SESSION 2: EFFECTIVENESS OF POLICE RESPONSE TO CRIME PATTERNS

PRESENTED BY:

DR. ROBERTO SANTOS
ASSISTANT PROFESSOR

HOSTED BY:

Tennessee Association of Law Enforcement Analysts
2016 Conference: Oct 11-13
Crime Concentrates at Place

- A disproportionate amount of crime occurs at a small number of places
  Sherman, Gartin, & Burger (1989)
- Law of crime concentration and the criminology of place
  Weisburd (2015)
- Offenders are “tightly coupled” to place
  Weisburd, Groff, & Yang (2012)
- Crime events that recur at the same place or near one another—repeat victimization and near repeat victimization.
  Bowers and Johnson (2005)
- Displacement of crime to other places does not often occur
  Hessling (1994)
- More often there is a reduction of crime—diffusion of benefits
  Clarke & Weisburd (1994)
Micro-Time Hot Spot

- Type of crime pattern identified by crime analysts
- A crime flare-up
- The emergence of several closely-related crimes within a few minutes travel distance from one another (i.e., micro-place)
- That occurs within one to two weeks (i.e., micro-time)
- In an area not necessarily accustomed to high levels of crime or having an ongoing crime problem
- Once a micro-time hot spot appears, it can last for several weeks or months
- Majority of patterns, especially property crimes are MTHS
Concentration of Crime

Near repeats:
40% occur in 14 days
Hypothesis

Days after last incident

Likelihood of an additional crime

Identify MTHS

Start Responses

Stop Related Crimes

Days after last incident

2  4  6  8  10  12  14  16  18  20  22  24  26
Stratified Policing

Rank

Chief

Officer

Incident

Significant/Repeat Incident

Pattern

Problem

Level of Problem Complexity
Previous Research on Micro-Time Hot Spots

- Quasi-experiment examining 5 years of data
- Propensity score matching
- Residential burglary and theft from vehicle MTHS
- Systematic Response resulted in 20% reduction in crime


Research Methodology

- **Study agency:** Port St. Lucie, FL Police Department
- **Crimes**
  - Residential burglary
  - Residential theft from vehicle
- **Blind experiment**
  - Only key people in department know of experiment
  - Personnel unaware that controls had even been identified
- **Randomization**
  - Crime analysts prepare bulletin
  - Researchers randomized (blocked)
- **Length of treatment:** 2 years
Micro-Time Hot Spot Study Definition

- 2 crimes within .20 radius
- 3 or more within a .40 mile radius
- Occurring within 14 days
HOT SPOT – AUTO & RESIDENTIAL BURGLARIES
SE Thornhill Dr. Area – Zone 21
April 12th – 27th, 2015

MODUS OPERANDI
Auto Burglary – 2 Incidents
Residential Burglary – 1 Incident – No signs of force
Primarily occurring in the overnight-late night hours
Primary Target: Firearms, pocket knives, and anything of value
Latent Prints: 2015-07888, 2015-08884

POSSIBLE SUSPECT INFORMATION
Residential Burglary – Case #2015-07772
The victim’s neighbor reportedly observed a female subject looking through the victim’s kitchen window from outside and go into the rear sliding door of the victim’s residence located at 449 SE Thornhill Dr. The female subject was not seen exiting the residence. SUBJECT DESCRIPTION: Female, early 30’s, petite build, dark brown hair, and wearing jeans.

INFORMATION ONLY – F.I. #2015-08355
On 4/20/15 at approx. 0053 hrs., Officer Geisler observed Antonio Tennyson (B/M, DOB 4/10/94, 920 SE Streamlet Ave, pictured) riding a blue bicycle with no lights in the area of SE Floresta Dr./Thornhill Dr. Antonio stated he was going to the store on Floresta Dr. Upon inquiring if the subject knew anything about the recent burglaries, he stated he did not. Antonio has a burglary arrest history out of Palm Beach Co.

<table>
<thead>
<tr>
<th>NO</th>
<th>CRIME</th>
<th>CASE</th>
<th>DATE</th>
<th>DCW</th>
<th>TIME</th>
<th>ADDRESS</th>
<th>STOLEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RESID BURG</td>
<td>2015-07772</td>
<td>04/12/15</td>
<td>SUN</td>
<td>1945-2125</td>
<td>449 SE THORNHILL DR</td>
<td>Unlocked rear sliding door; POSSIBLE SUSPECT: Female, early 30’s, petite, dark brown hair</td>
</tr>
<tr>
<td>2</td>
<td>AUTO BURG</td>
<td>2015-07888</td>
<td>04/12-04/14</td>
<td>SUN/MON</td>
<td>2230-0745</td>
<td>241 SE STARFISH AVE</td>
<td>Cannon printer, Gerber pocket knife</td>
</tr>
<tr>
<td>3</td>
<td>AUTO BURG</td>
<td>2015-08886</td>
<td>04/26-04/27</td>
<td>SUN/MON</td>
<td>2000-0700</td>
<td>1654 SE CHELLO LN</td>
<td>No Force</td>
</tr>
</tbody>
</table>
Evidence-Based Response

- Traditional responses most effective short-term
  - Directed patrol, field interviews, known offender contacts, traffic stops, and searches

- Focused crime prevention responses most effective
  - Contacting potential victims (e.g., Reverse-911, sanitized pattern bulletin, volunteers, media)

- Offenders commit crimes near where they live
  - Include known offenders and FL cards on the bulletin
Response Implementation

- Responses initially implemented for 14 days
- Analysts continually look for additional crimes in the MTHS
- Responses last for 14 days after the last crime in the pattern
Response Data Collection

- Systematic communication for sustainability
- Sharing information in real time
- Documentation of responses
- Transparency
- Accountability
- Technology (e.g., agency management system)
new discussion

2015-224A HOT SPOT Residential Burglaries SW INGRASSINA AVE Area-ZN 32
4 Incidents (9/4-9/6) within .42 mile radius M.O. Residential Burglaries – 4 Incidents – Forced Prim...
By Cheryl Davis | Latest reply by Anthony Romani | 36 minutes ago

2015-235 SPREE - VANDALISM-SW Herald Rd Area_SLASHED VEHICLE TIRES-ZN 32
5 Incidents (9/14/15) 300 ft. radius M.O. – 5 Reported Incidents Occurred in the overnight/early mo...
By Cheryl Davis | Latest reply by William Harris | 41 minutes ago

2015-217 HOT SPOT Auto-Res Burglaries SW COLLEGE PARK RD Area_ZN 33
4 Incidents 8/16-9/2 .42 mile radius M.O. Auto Burglaries – 2 Incidents – 1 Force/ 1 No Force Resid...
By Cheryl Davis | Latest reply by Anthony Romani | About an hour ago

2015-236 SERIES Auto Burglaries-Smashed Windows_NW PEACOCK BLVD_ZN 43
5 Incidents (9/4-9/15) .14 mile radius M.O. 5 Incidents – 4 incident Spree 9/15/15 Smashed Windo...
By Cheryl Davis | Latest reply by Scott Maree | 2 hours ago

2015-234 Amended HOT SPOT Auto Burglaries SW BELLEVUE AVE Area_ZN 42
AMENDED: 4 Incidents (9/7-9/14).44 Mile Radius M.O. Auto Burglaries – 4 Incidents Unlocked / N...
By Cheryl Davis | Latest reply by Salvador Marmolejo | 5 hours ago

2015-2168 HOT SPOT - RESIDENTIAL BURGLARY - SW Duval Ave -ZN 23
5 Incidents - .25 mile radius MODUS OPERANDI Residential Burglary – 2 of 4 Incidents – Forced 3...
By Michelle Chitoe | Latest reply by Jesse McNemey | 7 hours ago

2015-215 HOT SPOT Auto-Res Burglaries SANCTUARY-WINTERLAKES Area_ZN 44
3 Incidents 8/22-8/29 (.18 mile radius) WITHIN IDENTIFIED PROBLEM AREA - DISTRICT 4 M.O. Aut...
By Cheryl Davis | Latest reply by John Fazio | 10 hours ago

2015-220A HOT SPOT Auto Burglaries NW COVENTRY CIR Area_ZN 44
6 Incidents (8/30-9/4/15) within .30 mile radius M.O. Auto Burglaries – 6 Incidents – No Force/Unlo...
By Cheryl Davis | Latest reply by Cratbonso Thorpe | 3 days ago

2015-232A ARRESTS-SPREE Auto Burglaries SW SOUTH QUICK CIR Area_ZN 31
2 Incidents (9/7-9/8).23 mile radius M.O. Auto Burglaries – 2 Incidents – No Force/Unlocked Occur...
2015-089A HOT SPOT - AUTO-RESIDENTIAL BURGLARIES -SE Thornhill Dr Area - ZN 21

163 replies

Michelle Chitolie

3 Incidents - .20 mile radius

MODUS OPERANDI

Auto Burglary – 2 Incidents

Residential Burglary – 1 Incident – No signs of force

Primarily occurring in the overnight-late night hours

Primary Target: Firearms, pocket knives, and anything of value

Latent Prints: 2015-07858, 2015-08884

POSSIBLE SUSPECT INFORMATION

Residential Burglary – Case #2015-07772

The victim’s neighbor reportedly observed a female subject looking through the victim’s kitchen window from outside and go into the rear sliding door of the victim’s residence located at 449 SE Thornhill Dr. The female subject was not seen exiting the residence. SUBJECT DESCRIPTION: Female, early 30’s, petite build, dark brown hair, and wearing jeans.

INFORMATION ONLY - F.I. #2015-08355

On 4/20/15 at approx. 0053 hrs., Officer Gerstner observed Antonio Tennyson (B/M, DOB 4/10/94, 920 SE Streamlet Ave, pictured) riding a blue bicycle with no lights in the area of SE Floresta Dr./Thornhill Dr. Antonio stated he was going to the store on Floresta Dr. Upon inquiring if the subject knew anything about the recent burglaries, he stated he did not. Antonio has a burglary arrest history out of Palm Beach Co.


April 14  Reply  Edit  ...
HOT SPOT – AUTO & RESIDENTIAL BURGLARIES
SE Thornhill Dr. Area – Zone 21
April 12th – 27th, 2015

MODUS OPERANDI!
Auto Burglary – 2 Incidents
Residential Burglary – 1 Incident – No signs of force
Primarily occurring in the overnight-late night hours
Primary Target: Firearms, pocket knives, and anything of value
Latent Prints: 2015-07858, 2015-08884

POSSIBLE SUSPECT INFORMATION
Residential Burglary – Case 2015-07772
The victim’s neighbor reportedly observed a female subject
looking through the victim’s kitchen window from outside and
go into the rear sliding door of the victim’s residence located at
449 SE Thornhill Dr. The female subject was not seen exiting the
residence. SUBJECT DESCRIPTION: Female, early 30’s, petite,
dark brown hair, and wearing jeans.

INFORMATION ONLY – F.I. #2015-08355
On 4/20/15 at approx. 0053 hrs., Officer Gerster observed Antonio Tennyson (B/M, DOB 4/10/94, 920
SE Streamlet Ave, pictured) riding a blue bicycle with no lights in the area of SE Floresta Dr./Thornhill Dr.
Antonio stated he was going to the store on Floresta Dr. Upon inquiring if the subject knew anything about
the recent burglaries, he stated he did not. Antonio has a burglary arrest history out of Palm Beach Co.

<table>
<thead>
<tr>
<th>NO</th>
<th>CRIME</th>
<th>CASE</th>
<th>DATE</th>
<th>DOW</th>
<th>TIME</th>
<th>ADDRESS</th>
<th>M/O</th>
<th>STOLEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RESID BURG</td>
<td>2015-07772</td>
<td>04/12/15</td>
<td>SUN</td>
<td>1945-2125</td>
<td>449 SE THORNHILL DR</td>
<td>Unlocked rear sliding door;</td>
<td>S&amp;W Revolver (7 Cylinder), Prescription pills (Oxy)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>POSSIBLE SUSPECT:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Female, early 30’s, petite,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>dark brown hair</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>AUTO BURG</td>
<td>2015-07858</td>
<td>04/12-04/13</td>
<td>SUN/MON</td>
<td>23:00-07:45</td>
<td>241 SE STARFISH AVE</td>
<td>Unknown - Not noted (2 Vehicles)</td>
<td>Cannon printer, Gerber pocket knife</td>
</tr>
<tr>
<td>3</td>
<td>AUTO BURG</td>
<td>2015-08884</td>
<td>04/25-04/27</td>
<td>SUN/MON</td>
<td>00:00-07:00</td>
<td>1654 SE CHETTO LN</td>
<td>No Force</td>
<td>S&amp;W MP9 Shield 9mm w/ holster, green folding knife, Google Nexus tablet</td>
</tr>
</tbody>
</table>
Jesse Inigo
CP from 2323 to 2340 hrs (17 mins). Nothing noted.
April 14  Reply  Edit  ***

Joseph V. Cassani
On 04/15/2015 at approximately 0134 hours, I closely patrolled the area for approximately 20 minutes. No suspicious activity observed.
April 15  Reply  Edit  ***

Daniel Papaleo
Total time 1 hour
Traffic stop - Electronic Warning: 1
I closely patrolled the area from approximately 0110-0210 hours. No suspicious activity observed.
April 15  Reply  Edit  ***

William Jarrett
I conducted a close patrol of the 400-800k of SE Thornhill Dr on 4/15/2015 from 1011-1031 hours. No suspicious activity was observed during that time.
Time spent: 20 minutes
April 15  Reply  Edit  ***

Jan Bernstein
This Hotspot is Assigned to Detective Herzog. If anyone has information or questions please contact me or him. Thanks
April 15  Reply  Edit  ***

Stacy Paton
A R911 was dispatched on 4/14/15 at 1930 hours encompassing a five-block radius.
April 15  Reply  Edit  ***

Kenneth Frid
15 min
Resolution of a MTHS

- No more crimes in 21 days
- 90-day follow up period to check for displacement and additional crimes
Treatment Fidelity

Daily
- Micro-time hot spot identified
- Response implemented and entered by officers in the field

Weekly
- Assistant Chief holds district lieutenants accountable for responses
- Weekly agency-wide meeting to discuss responses

Monthly
- Lieutenants report to Chief on responses and outcomes
- Chief reviews statistics in meeting to evaluate effectiveness
## Descriptive Statistics

<table>
<thead>
<tr>
<th>Block</th>
<th>Treatment</th>
<th>Control</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spree</td>
<td>40</td>
<td>35</td>
<td>75</td>
<td>35%</td>
</tr>
<tr>
<td>Micro-Time</td>
<td>73</td>
<td>68</td>
<td>141</td>
<td>65%</td>
</tr>
<tr>
<td>Hot Spot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>103 (lost 5)</td>
<td>216</td>
<td>100%</td>
</tr>
<tr>
<td>Percent</td>
<td>52%</td>
<td>48%</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>
# Preliminary Directed Patrol Statistics

<table>
<thead>
<tr>
<th></th>
<th>N=113 Micro-Time Hot Spots</th>
<th>Average</th>
<th>Standard Deviation</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Days in Response</td>
<td></td>
<td>20.98</td>
<td>11.21</td>
<td>17.00</td>
</tr>
<tr>
<td>Number of Responses Per Micro-Time Hot Spot</td>
<td></td>
<td>149.38</td>
<td>39.78</td>
<td>140.22</td>
</tr>
<tr>
<td>Number of Responses Per Day</td>
<td></td>
<td>7.12</td>
<td>1.22</td>
<td>6.29</td>
</tr>
<tr>
<td>Total Minutes of Directed Patrol Per Micro-Time Hot Spot</td>
<td></td>
<td>1,920.80</td>
<td>700.67</td>
<td>1,930.88</td>
</tr>
<tr>
<td>Minutes Per Directed Patrol for All Micro-Time Hot Spots</td>
<td></td>
<td>12.85</td>
<td>4.17</td>
<td>10.36</td>
</tr>
</tbody>
</table>
Initial Crime
Mean = 2.81

Treatment Group
(N=113)

Independent T-test
NO DIFFERENCE

Initial Crime
Mean = 2.77

Control Group
(N=103)

Response

Crime 120-Days
Mean = 3.45

Independent T-test
DIFFERENCE: 3.56

Crime 120-Days
Mean = 7.01
Initial Findings

- **Summary of Treatment**
  - Average 7 responses per day
  - Average 12 minutes for each response
  - Average response span 20 days

- **Summary of Experiment Results**
  - Resulted in 3.56 fewer crimes per MTHS
  - Control group total crime 9.78
  - 3.56 of 9.78 is a **36.48% reduction**
  - No spatial displacement
Common Cold Research Results

![Graph showing the comparison between placebo and zinc treatments for cold severity over days.]

- Placebo N = 39
- Zinc N = 41
SESSION 2: EFFECTIVENESS OF POLICE RESPONSE TO CRIME PATTERNS

PRESENTED BY:
DR. ROBERTO SANTOS
ASSISTANT PROFESSOR

HOSTED BY:

Tennessee Association of Law Enforcement Analysts
2016 Conference: Oct 11-13