TACKLING NEAR REPEAT CRIME

Using technology to formulate and evaluate crime prevention strategies for burglary, robbery, weapons violations and other crimes.

What is Near Repeat Victimization?

Researchers have found that once a crime has occurred, additional crimes are more likely to occur in nearby areas within a short period of time producing a pattern called "near repeat." Empirical research has clearly identified the existence of both a repeat (same target, another crime) and a near-repeat phenomenon for crimes such as burglary, robbery, weapons violations and other crimes. The exact spacing and timing of increased risk varies by the place but we also know that this increased risk is temporary[1] suggesting that police must act quickly to maximize the potential for reaping crime prevention benefits.

The research evidence behind near repeat provides police with a way to "shorten the odds of being in the right place at the right time to deflect or detect crime"[2]. Such interventions require that additional police resources be sent to the specific locations most likely to experience further victimization and that agencies not only address the crime that has been committed but work to prevent future victimization.

This strategy brief aims to help law enforcement professionals in identifying and responding to near repeat patterns of victimization. Specifically, this strategy brief will help you:

1. Understand what near repeat patterns are and why they are useful to policing
2. Evaluate global and local patterns of near repeat
3. Formulate appropriate responses for these patterns
4. Develop program metrics to understand the effect of the intervention
5. Evaluate a near repeat crime prevention program

Several open source programs are necessary to quantify near repeat patterns and develop interventions. The Near Repeat Calculator (NRC) was built to assist with determining if a near repeat pattern exists, and if that pattern is significant. The Near Repeat Crime Prevention Potential Calculator (CPPC) was designed to help identify the proportion of a crime type that are "preventable." The Near Repeat Area Identifier Tool (NRAIT) was built to assist with the process of area identification and treatment deployment.

Step 1. Quantify the Size of the Near Repeat Problem in Your Jurisdiction

Identify a Crime Type

The intervention should be designed around a specific crime type or crime types with similar characteristics. Existing research has found near repeat patterns among several types of crime in a variety of settings. Residential burglary, in particular, has been studied extensively in both the US and UK. Knowledge about near repeat patterns for person-crimes is less robust but it exists.

Gather Historical Data

There are no definitive rules on how much historical data should be considered to evaluate near repeat patterns. The volume of events will be the main consideration; a higher volume of events will require a shorter historical period for assessing near repeat patterns. In general, the recommendation is to use at least one year of historical data to smooth over any seasonal or transient effects in identifying an actual pattern. It is also recommended that a month prior and a month after the event be included to get a better estimate of the originators that take place prior to the study period and the repeats that occur after the end of the study period.

Quantify the Global Near Repeat Pattern

The Near Repeat Calculator (NRC) is available to help establish the intensity of a near repeat pattern and if that pattern is significant. The user is responsible for setting a few parameters: the file location; identifying coordinates and date variables, and spatial and temporal bandwidths. A reasonable starting point for analysis is to set the temporal bandwidth at seven days and the spatial bandwidth at 400 feet (122 meters).

> The increased risk of repeat victimization is temporary suggesting that police must act quickly to maximize the potential for reaping crime prevention benefits. The research evidence on 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"
> (Peace & Laycock, 1996, p. 2).

Quantify the Number of Preventable Near Repeats

The Near Repeat Crime Prevention Potential Calculator (CPPC) is available to help identify the proportion of a crime type that is "preventable" or in other words, the amount of crime that could be averted if all near repeat events were prevented. Along with the spatial analysis, the output can be used to identify where in a jurisdiction near repeats are a problem. The CPPC relies on historical data to provide a baseline for determining the crime prevention potential of an initiative aimed at addressing near repeat crimes. The program considers the spatiotemporal distribution of events and indicates how many events fall within the specified high-risk space-time window.

Step 2. Identify Where Near Repeat Patterns Are Most Prevalent

After exploring near repeat patterns at the global level, further refinements can be made to better understand the amount of near repeat crime that is actually involved in creating those patterns. The next step is to identify where these near repeat patterns are strongest. Data from the CPPC can be exported into a mapping application to identify those areas. Originator and repeat events can be plotted onto a map allowing for visual inspection and analysis. Creating a kernel density (also known as hot spot) map of these events will allow for a more thorough understanding of their spatial distribution. Depending on how the near repeat events are distributed, the intervention may be limited to a subset of the entire jurisdiction.

Step 3. Design a Near Repeat Crime Prevention Program

In theory, a wide variety of strategies could be used to disrupt near repeat victimization. In general, research has found place-based crime prevention strategies to be more effective than other kinds of strategies such as those focused on individuals. Research specifically designed to disrupt near repeat patterns of crime are few and have generally focused on burglary. Ultimately, the intervention will be based on the specific crime issue, resources available, and community needs. Nevertheless, quick response is key. Near Repeat Patterns diffuse rapidly. An effective intervention must be designed in

such a way that it is possible to get field personnel in a treatment area quickly.

Developing an Evaluation Plan

An evaluation plan should be decided in advance and should include metrics for measuring:

1. the effect on crime
2. the effect on the community
3. the effect on the agency

A multi-faceted approach to evaluating the impact of a program can provide a more comprehensive understanding of program impact.

Tracking the impact of an intervention on crime tends to be the most straightforward method of evaluating programmatic success. There are a variety of ways to assess changes in crime with varying levels of scientific rigor such as the use of random assignment to designate treatment and control groups or quasi-experimental pre- and post- evaluations that can provide a reasonable test of program effectiveness in reducing crime. Understanding the impact of the intervention on the community is also an important key goal. Two questions are worth considering here: First, did the intervention have the intended behavioral changes on individuals in the treatment area? For example, did a crime prevention strategy to reduce vehicle burglary which instructs residents to secure their vehicles and remove or hide their valuables result in them actually doing so? Second, were there any unintended consequences of the program? Understanding how the community might experience the intervention should be a key component of the evaluation.

Finally, the experiment may have an effect on the functioning of the agency and/or its personnel. At a minimum, it may be worthwhile to track outputs such as the number and type of near repeat crimes, or amount of time spent in treatment areas. This data provides essential information in understanding the true cost to implement a program and allows for a better understanding of the return on investment. Additional concerns may also warrant evaluation. Programs may also impact the treatment providers.

Step 4. Implementation

Implementation of a near repeat focused crime prevention strategy can be difficult. Quick action is needed and treatment providers need guidance on identification of the targets at risk. Furthermore, evaluation concerns may necessitate assigning areas to treatment or control groups. The Near Repeat Area Identifier Tool (NRAIT) can assist with the process of area identification and treatment deployment. It evaluates all new crimes for that day and establishes if the crime should be an outcome event of a previous event or if it should generate a new high risk repeat zone.

Burglary Crime Prevention Tips (Hang Tag)

There has recently been a burglary near your home. Research shows that there is an increased risk of additional burglaries occurring within a short time and distance of the first crime.

Burglary Prevention Tips
- Lock all outside doors and windows before you leave.
- Leave lights on when you go out. Connect a lamp to timers that will activate in the evening. Install motion sensitive exterior lighting.
- Make it easy to observe what is happening on the street by keeping the view from windows and doors unobstructed. Trim hedges and plants that may obstruct the view.
- When you are away for a longer period of time, stop mail, newspapers, packages, or any other deliveries.
- Keep valuables out of sight.
- Mark property with an identification code – such as your driver's license number.
- Install deadbolts on exterior doors.
- Consider installing a burglary alarm system.
- Form a neighborhood watch group. This can help protect everyone in the neighborhood from crime.

If you are the Victim of a Burglary
- Do not enter your home
- Notify the Police
- Preserve evidence by not touching or cleaning anything until the police have concluded their investigation

If you have Information on a Crime
IN-PROGRESS OR EMERGENCIES SHOULD BE CALLED INTO 911
- Contact the Redlands Police Dispatch at (909) 798-7681
- Text 274637 "REDTIP"
- Use the Redlands Police app (available for iOS/Android)

Other Resources
- Receive notifications about crime in your neighborhood: www.crimemapping.com
- Learn more crime prevention techniques: www.cityofredlands.org/police/crimeprevention

If a new zone is generated it can be randomly assigned to treatment or control conditions. One additional function to consider is whether zones can be retreated at a later date. This would allow zones to re-enter the treatment pool in order to provide follow-up treatments (e.g., the agency may be willing to provide treatment to a zone if there is another crime six months later).

Tracking Outcomes

The NRAIT counts all events occurring in treatment/control areas during a specified time period and this data can be exported for use in statistical analysis software. The NRAIT also produces a daily output file that tracks the status of each individual event run through the program. This output can tell the user if an event was allocated to treatment or control, or if the event could not be set to treatment/control and why it was left unallocated. A new burglary can be disqualified for use in the experiment for a variety of reasons and the specific reason is important in understanding the spatiotemporal pattern of residential burglary. These logs are useful for diagnostics and for understanding how events are being allocated.

Step 5. Analysis

Evaluation of a near repeat intervention can be complex. In general, the evaluation will be dictated by the design established in Step 3. If the intervention has been run as an experiment, a t-test using the outcome tracker of the NRAIT may be sufficient to understand effectiveness in preventing crime. Quasi-experimental designs may require more complex evaluations like pre-post or time series analysis. Evaluation of community or agency data may may only require simple descriptive statistics such as averages and percent change.

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References

[1]Johnson, S.D., Bowers, K.J., & Hirschfield, A. (1997). New insights into the spatial and temporal distribution of repeat victimization. *British Journal of Criminology, 37*(2), 224-241.

[2]Pease, K. & Laycock, G. (1996). Reducing the Heat on Hot Victims. NIJ Research in Action. Washington, DC: U.S. Dept. of Justice.

Resources and Tools:

The full technical report, additional project briefs and resources, Near Repeat Calculator, Crime Prevention Potential Calculator and Near Repeat Area Identifier Tool can all be found on the project page:

Please visit: https://www.policefoundation.org/projects/translating-near-repeat-theory-into-a-geospatial-policing-strategy/

Tackling Near Repeat Victimization
Strategy Summary

Step 1. Quantifying the Size of the Problem - Identify a crime type and quantify the size of the near repeat problem in your jurisdiction. Gather sufficient historical data to produce reliable estimates. Evaluate patterns at the global level and calculate the number of "preventable" near repeats that occurred.

Step 2. Identifying Where Near Repeat Patterns Are Most Prevalent - Use the calculator outputs to develop a targeted intervention. The Near Repeat Calculator (NRC) produces a global (i.e. jurisdictional) estimate the repeat pattern. The Crime Prevention Potential Calculator (CPPC) can be used to better understand the spatial distribution of near repeat patterns.

Step 3. Design a Near Repeat Crime Prevention Program - Developing an evaluation strategy should be an integral part of program development. Consider the impact of the program on crime, residents, the agency, and treatment providers in order to develop a holistic understanding of the program's effectiveness.

Step 4. Implement a Crime Prevention Strategy - Quick action is needed. The Near Repeat Area Identifier Tool (NRAIT) has been developed to streamline the identification of near repeat high risk zones and facilitate deployment of resources to those zones. The NRAIT also tracks outcome measures that may be useful for evaluation purposes.

Step 5. Analysis and Evaluation of Near Repeat Intervention - With proper setup, the analysis component of the project should be straightforward. Experimental designs often lend themselves to simple statistical approaches. Other data, such as resident surveys or administrative data, require additional considerations.

Funding & Collaboration:

About the Police Foundation:

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