignment to either treatment or control in order to allow time for them to be treated quickly. Accordingly, we used a computerized randomization process equivalent to a coin flip to assign burglaries to treatment or control on a rolling basis. Areas assigned to control received business-as-usual policing. In total, we assigned a total of 190 treatment NR-HRZs and 185 control NR-HRZs. Baltimore County had 122-treatment and 120 control areas. Redlands had 68-treatment and 65 control areas. Once designated, the NR-HRZs persisted for the duration of the experiment. That is, zones could only be treated once for the duration of the experiment. We did this to avoid increasing the fear of crime among residents that might result from repeated visits by police volunteers and to avoid contamination effects. Subsequent burglaries in the near-repeat-high-risk areas were tracked over the course of the experiment.

Treatment

The treatment intervention was to direct the agency to deploy its uniformed volunteers and/or auxiliary officers to provide crime prevention tips and offer to do a security audit (If no one was home, the officers and volunteers left a hang tag with the same information and contact information for a security audit). In both sites, trained volunteers (regular volunteers in Redlands, and volunteer Auxiliary Officers in Baltimore County) wore uniforms (similar to but distinct from sworn agency personnel) and drove marked agency vehicles. For safety reasons, it was the policy of both agencies to deploy the volunteers in pairs as much as possible while conducting field operations. The treatment areas were based on an output report from the NR-HRZ tool, which consisted of a map and a list of addresses.

In the case of residential burglaries, research suggests that law enforcement agencies can take steps to activate the local population in the co-production of public safety (Innes & Roberts, 2008). Given that risk is greatest immediately after a burglary and declines over time, preventive action should be implemented quickly (Kleemans, 2004). Accordingly, we intended to deploy personnel to the residences in the treatment group within 24 hours of when police became aware of the burglary. Residents often don’t know the exact time of a burglary, as it typically happens when they are not at home, so the time at which it is recognized and reported could range from hours to weeks.

---

7 For more information on the procedure, see: Braucht & Reichardt, 1993; Shadish, Cook, & Campbell, 2002.
8 The lower number of sites in Redlands was due to its lower burglary incidence.
9 Residents often don’t know the exact time of a burglary, as it typically happens when they are not at home, so the time at which it is recognized and reported could range from hours to weeks.
Data Collection and Analysis

Data collection

While data were collected on the incidences of near repeats after the treatments, we also surveyed residents in the treatment areas about their experience with residential burglary, their actions in response to the notification and their perceptions about the intervention program and their local police department. Importantly, the survey asked about whether the notification increased resident’s fear of crime. Because we were primarily interested in the reaction to the notification and crime prevention information, we did not survey residents of control NR-HRZs since they would not have received a notification. Residents could respond in complete anonymity or provide their e-mail address to receive a $5.00 electronic Amazon gift card for completing the survey. Given the varying times of burglaries, there were six waves of survey administration.

Analysis

We used t-tests to compare the crime counts in the treatment and control areas. Five time periods were considered: 1 week, 1–2 weeks, 1–4 weeks, 1–8 weeks, and 1–12 weeks. The temporal bands were overlapping (i.e., the 1- to 8-week band included weeks 1–4). To explore the potential for crime displacement, we conducted the same analysis for burglary events occurring in the buffer areas generated by the Near Repeat-High Risk Intervention Tool (NR-HRZIT).

Results

Effect of the Treatment on Near Repeat Burglary

Overall, the number of burglaries occurring after generation of the treatment and control areas was low in both sites. In Baltimore County, only 7 follow-on burglaries occurred in the 120 control areas and only 1 occurred in the 122 treatment areas in the 2 weeks after the originator burglary. In Redlands, only 3 follow-on burglaries occurred in the 65 control areas and only 1 follow-on burglary occurred in the 68 treatment areas within 2 weeks of the originator burglary. Nevertheless, results in both Baltimore County and Redlands suggest that the treatment did not significantly reduce burglary 4, 8, or 12 weeks after the intervention.

However, in Baltimore County the difference between treatment and control areas was most pronounced in the 1 – 2-week band where the results approached statistical significance (p=.08). Results in Redlands were similar. Both NR-HRZs and buffer zones had lower burglary rates after the treatment than their control counterparts did. Follow-on events in the buffer zones were significant in the 1– 8-week band and marginally significant in the 1- 4-week band. However, this finding is difficult to interpret as a diffusion of benefits since there were no significant burglary reductions in the treatment NR-HRZs as compared to the controls.

---

10 The incentive was used to encourage a high response rate based on a sample of addresses that received the treatment. In a comprehensive meta-analysis, Edwards and colleagues (2009) found that a monetary incentive for survey completion more than doubled the odds of receiving a response.

Effect of the Intervention on Residents

Response rates to surveys, despite the provision of an incentive were low (< 10%) in both jurisdictions. While a common argument against notifying residents about increased risk is that it will increase fear of crime, the respondents overwhelmingly responded that it did not increase their fear of crime. In Baltimore County, 86% felt about the same or less concerned about burglary and in Redlands it was even higher, 88.5%. This is consistent with a recent study in the UK that found residents could be informed of burglary prevention strategies without increasing their fear of victimization (Johnson et al., 2017).

Another important facet of the intervention was examining the actions residents took after receiving the notifications and if it affected their safety perceptions. The largest numbers of actions taken by respondents (n = 173) included: 1) being more vigilant about locking doors/windows—82% (n=139); 2) being more likely to watch out for neighbors—71% (n=123); 3) being more likely to report a burglary to the police—42% (n=72); and 4) installing better exterior lighting—21% (n=36). If respondents reported taking any action, on average they took 2.9 actions in response to the notification. Redlands residents reported taking more actions than their Baltimore County counterparts (3.7 versus 2.8).

“82% of residents who responded to our survey after getting the safety tips/offer of security audit reported being more vigilant about locking doors and windows and 71% were more likely to watch out for neighbors.”

We also asked those who didn’t take action, what kept them from doing so and the two most frequently offered reasons were “Already in place” (61%; n = 70) and the perception that there was a “Low risk of victimization” (20%; n = 23).

Reasons for Null Findings

There are a number of potential explanations for our finding that notifying neighbors did not significantly reduce subsequent burglaries in the treatment NR-HRZs. These include: (1) delay in discovering, reporting, and responding to burglary; (2) low numbers of burglaries at micro places; (3) differences in measuring risk versus measuring outcomes; (4) permanency of the treatment/control areas; (5) unintended consequences of community notifications; and (6) treatment dosage; all of which are discussed in detail in our full monograph referenced herein.

Final Summary

Analyses between treatment and control zones in Baltimore County and Redlands did not reveal statistically significant differences. However, the amount of follow-on burglary in the treatment areas was lower than in the control areas. It is possible that because of the low incidences of burglary in both sites, our ability to detect differences was reduced, despite an initial power analysis.

The community survey findings suggest that the treatment did not reach the majority of the people who lived in the NR-HRZs. However, of the individuals who remembered the treatment and responded to the survey, the most frequent actions taken were of relatively low cost and low effort. In both sites, 100% of respondents said that the agency should continue treatment, suggesting a different type of benefit to residents. Additionally, the program was viewed extremely positively by residents in each site. Among respondents who remembered the notification, 82 to 85% felt like the notification indicated the agency was being proactive in preventing burglary.

Survey responses from the volunteers suggest the program was effective at increasing the level of engagement between the volunteers and the agency. Most of the volunteers indicated that their participation in the program had a positive impact on the community. The program appeared successful in engaging citizen volunteers and increasing the positive effects of their volunteer work.
Limitations and Implications

Limitations of Study

The major weaknesses in the implementation of the experiment had to do with field considerations, which often plague experimental field research. Events and/or special circumstances in both sites occurred over the course of the experiment that resulted in burglaries failing to be considered by the software program even though they should have. In Redlands, the automated program failed to run for 27 days and 17 burglaries occurred on those days and thus were not included as originators.

In Baltimore County, although some burglaries were excluded intentionally (due to work flow and staffing constraints), there were also a few unexpected exclusion circumstances, e.g., crime analysts do not work on weekends, the agency suspended interventions during early darkness months (November and March). Seven additional interruptions occurred because of holidays and one snow day when crime analysts did not work as well as one holiday during which auxiliary police were not available. Also, resource constraints in Baltimore County limited the number of treatments that could be provided by auxiliary police to one per day.

Implications for Policing

Despite the persistent finding that near repeat patterns exist, our study suggests that it may be challenging to interrupt the pattern (Haberman & Ratcliffe, 2012). The relatively short window for intervention between the originator event and a potential follow-on burglary may make it difficult for agencies to respond quickly enough to have an impact. While the intervention we used is of low cost when relying on volunteers, it is important to note that their schedules may not permit immediate responses. Of course, if a police agency made responding to near repeat crime a priority, they could allocate specific personnel to respond to all types of crime.

Even though we found little impact of this intervention on burglary reduction, the other corollary benefits still suggest that this approach may be worthy of consideration. The fact that those community participants who received the treatment wanted the practice to continue, suggests that those residents may be reaping a community policing benefit (through increased police presence, communication and outreach, etc.) which may ultimately increase their trust and confidence in the police.

In sum, our findings suggest that NR burglary prevention programs can be a useful for:

- **improving police-community relations,**
- **educating the public regarding crime prevention,**
- **increasing uniformed presence in a cost-effective manner,**
- **activating informal guardianship and target hardening among residents,** and
- **increasing satisfaction among police volunteers.**

This was the first experimental evaluation of a police intervention designed to disrupt the near-repeat pattern of residential burglary in the United States. Although the lack of a statistically significant reduction in residential burglary was disappointing, this research demonstrated that law enforcement volunteers can be used to undertake programs that have positive impacts on the community and to mobilize residents to take action. Additionally, such a program produces positive impacts on community perceptions of the participating law enforcement agencies, without raising fear of crime in the community.

The full report can be found at:


---

12 This meant that burglaries that were reported on Friday or Saturday were not considered for inclusion in the experiment.
13 During the first weeks of the restart, as with the first week of the study, burglaries that were actually follow-ons were counted as originators.
References


Related Publications:

1. Micro-Level Policing for Preventing Near Repeat Residential Burglary
   Monograph (Technical Report)

2. Interrupting ‘Near Repeat’ Burglary Patterns: Rapid Identification and Interaction with At-Risk Residents After a Burglary
   Research Brief (Summary Report)

3. Near Repeat Crime Prevention Potential Calculator
   User Manual, v. 1.0

4. Near Repeat Area Identifier Tool
   User Manual, v. 2.3

5. 5 Things You Need To Know About Near-Repeat Patterns and Crime Prevention
   Police Foundation 5 Things series

6. Preventing Near Repeat Residential Burglary
   Police Foundation Research Summaries series

   Police Foundation Strategy Briefs series