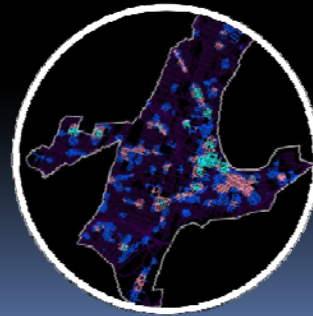


FORECASTING STREET ROBBERY LOCATIONS AT THE MICRO-LEVEL UNIT OF ANALYSIS: *An Application of Risk Terrain Modeling (RTM)*

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INTRODUCTION

STREET ROBBERIES IN RECENT LITERATURE

Robbery concentration on geographies

- Weisburd et al. (2004)
- Bernasco and Block (2008)
- Braga et al. (2010)

Robbery concentration on targets

- Kennedy and Baron (1993)
- Wright and Decker (1997)
- Tilley et al. (2005)

CURRENT STUDY

• STUDY OBJECTIVES

1. Applying Risk Terrain Modeling (RTM) to street robberies
2. By identification of high-risk street segments creating a strategic approach to robbery abatement

• RESEARCH SETTING

- Study extent: Newark
- Exclusion areas
 - Newark Int. Airport
 - Port Authority

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METHODOLOGY

• What is Risk Terrain Modeling (RTM)?

• A Brief Description of RTM:

1. Select an outcome event and identify risk factors
2. Operationalize risk factors to risk map layers
3. Combine risk map layers to produce a composite risk map

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SELECTING THE OUTCOME EVENT & IDENTIFYING THE RISK FACTORS

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METHODOLOGY

Dependent variable: Locations of Street Robberies

Definition:

- The goods stolen should belong to an individual or group of individuals
- The actual or implied use of force should be directed against the victim
- The offender and victim might be strangers or might know each other
- The incident should take place in public space (e.g. streets, sidewalks, parking lots, lots/yards, in front of commercial dwellings)

Data Source:

- Newark PD, New Jersey

Time Frame

- Robbery Incidents between January and August 2009

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METHODOLOGY

Independent variables:

▪ Selection of variables

➤ 5 out of 8 variables proved to be significantly correlated with street robberies ($p \leq .05$): Locations of;

1. Retail business venues
2. Bus stops
3. Banks
4. Drug arrests
5. Prostitution arrests

▪ Time frame:

➤ Drug arrests and prostitution arrests between January and August 2008

➤ All other 3 independent variables were available in address-level datasets for the year of 2008

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OPERATIONALIZING RISK FACTORS TO RISK MAP LAYERS & COMBINING RISK MAP LAYERS

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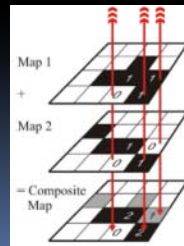
METHODOLOGY

Operationalization of independent variables:

- ArcMap's Spatial Analyst Extension
- Geocoding: Census 2000 TIGER/Line Shapefiles
- Density calculation: Density Tool

Combination of Risk Map Layers

- Raster calculator



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RESULTS

Figure 1. Period I Risk Terrain with Period II Street Robbery Overlay

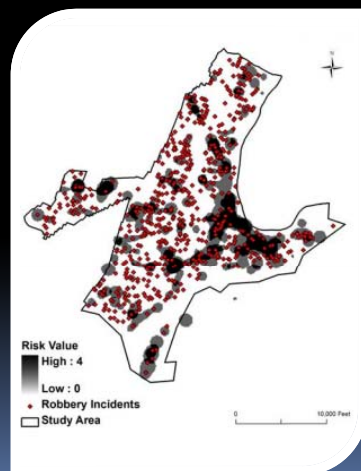
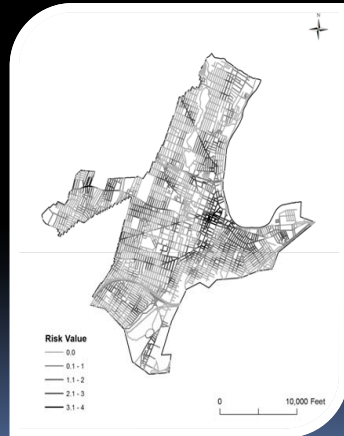


Table 1: Logistic Regressions for Risk Value on Street Robberies						
2008 Risk Terrain*						
	B	S.E.	Wald	df	Sig.	Exp(B)
Risk Value	.825	.036	531.881	1	.000	2.282

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RESULTS

Figure 2. Average Risk Value per Street Segment, Newark, NJ



Period I Risk Terrain				
	B	S.E.	Sig.	Exp(B)
Average Risk Value	.153	.049	0.002	1.166
Constant	-2.044	.055	0.000	.129

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CONCLUDING REMARKS

- Environmental context of robberies
- Recognition of administrative units in crime analysis
- Identification of risk clusters and resource allocation
- Limitations of the study and future research

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Thank You!

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