

Tactical Webinar Series 2024

Webinar 4: Mastering Crime Patterns: Unlocking Secrets with Temporal and Geospatial Analysis

Dawn Reeby

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Keynote Speaker | Best Selling Author | Certified Trainer | Subject Matter Expert | Private Coach | Nature Lover | Joy Catalyst

👉 Transforming law enforcement leaders into balanced, highly productive, & HAPPY professionals!

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12-Part Tactical Series Webinars

- ✔ January 11th @ 1300 ET - Introduction to Tactical Crime Analysis - Jennifer Zawitz
- ✔ February 8th @ 1400 ET - Data Management - Christopher Bruce
- ✔ March 7th @ 1400 ET - Identifying Crime Patterns and Series - Christopher Bruce
- ✔ **April 11th @ 1400 ET - Unlocking Secrets with Temporal and Geospatial Analysis - Dawn Reeby**
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Characteristics of Crime Patterns

Question	Sub-questions
What?	Scope of issue, number of offenses, property
When?	Time, day, season, intervals
Where?	Location, type of location, environment, movement



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THE WHAT

Characteristics of a Pattern



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Characteristics: What?

- Crime type & characteristics
- Sequence of events
- Actions of participants



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Characteristics of Vehicle Break-Ins may include:

- The targeted locations
- Method of entry
- Items commonly stolen



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Targeted Burglaries of Asian Business Owners' Residences

- Initial Surveillance
- Target Selection
- Pre-Incident Preparation
- Entry and Exit
- Item Selection
- Escape



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Juveniles' Mailbox Vandalism

- Main Perpetrator's Motivation
- Planning Phase
- Logistical Support
- Scouting Target Locations
- Execution of Vandalism
- Escape and Evasion



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THE WHAT

Crime against person? Property? Society? Dig into details.



#	Case	Date	Offense	Location	Bank	Account	Amount	Notes
1	22-1338	6/21/2022	Jun	16/4/2022	Incoming Mail	Main Street Superette (123 Main St.)	Chase Bank	Unknown
2	22-1338	6/21/2022	Jun	6/10/2022	1230	Main Street Superette (123 Main St.)	American Bank	Unknown
3	22-1338	6/21/2022	Jun	Unknown	Unknown	Post Office Manchester, NH	Unknown	\$ 10.00
4	22-1338	6/21/2022	Jun	6/11/2022	Unknown	Main Street Superette (123 Main St.)	East Western Bank	Farmer's Bank - mobile
5	22-1338	6/21/2022	Jun	6/11/2022	0900-1000	Manchester Post Office (157 Main St.)	City of Dreams Co-Operative Bank	City of Dreams Co-Operative Bank
6	22-1340	6/18/2022	Jun	6/6/2022	Unknown	Main Street Superette (123 Main St.)	Chitenden's Bank	Farmer's Bank - mobile
7	22-1341	6/17/2022	Jun	Unknown	Unknown	Merrimack Valley Credit Union	Unknown	\$ 686.82
8	22-1342	6/14/2022	Jun	6/11/2022	0630	Manchester Post Office (157 Main St.)	City of Dreams Co-Operative Bank	City of Dreams Co-Operative Bank
9	22-1343	6/10/2022	Jun	6/9/2022	Unknown	LIGHT drop off box on front of Assessor's	Chitenden's Bank	A bank associated with
10	22-1344	6/2/2022	Jun	6/2/2022	N/A	Unknown	OTenary Bank	\$ 2,000.00
11	22-1345	6/1/2022	May	6/2/2022	Unknown	Manchester Post Office (157 Main St.)	East Western Bank	Farmer's Bank
12	22-1347	4/6/2022	Apr	11/17/2021	Unknown	Manchester Post Office (157 Main St.)	American Bank	Unknown
13	22-1348	2/4/2022	Feb	22/8/2021	N/A	Unknown	Service Credit Union th	\$ 93,982.00
14	22-1349	11/29/2021	Jan	N/A	N/A	Unknown	Silly Sabs Bank	\$ 1,350.00
15	22-1350	10/15/2021	Oct	10/9/2021	Unknown	Manchester at Manchester Post Office (157	City of Dreams Co-Operative Bank	City of Dreams Post
16	22-1351	10/21/2021	Oct	N/A	Unknown	Unknown	National Bank	American Bank
17	22-1352	10/11/2021	Sep	8/24/2022	Unknown	Unknown	Merrimack Valley Credit Union	Trust Mark National



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THE WHEN Pattern Analysis of Time



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Temporal Relationships

- Time of day
- Day of week
- Type of day
- Week of month
- Month of year

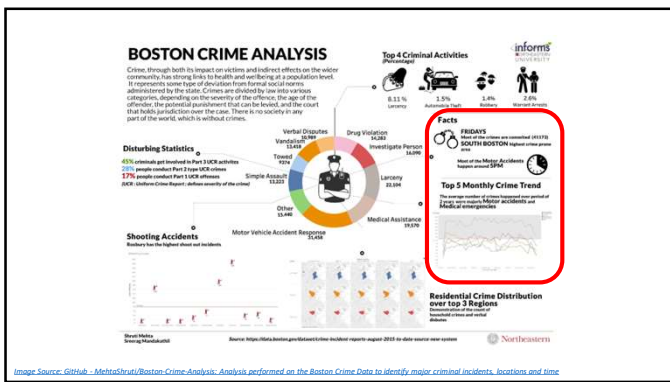


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Temporal Relationships

- Season/Cycle
- Proximity to other events
- Days between hits
- Temporal Progression of Pattern

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Basic Tactical Temporal Processes

Ensure you have all offenses in the series and none that are not in the series	Apply common sense and judgment	Look for tempos	Look for cyclical patterns	Consider correlative variables	Perform basic interval calculations


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Basic Tactical Temporal Processes




Ensure you have **all offenses** in the series and none that are not in the series




Apply **common sense and judgment**




Look for **tempo**s




Look for **cyclical patterns**



Consider **correlative variables**




Perform **basic interval calculations**



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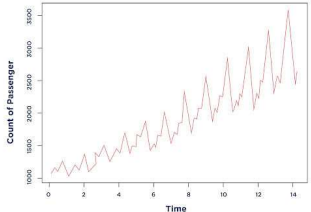

Temporal Relationships

Hour of the Day	Sat	Mon	Tue	Wed	Thu	Fri	Sat
0400 to 0459							
0500 to 0559							
0600 to 0659							
0700 to 0759							
0800 to 0859							
0900 to 0959							
1000 to 1059							
1100 to 1159							
1200 to 1259							
1300 to 1359							
1400 to 1459							
1500 to 1559							
1600 to 1659							1
1700 to 1759						1	1
1800 to 1859							
1900 to 1959					2		1
2000 to 2059		1				1	1
2100 to 2159						1	2
2200 to 2259				1	1	1	1
2300 to 2359							



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Temporal Relationships

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Temporal Forecasting


CaseNo	Date	Time	Location	Interval	DOW
2006-1608	8/4/2006	19:30	Christy's, 185 Main St	NA	Fri
2006-1606	8/18/2006	18:00	Cumberland Farms, 213 Union St	14	Fri
2006-1646	8/23/2006	19:12	White Hen, 180 Boston St	5	Wed
2006-1802	9/1/2006	20:03	7-11, 695 California Ave	9	Fri
2006-1816	9/8/2006	17:00	Quadrup, 1000 Bakersfield Blvd	7	Fri
2006-1830	9/15/2006	20:20	Stop & Go, 800 Camino Del Ladrón	7	Fri
2006-1838	9/19/2006	20:00	Get & Go, 1500 First St	4	Tue
2006-1846	9/22/2006	18:30	Texaco Food Mart, 5609 Stone Rd	3	Fri
2006-1858	9/29/2006	18:18	Jenny's Mini-Mart, 1201 Down St	7	Fri
2006-2010	10/4/2006	19:00	Safeway Super, 506 Chelms Dr	5	Wed
2006-2040	10/20/2006	17:55	Mobil Mart, 4621 American Ave	16	Fri
2006-2042	10/21/2006	18:52	Pump & Play, 1803 G St	1	Sat
2006-2054	10/27/2006	19:04	Get & Go, 200 Elm Ave	6	Fri
2006-2220	11/9/2006	18:35	Pump & Run, 1030 Bruce Way	13	Thu
Average		19:00		7	
St Dev		0:46		4.27	
Minimum		17:00		1	
Maximum		20:20		16	
Predictions					
Minimum	11/10/2006	17:50			Fri
-1 St Dev	11/12/2006	18:13			Sun
+1 St Dev	11/20/2006	19:47			Mon
Maximum	11/25/2006	20:20			
Best	11/17/2006				



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Tools for Temporal Analysis

- Excel or Google Sheets
- Time-Series Analysis Software
- Tableau
- Microsoft Power BI
- Google Trends
- Temporal Data Mining Tools
- SPSS Statistics
- Temporal GIS Tools
- Open-source Temporal Analysis Libraries




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THE WHERE
Pattern Analysis of Links
and Space



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Spatial Relationships

Where?

- Specific location
- Type of location
- Environment
- Route/Recovery
- Direction of Travel/Flight
- Geographic Progression of Pattern

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Specific Locations Spatial Arrangement

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Location Types

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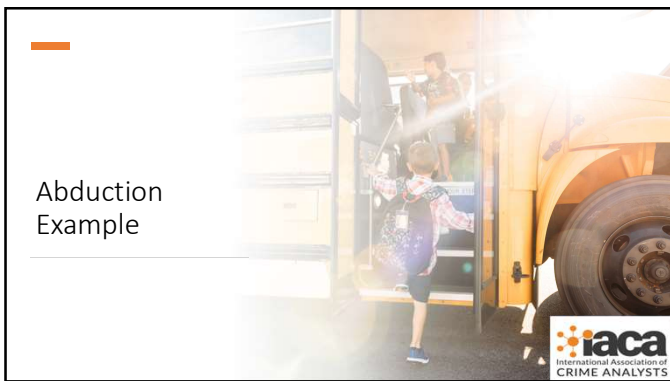
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Identity Theft Example

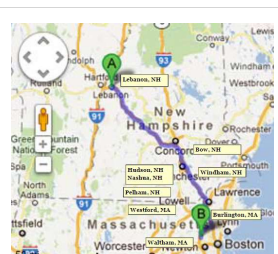


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Regional Factors

Cross-Jurisdictional Activity




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Geographic Progression

Car Jacking Series




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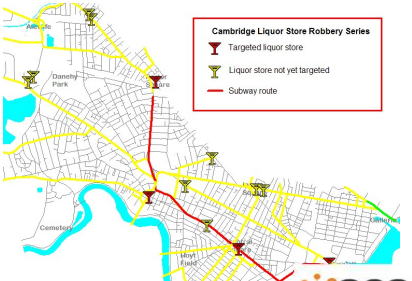

Geographic Correlation

Highways/major routes	Methadone clinics	Public transportation	Budget motels
Public housing	Schools	Gang territories	Homeless shelters





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Environmental Variables & Correlates

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Crime Pattern Theory

Client Source: http://www.papcenter.org/learnimg/10/traa/crgraphs/c/tra_16.gif

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Factors to Consider When Analyzing a Crime Pattern


Check List	What Factors <ul style="list-style-type: none"> <input type="checkbox"/> Incident Nature (Crime against Person/Property/Society) <input type="checkbox"/> Incident Types <ul style="list-style-type: none"> • Traditional • Categorization • Sub-Categorization <input type="checkbox"/> Number of Incidents in Pattern Who Factors <ul style="list-style-type: none"> <input type="checkbox"/> Number of Offenders <input type="checkbox"/> Offender Characteristics <input type="checkbox"/> Physical <ul style="list-style-type: none"> • Sex • Age • Race/Ethnicity/Nationality • Height • Weight • Build • Other Physical Characteristics <input type="checkbox"/> Property Carried <input type="checkbox"/> Social/Economic/Political <input type="checkbox"/> Education <input type="checkbox"/> Literacy <input type="checkbox"/> Income Level <input type="checkbox"/> Vehicle <input type="checkbox"/> Make & Model <input type="checkbox"/> Year <input type="checkbox"/> Body Style <input type="checkbox"/> Color <input type="checkbox"/> Stolen/Not Stolen <input type="checkbox"/> Activity <ul style="list-style-type: none"> • Pre-Crime Activity • Post-Crime Activity 	<ul style="list-style-type: none"> • Psychological <ul style="list-style-type: none"> • Intellect • Motivation <input type="checkbox"/> Number of Victims <input type="checkbox"/> Victim Characteristics (Primarily for Violent Crimes) <ul style="list-style-type: none"> • Physical <ul style="list-style-type: none"> • Sex • Age (Actual & Apparent) • Race/Ethnicity/Nationality • Height • Weight • Build • Other Physical Characteristics • Social/Economic/Political • Property Carried • Education • Occupation • Lifestyle • Income Level • Political Affiliation • Organizational Affiliations/Activity • Pre-Crime Activity • Post-Crime Activity <input type="checkbox"/> Business/Property Characteristics (Primarily for Property Crimes) <ul style="list-style-type: none"> • Industry • Name • Value • Logo/Sign • Physical Appearance • Physical Size • Material • Number of Units • Location of Parade • Political Affiliations • Social/Political Activity 	Where Factors <ul style="list-style-type: none"> <input type="checkbox"/> Geographic Location <input type="checkbox"/> Address <input type="checkbox"/> Location Type <input type="checkbox"/> Environment <ul style="list-style-type: none"> • Lighting • Degree of Isolation • Geographic Proximity to Other Locations/Events • Topology <input type="checkbox"/> Direction of Travel/Flight <input type="checkbox"/> Geographic Progression of Pattern When Factors <ul style="list-style-type: none"> <input type="checkbox"/> Time of Day <input type="checkbox"/> Day of Week <input type="checkbox"/> Type of Day (weekday, weekend, holiday, etc.) <input type="checkbox"/> Month of Year <input type="checkbox"/> Temporal proximity to other events <input type="checkbox"/> Days/Time Between Hits How Factors <ul style="list-style-type: none"> <input type="checkbox"/> Actions Essential or Incidental to Crime Commission <ul style="list-style-type: none"> • Location of Entry • Method of Entry • Weapon Used • Property Seized • Vehicle Observed • Injury Inflicted • Property Damaged/Inflicted • Miscellaneous Actions <input type="checkbox"/> Actions Not Essential to Crime Commission (Signature)
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Source: Pattern Analysis Factors Article, IACA

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Resource Links

- <https://www.iaca.net/tactical-series-webinars>
- <https://www.iaca.net/training>
- dawn@excellenceinanalytics.com



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