COMBINING DATA AND COMMUNITY RESOURCES TO REDUCE CRIME AT RISKY PLACES

Dr. Joel Caplan

Rutgers University, School of Criminal Justice

FRAME TODAY'S DISCUSSION WITHIN PRIOR RESEARCH

CPTED
- Design physical environment to positively influence human behavior

CRIME PATTERN THEORY
- Environmental backcloth; Attractors & Generators

ENVIRONMENTAL CRIMINOLOGY →
- Study how people and places relate to crime

HOT SPOTS
- Crime incidents cluster at the same places

NEAR REPEAT ANALYSIS
- Crime risk is greater within a short distance and time period after a new crime incident

THEORY OF RISKY PLACES →
- Vulnerability + Exposure = 'Risky Places'

FOCUS ON THE PLACES THAT NEED YOU MOST

DIAGNOSE

- Crime patterns to identify key attractors/generators

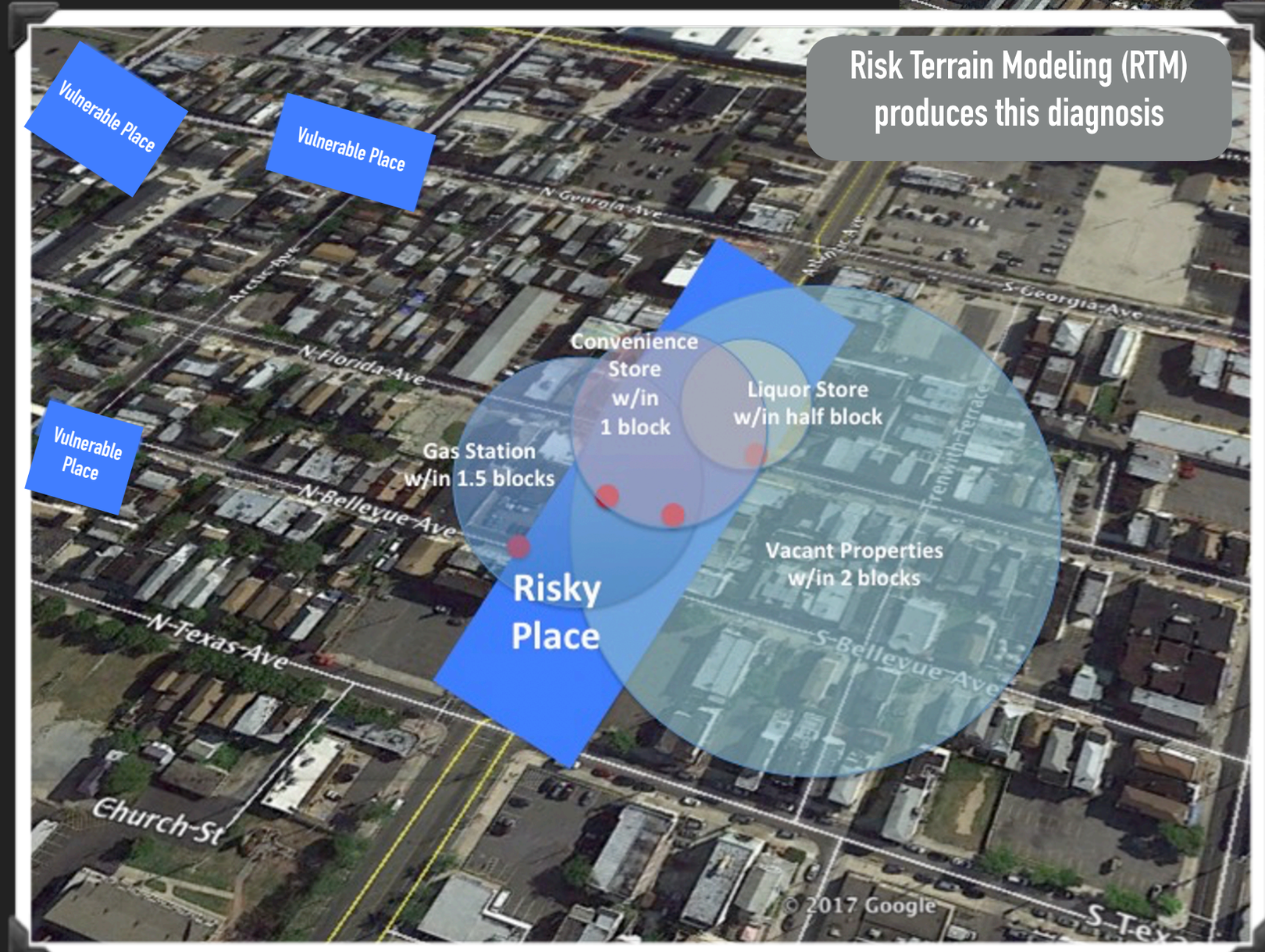
DEPLOY

- Resources at priority places based on our knowledge of current vulnerabilities and exposures

PREVENT

- Crime & other threats to public safety while meeting community expectations

Diagnose crime patterns to identify `behavior settings' within the `environmental backcloth'



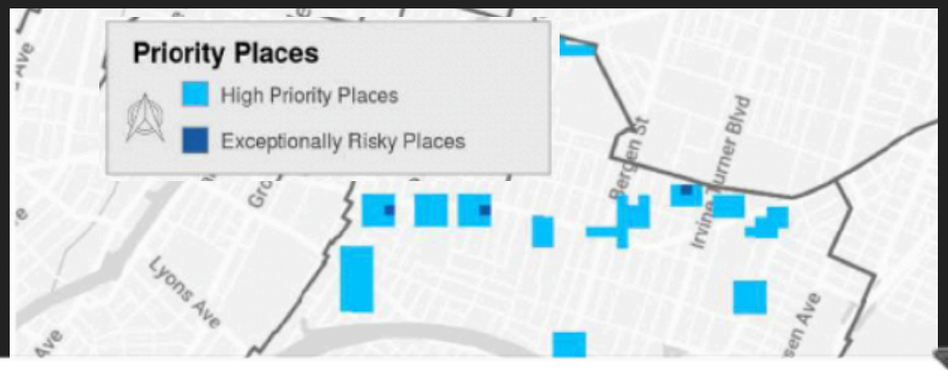
DIAGNOSE

I examine multiple facilities at once across an entire jurisdiction in one reproducible task.

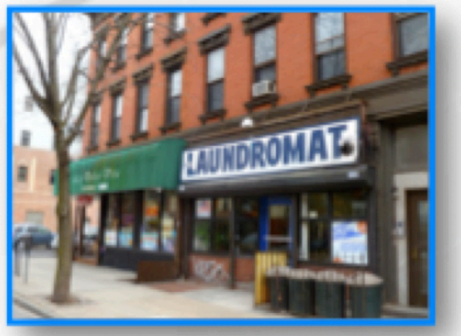
– Crime Analyst (Essex, UK)

- **Identify place features that connect with crime**
  - Find interactions that create opportunities for crime
  - Risk Terrain Modeling (RTM): Empirically minimize uncertainty

Deploy to disrupt opportunities for crime

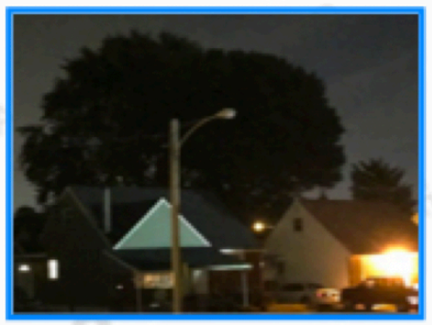


Apartments, Banks, Bars, Check Cashing Services, Coffee Shops, Grocery Stores, Department Stores, Self-Betterment Centers, Health **Convenience Stores** **Laundromats** Public Libraries, Liquor Stores, Manicuring Shops, Movie Theaters, Parking Lots, Parks, **Gas Stations**, Pawn/Second Hand Dealers, Pharmacies, Rec Centers, **Vacant Buildings** Restaurants, Variety Stores, Schools, Shelters.



Police focus patrols and conduct business checks…

Police patrol at peak times; Public Works adds street lights



Make results from the RTM diagnosis actionable

…

and relatable to people in the field

Risk Narratives

Planning Department boards-up and demolishes priority vacant buildings

DEPLOY

Diagnosing risk terrains offers an irreversible perspective on safety and risk that drives action and innovation.

– Data Science Manager (Edmonton, Canada)

- **Maximize Existing Resources**
  - Prioritize places (objectively)
  - Know where & when to go, and what to focus on
  - Include multiple stakeholders
  - Increase transparency

TWO QUICK CASE STUDIES

Shootings (Philadelphia)

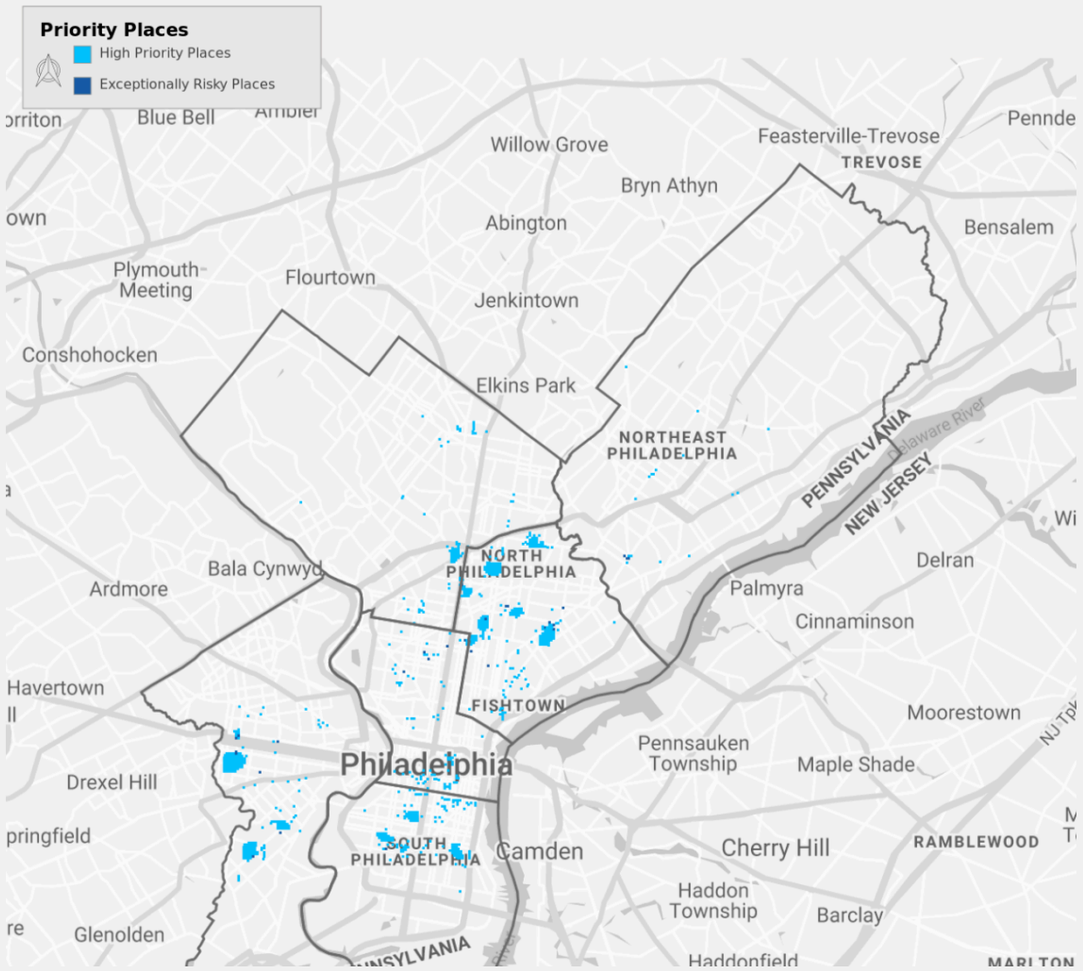
Robberies (Atlantic City)

It improves community relations and does not define people as the problem. We reduced crime without contributing to mass incarceration.

– Chief of Police (Atlantic City, New Jersey)

2018 Shootings T1 | 2018 Shootings T2 | +

Study Area | Unit of Measurement | Analysis Issue | Risk Factors | Summarize & Run | Report



GIS Tools

Open GIS Workspace

Map Type

The map(s) to be downloaded or included in the generated report PDF can be previewed to the left.

These maps are for illustration purposes. Download maps with all relative risk scores to fully explore risky places in a GIS.

Report Options

Generate Report PDF

Explore / Geocode

Priority Places

Shows all places with relative risk scores (RRS) two standard deviations or more above the mean that intersect with recent past exposures to create exceptionally risky places (displayed in dark blue) and/or places with RRS equal to or greater than the top 1% value (displayed in light blue). At least 1% of places in the study area are displayed.
Download Google Maps KML

Results

Agency Edition

You have access to all available outputs, including customizable PDF reports, PNG images, KML maps, vector shapefiles, raster data, and raw statistical files. These give you the most flexibility to view and share results, or for further study in a geographic information system (GIS), Google Earth, or other statistical programs.

Download PNG and KML Files

Download Shapefiles, Raster Data and Raw Statistical Files

Analysis units of forecast = 250 ft places
Total Number of Places = 64625
RRS Statistics:
Range = 1 to 438.334
Mean = 15.518
Standard Deviation = 24.465
Number of Places greater than 2 Standard Deviations from the Mean = 2782 (4.30% of the study area)

Analysis Duration: 1 hr 16 min 45 sec
GIS Duration: 3 min 56 sec
Image Duration: 9 min 9 sec
Total time: 1 hr 29 min 50 sec

Risk Factor Name	Operationalization	Spatial Influence	Relative Risk Value	Download
Grocery_and_Convenience	Proximity	1000	4.856	Download KML
ATM	Proximity	1500	3.701	Download KML
BeautyEyeNailWigHairMakeup	Proximity	250	1.798	Download KML
PreciousMetals_Jewelry_Pawn	Density	1250	1.708	Download KML
KindergartenToElementary	Proximity	1500	1.509	Download KML
Auto_Repair	Proximity	1500	1.416	Download KML
Laundries	Proximity	1500	1.289	Download KML

BACK

2018 Shootings T1 | 2018 Shootings T2 | +

Study Area | Unit of Measurement | Analysis Issue | Risk Factors | Summarize & Run | Report

GIS Tools

Open GIS Workspace

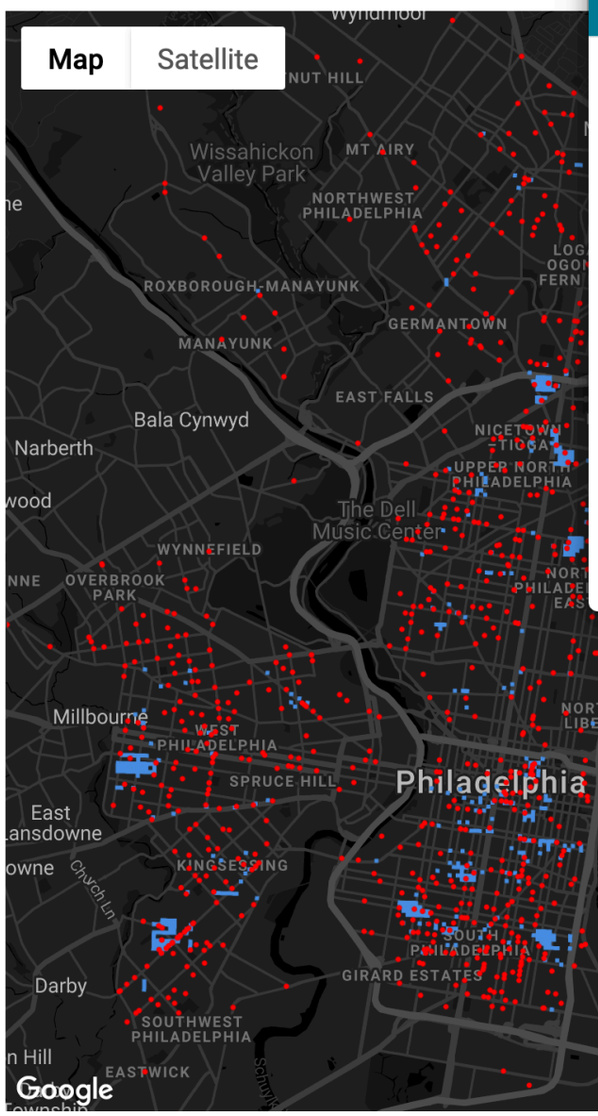
Map Type

Results

Agency Edition

You have access to all available outputs, including customizable PDF reports, PNG images, KML maps, vector shapefiles, raster data, and raw statistical files. ...e give you the most flexibility to view and share

Map



Intersect & Download for: 2018 Shootings T1

Select the file from which to retrieve attributes for its features that intersect within the visible cells of 2018 Shootings T1

For example, if you selected an analysis map and have set the symbology to Priority Areas, this will provide you with a CSV file that includes the attributes such as address fields for points in the selected file that are within the Priority Areas.

Choose a file below:

You must add the file to your Workspace first for it to show up here.

Phila - B - Grocery_and_Convenience.shp

Matched 119 of 1210 total rows.

Download CSV file

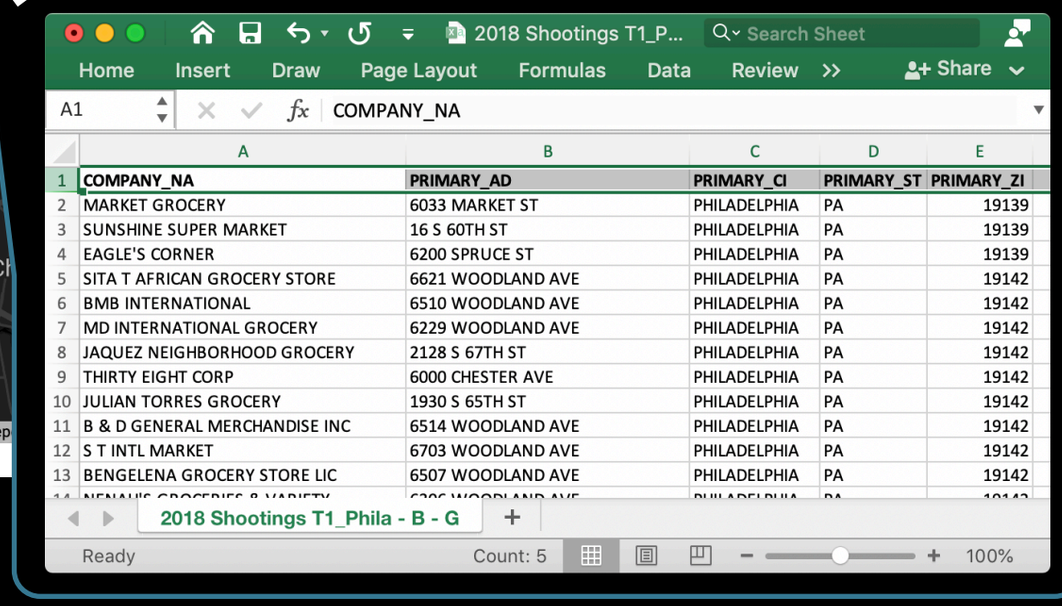
...Tools

...RTM Analysis | Compare RTM Analyses

...nts

...rocery_and_Convenience.shp

...gs T1



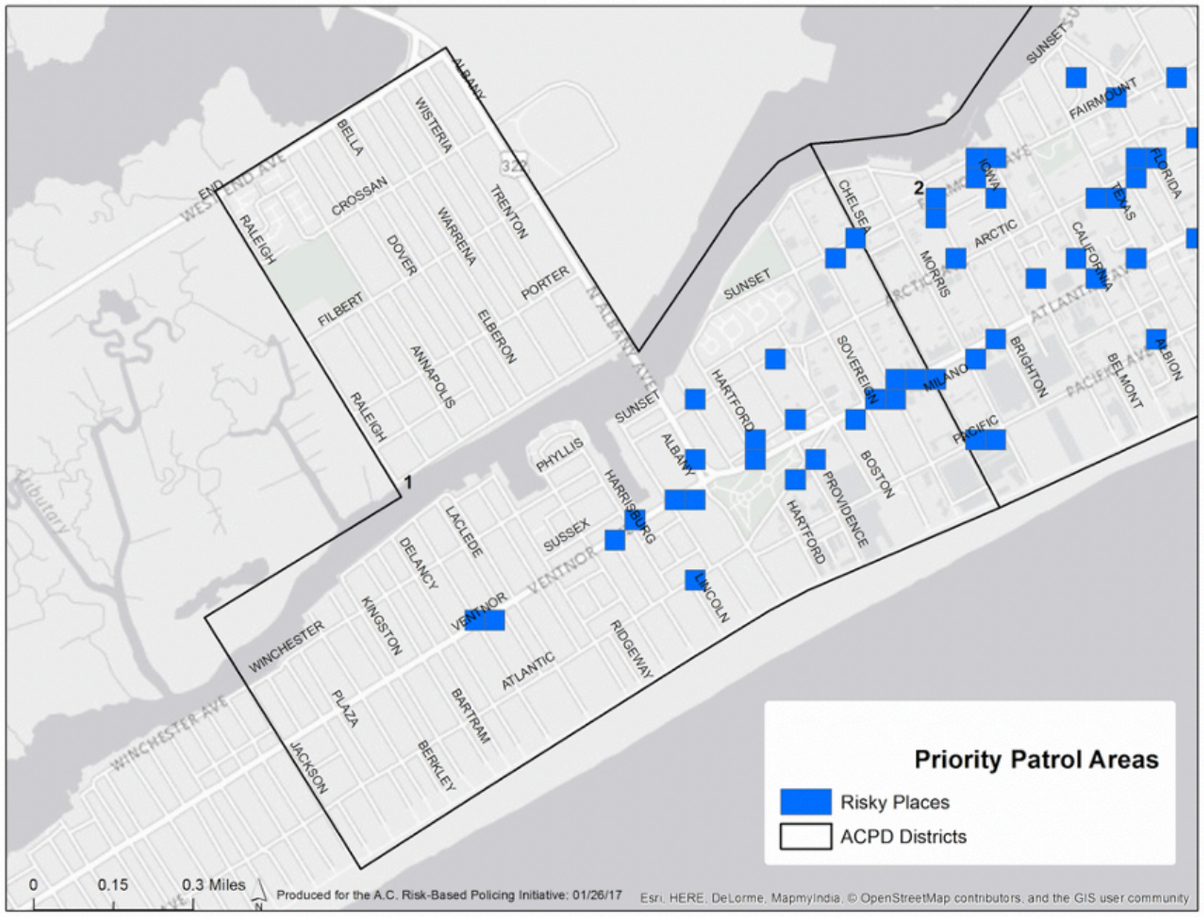
	A	B	C	D	E
1	COMPANY_NA	PRIMARY_AD	PRIMARY_CI	PRIMARY_ST	PRIMARY_ZI
2	MARKET GROCERY	6033 MARKET ST	PHILADELPHIA	PA	19139
3	SUNSHINE SUPER MARKET	16 S 60TH ST	PHILADELPHIA	PA	19139
4	EAGLE'S CORNER	6200 SPRUCE ST	PHILADELPHIA	PA	19139
5	SITA T AFRICAN GROCERY STORE	6621 WOODLAND AVE	PHILADELPHIA	PA	19142
6	BMB INTERNATIONAL	6510 WOODLAND AVE	PHILADELPHIA	PA	19142
7	MD INTERNATIONAL GROCERY	6229 WOODLAND AVE	PHILADELPHIA	PA	19142
8	JAQUEZ NEIGHBORHOOD GROCERY	2128 S 67TH ST	PHILADELPHIA	PA	19142
9	THIRTY EIGHT CORP	6000 CHESTER AVE	PHILADELPHIA	PA	19142
10	JULIAN TORRES GROCERY	1930 S 65TH ST	PHILADELPHIA	PA	19142
11	B & D GENERAL MERCHANDISE INC	6514 WOODLAND AVE	PHILADELPHIA	PA	19142
12	S T INTL MARKET	6703 WOODLAND AVE	PHILADELPHIA	PA	19142
13	BENGELENA GROCERY STORE LIC	6507 WOODLAND AVE	PHILADELPHIA	PA	19142

2017 Target Area Risk Factors

District 1 - Risk-Based Policing

1. Convenience Stores

Business Name	Address
BABAJAN FOOD MARKET	3104 PACIFIC AV
GOLDEN MERCHANDISE	3120 ATLANTIC AVE
ROSARIO'S MINI MARKET	3303 ATLANTIC AVE
AC FOOD & VARIETY	3307 ATLANTIC AVENUE
BOOM FOOD MARKET	3601 VENTNOR AV
TOBACCO JUNCTION & VARIETY	3313 ATLANTIC AVENUE



POLICE PRACTICE & RESEARCH
An International Journal

POLICE PRACTICE AND RESEARCH
https://doi.org/10.1080/15614263.2021.1917399

Routledge
Taylor & Francis Group

ARTICLE

Check for updates

Data-informed crime prevention at convenience stores in Atlantic City

Leslie W. Kennedy[a], Joel M. Caplan[a] and Grant Drawve[b]

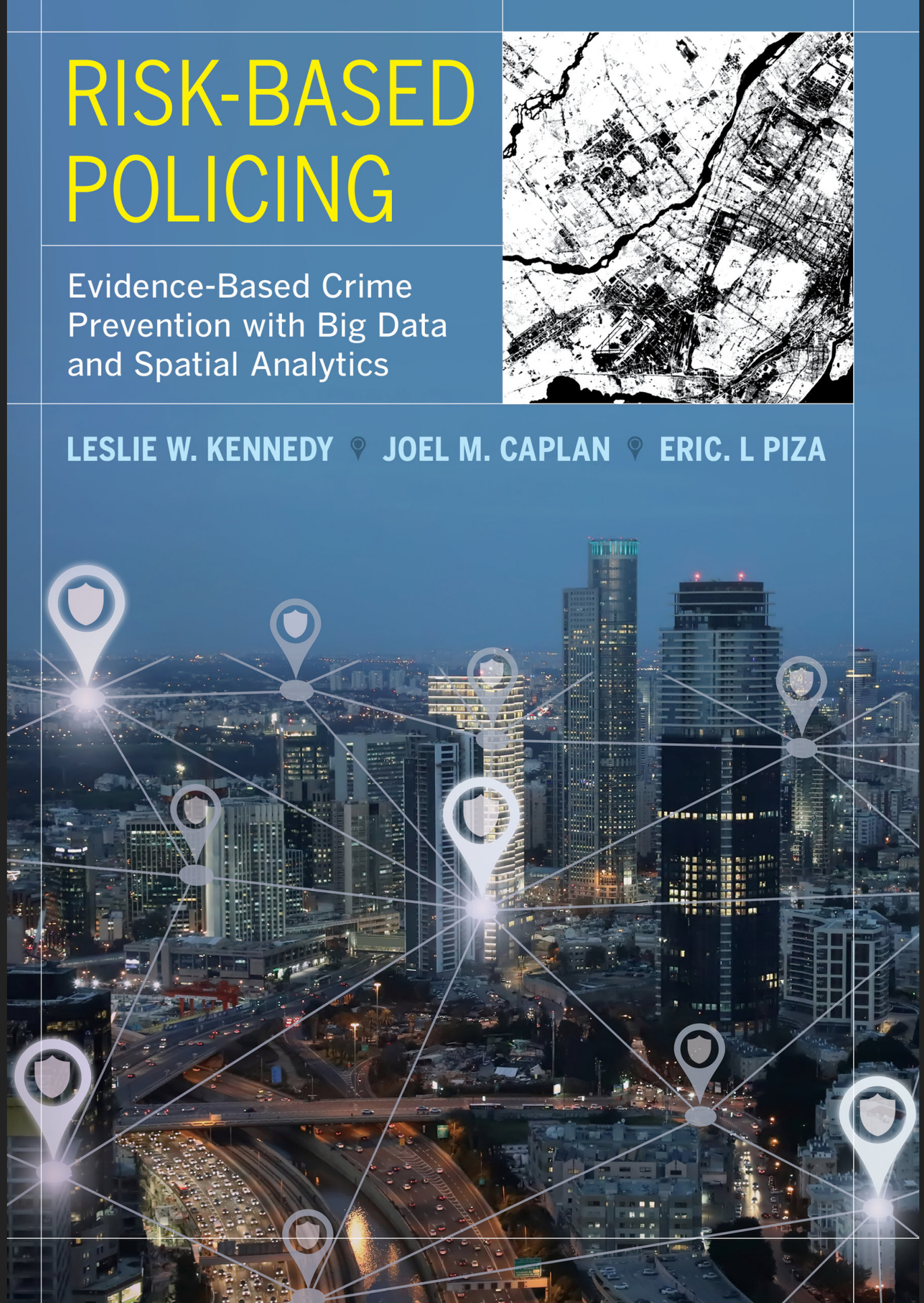
[a]Rutgers School of Criminal Justice, Newark, NJ, USA; [b]Department of Sociology and Criminology, University of Arkansas, Fayetteville, Arkansas, USA

ACPD diagnosed spatial patterns of robbery then focused on convenience stores to dynamically deploy their patrol officers.

Robberies decreased 63%

When diagnosing crime patterns and deploying resources is spearheaded by police...

RiskBasedPolicing.com



POLICE ARE ASKED TO DO A LOT, AND STRETCHED BEYOND THEIR EXPERTISE

DISORDER & CRIME

Loitering / Homelessness / Mental Illness

Burglary / Robbery / Homicide

POLICE

expected to handle all calls-for-service and carry the full burden for crime prevention

THE RIGHT RESOURCES, TO THE RIGHT PLACES, AT THE RIGHT TIMES

DISORDER & CRIME

Loitering / Homelessness / Mental Illness

Burglary / Robbery / Homicide

POLICE
focus on more serious problems

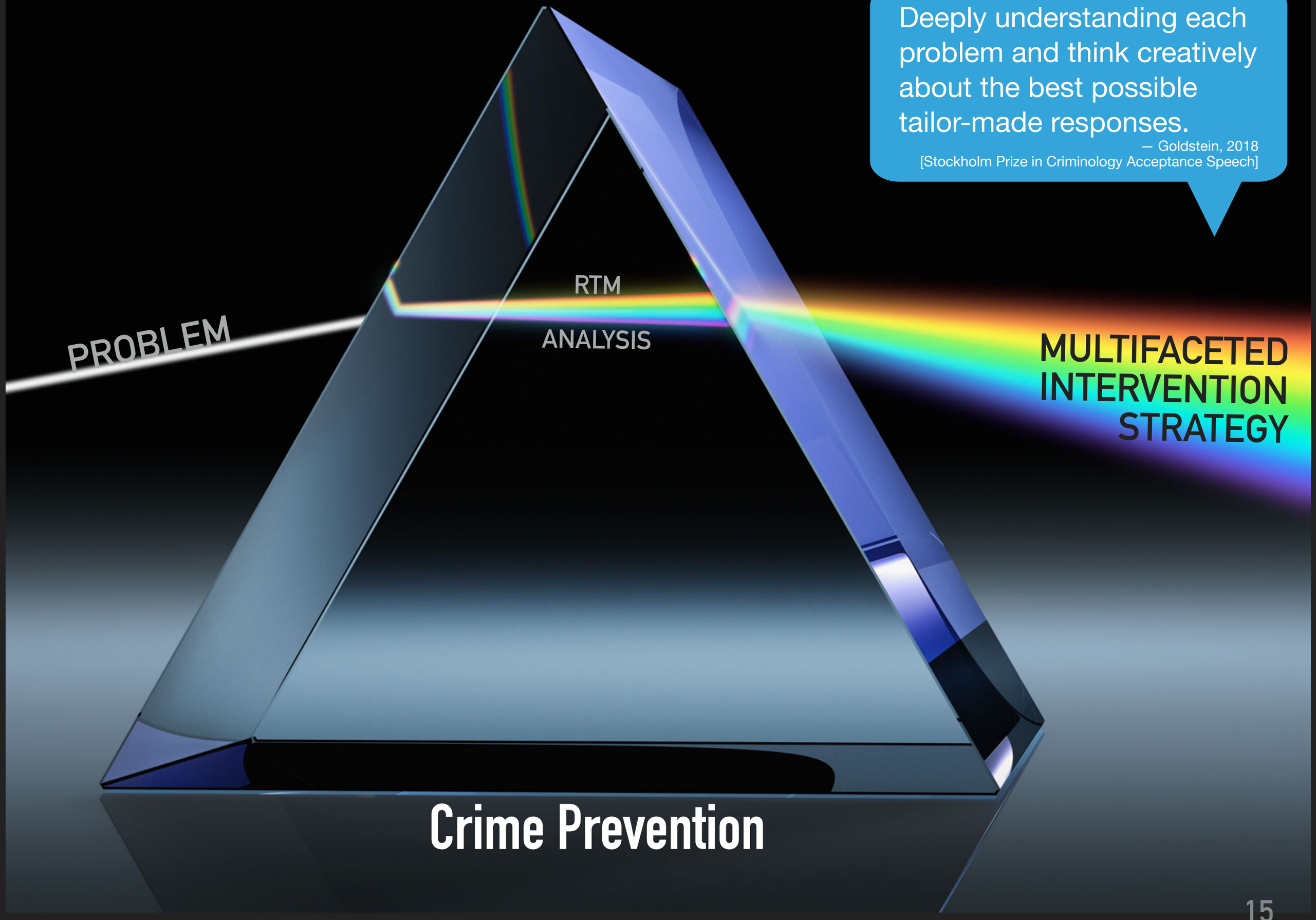
Other City Services

NGO / Local Orgs

REDUCED DEMAND = BETTER FOCUS ON PRIORITIES = BETTER OUTCOMES

Deeply understanding each problem and think creatively about the best possible tailor-made responses.

— Goldstein, 2018
[Stockholm Prize in Criminology Acceptance Speech]



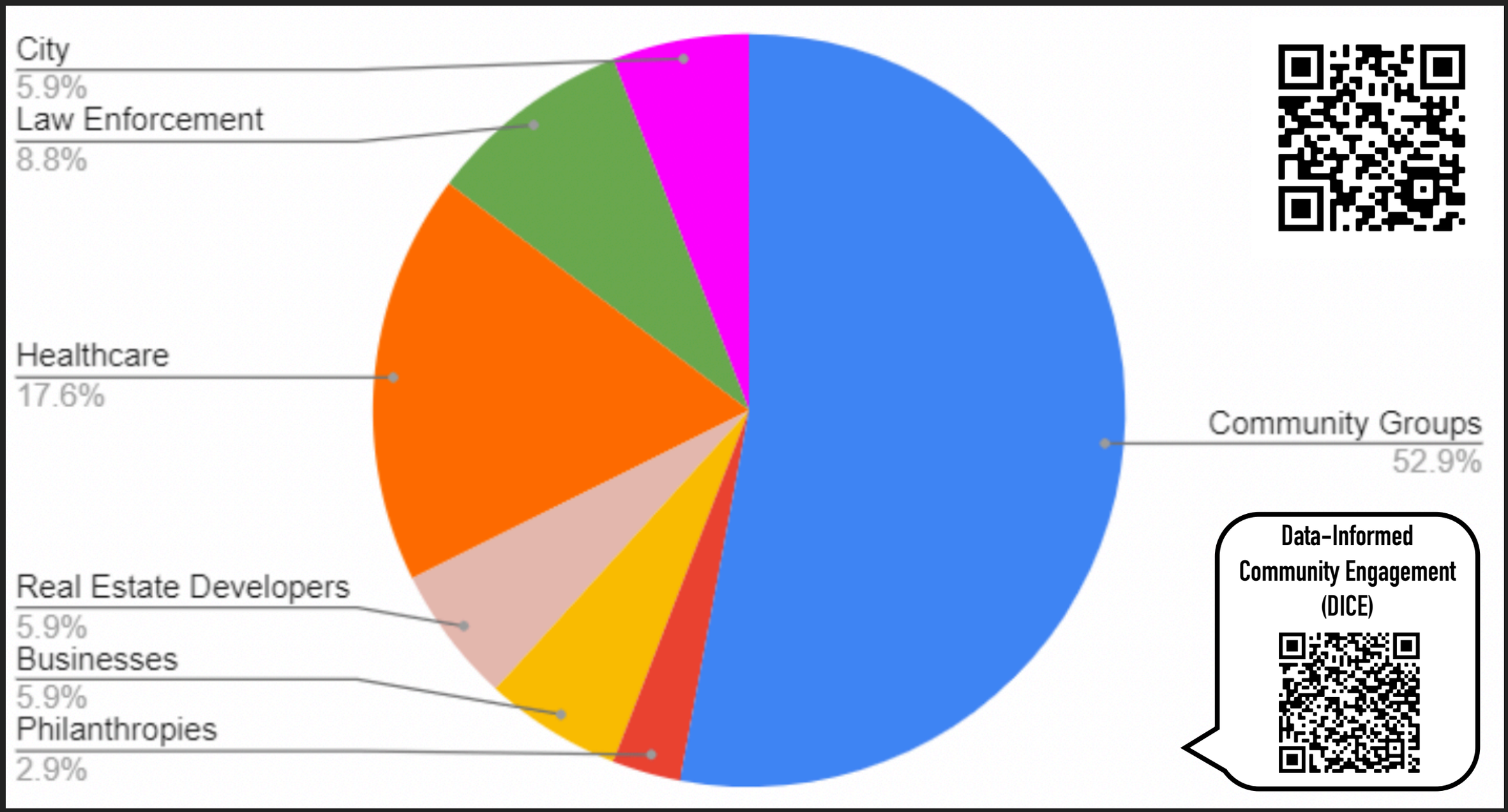
Crime Prevention

NPSC

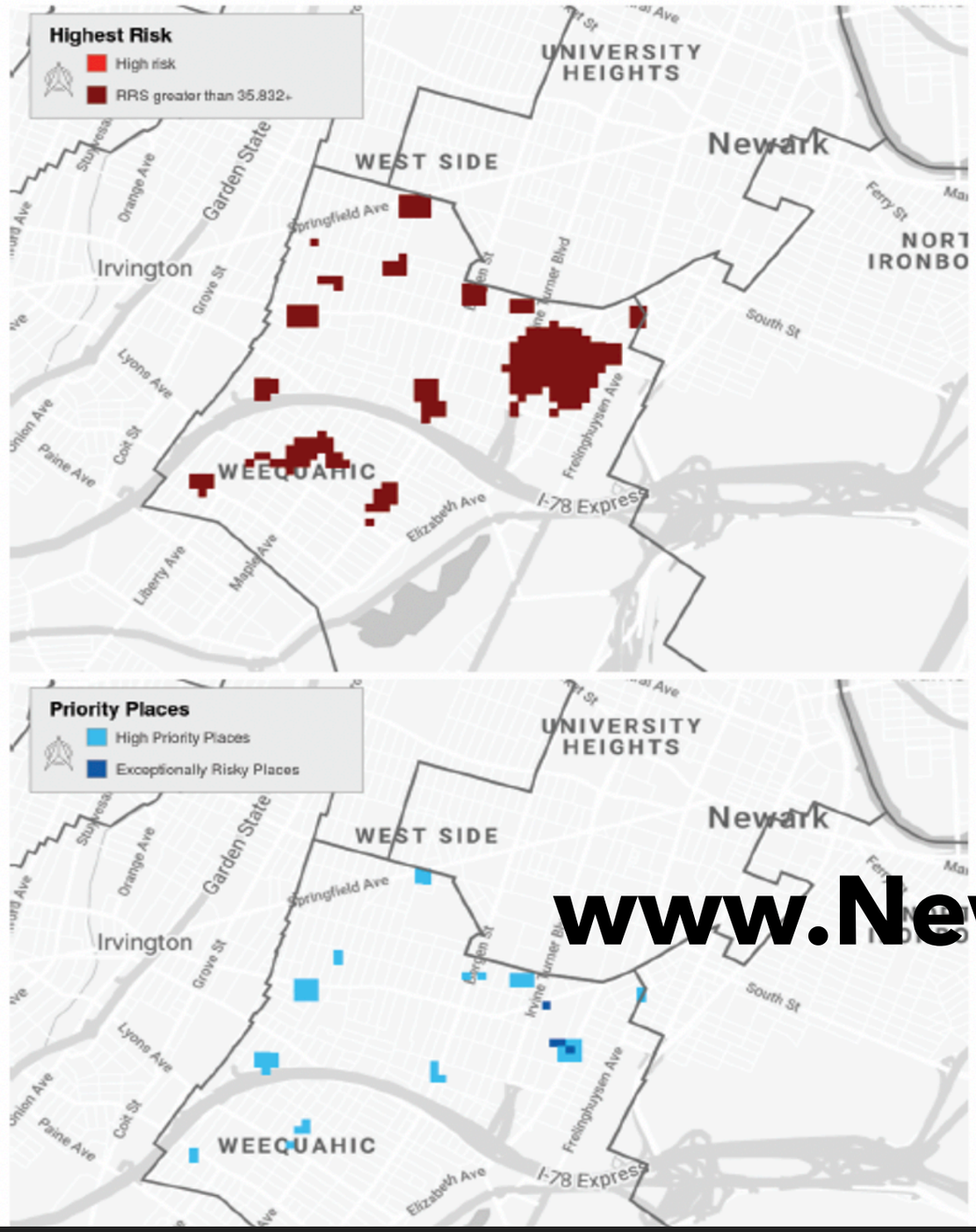
NEWARK PUBLIC SAFETY COLLABORATIVE

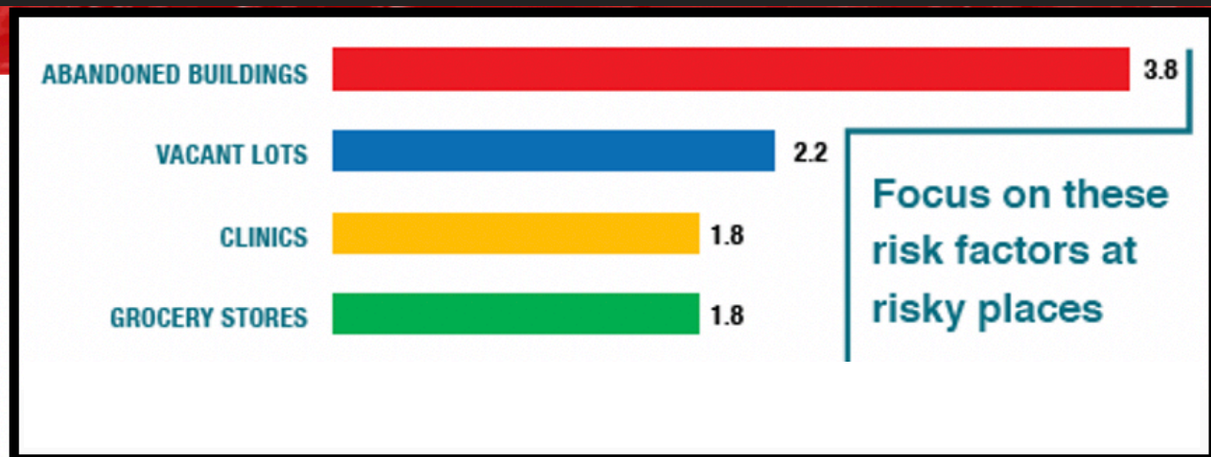
Monthly meetings with diverse stakeholders.

Informed by the same data & analytics, they add context to crime problems, then form strategies to disrupt the risk narratives.



VULNERABLE PLACES FOR AGGRAVATED ASSAULT IN THE SOUTH WARD, NEWARK





Abandoned buildings in priority places*

- 812 Clinton Ave
- 7 Ridgewood Ave
- 16 Ridgewood Ave
- 583-585 Bergen St
- 59 Hillside Ave
- 83 Schley St

www.NewarkCollaborative.org

Vacant lots in priority places**

- 526 Springfield Ave
- 523 Springfield Ave
- 579 Bergen St
- 797 Bergen St
- 807 Bergen St
- 799 Bergen St

NEW COMMUNITY CORPORATION

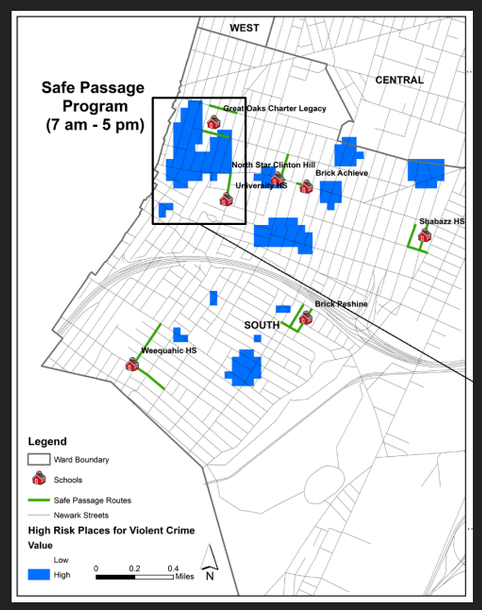
Site suitability analysis; Remediate abandoned buildings and improve access to affordable housing

South Ward Children's Alliance

Newark Community Solutions

Adopt city-owned vacant lots in high-risk places & turning them into useable, maintained, spaces

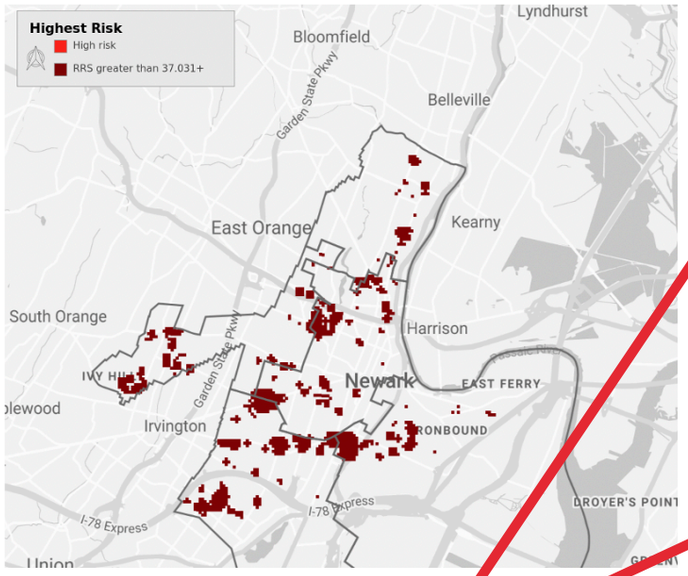
NCST
NEWARK COMMUNITY STREET TEAM



Outreach Workers are deployed to help ensure safe passage for children walking to and from school along high-risk routes

NPSC NEWARK PUBLIC SAFETY COLLABORATIVE

Violent Crime Risk Analysis
(1/1/2021 – 3/18/2021)

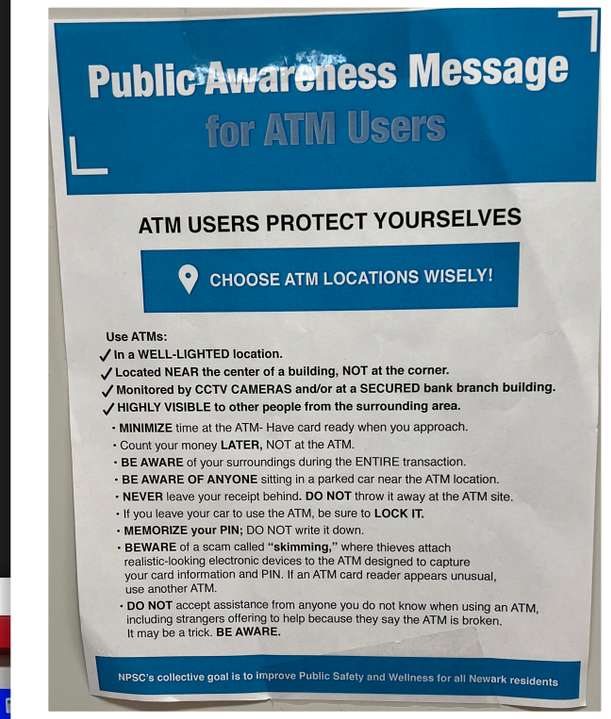


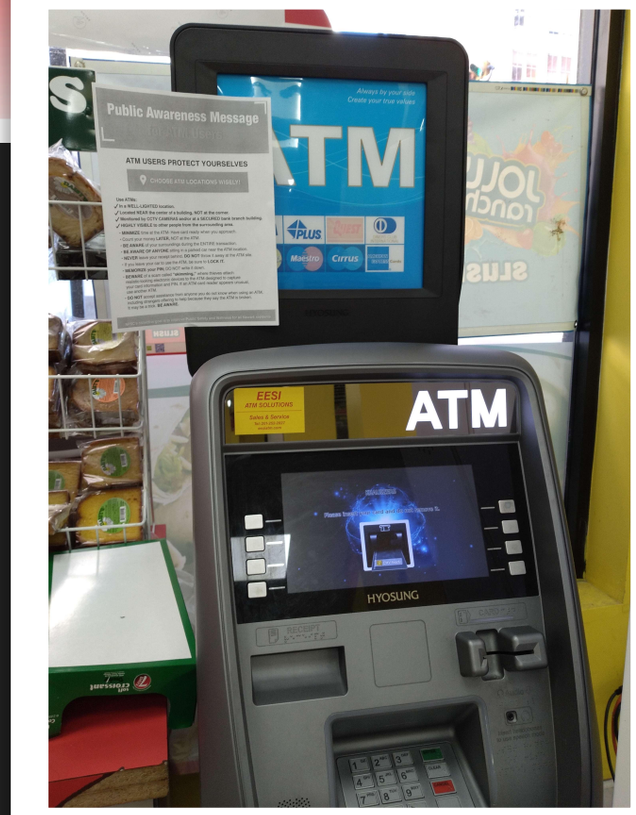
- "vic was depositing currency inside the atm when a unk male approach from behind placed a unk object on her back & demanded property. sus removed currency from vic purse & fled the scene"

- "time: 0015-0029, v: y, f: n vic was depositing $90.00 inside the atm when an unk bm approached him from behimd std do not put the money in the machine sus then pushed vic on the ground punched him several times & tk $90.00 & his wallet"

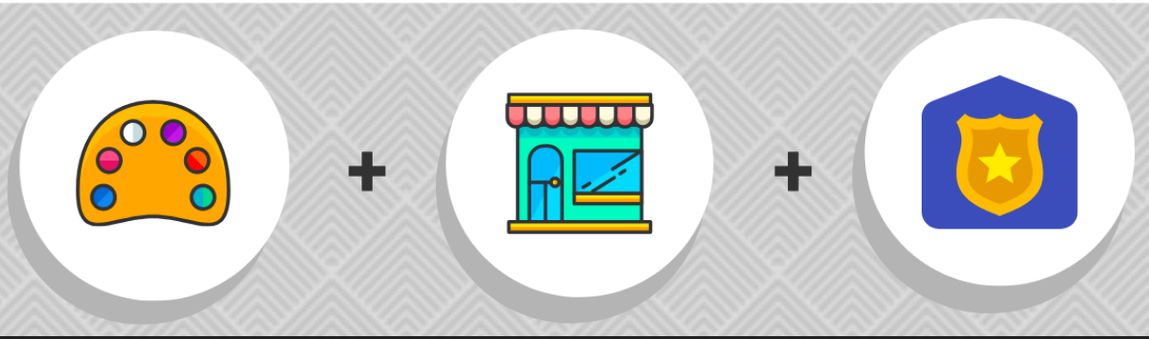
Main Risk Factors: Abandoned buildings, ATMs, and vacant lots.

newarkcollaborative.org/atm-public





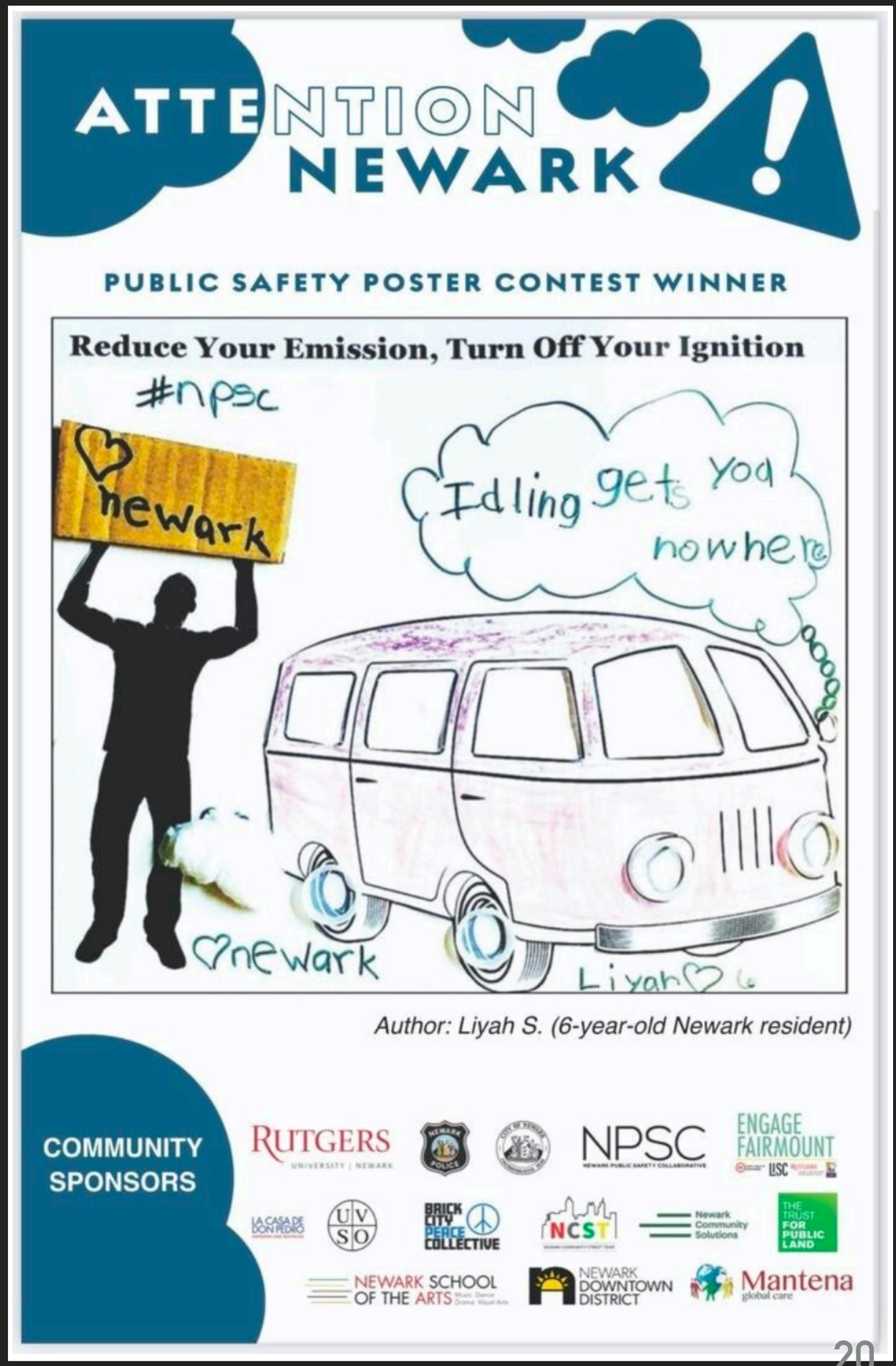
Art School, Businesses and the Police: A Case Study



Motor Vehicle Theft

DECREASED 40%

newarkcollaborative.org/mvtcampaign



Article

Police Quarterly
0(0) 1–27
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/10986111211000205
journals.sagepub.com/home/pqx

SAGE

Data-Informed and Place-Based Violent Crime Prevention: The Kansas City, Missouri Risk-Based Policing Initiative

Joel M. Caplan[1], Leslie W. Kennedy[1], Grant Drawve[2], and Jonas H. Baughman[3]

Abstract

The Kansas City, Missouri Police Department sought to reduce violent crime with an evidence-based approach to problem analysis and intervention planning. Informed by hot spot ana… …ain modeling, police and their community partners implem… …attractors and … …as were sele… …violent crime… …spatial diffusion… …resulting in arrests or citations. Crime prevention was achieved without an abundance of law enforcement actions against people located at the target areas. Implications for policy and practice are discussed within the contexts of police responses to urgent crime problems and data analytics.

23% REDUCTION

[The NPSC model] helps us bring insightful information to community groups who coordinate programs that lower the risk of violent gun crimes in our city.

– President of CPAL (Dallas, Texas)

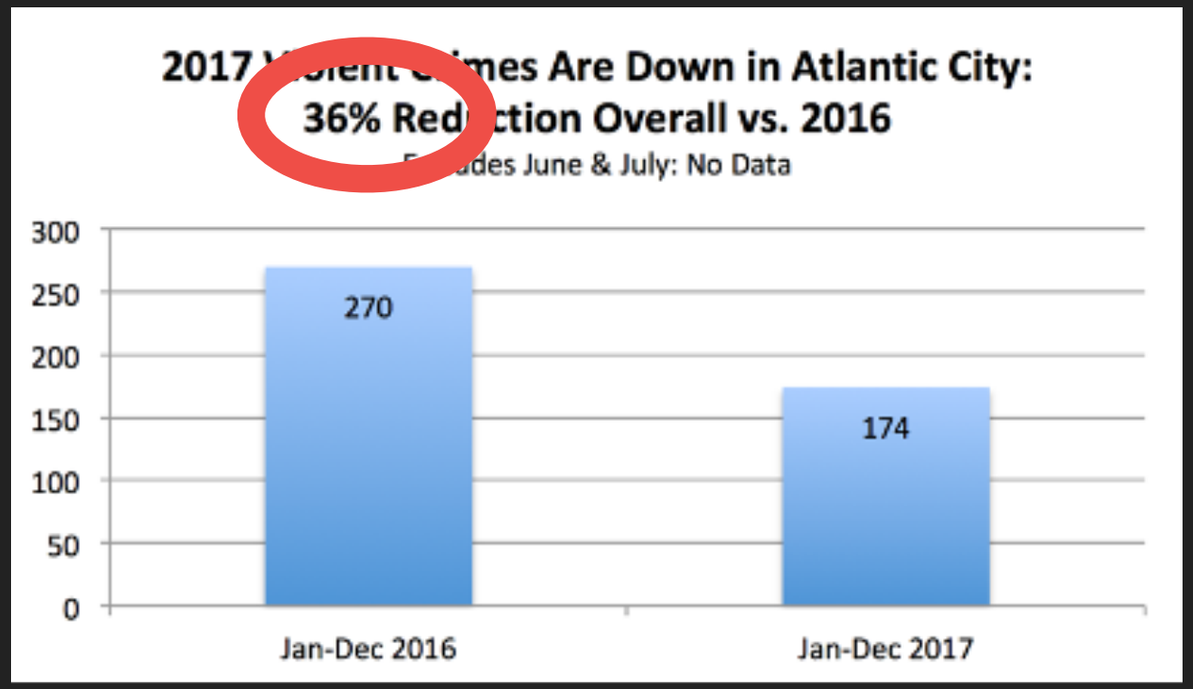
NIJ National Institute of Justice

RELATED RESEARCH

Glendale, AZ: Robbery down 42%

Colorado Springs, CO: MVT down 33%

Newark, NJ: Gun crimes down 35%



PREVENT

Diagnosing risky places offers a non-biased approach to addressing the reason for why crime is occurring at a given location. It allows us to focus on the true causes of crime and fix the problems.

– Assistant Chief (Fayetteville, NC)

- **Solve Problems**
  - Quickly before they persist
  - Address existing chronic hot spots (attractors/generators w/in them)
  - Meet community expectations
  - Deliver (trauma-informed) services to people at the places needing it most

PREVENTION

- (ASEPB) Evidence-based policing flows from EB Medicine
- Medicine relies on multiple specialists to prevent and treat illness or trauma. Specific problems require coordination among multiple experts (e.g., pathologists, nurses, internists, radiologists, surgeons)…and outside partners.
- Crime problems require multiple stakeholders and resources too

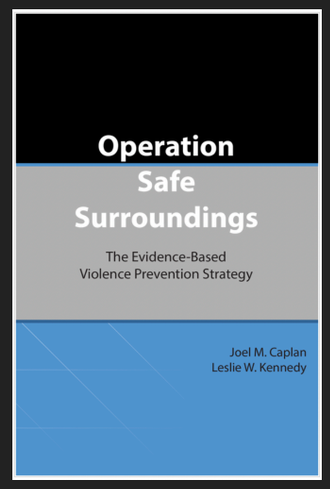
"We need to differentiate between law enforcement and public safety."

– Director, Dallas Office of Integrated Public Safety Solutions (Texas)

Think differently about crime prevention . . .

It's not about choosing one or another "strategy". It's about the process for data sharing and problem-solving, with inputs & actions from many stakeholder perspectives, to coordinate multiple resources.

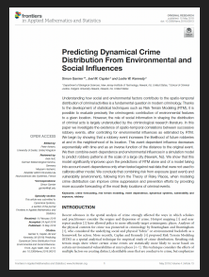
The PROCESS for co-production is the strategy!



OPERATION SAFE SURROUNDINGS
(HOW-TO; EBOOK)

LET'S CHAT...

FURTHER READING AND WATCHING



PREDICTING DYNAMICAL CRIME DISTRIBUTION FROM ENVIRONMENTAL AND SOCIAL INFLUENCES (THEORY TEST, ARTICLE)

- HTTPS://WWW.FRONTIERSIN.ORG/ARTICLE/10.3389/FAMS.2018.00013

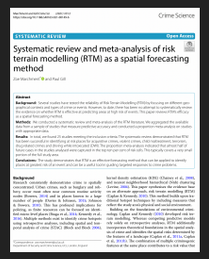
USING VULNERABILITY AND EXPOSURE TO IMPROVE ROBBERY PREDICTION AND TARGET AREA SELECTION (THEORY TEST, ARTICLE)

- HTTPS://LINK.SPRINGER.COM/ARTICLE/10.1007/S12061-019-09294-7

COGNITIVE AND AFFECTIVE PROCESSING OF RISK INFORMATION (RISK COMMUNICATION, ARTICLE)

- HTTPS://DOI.ORG/10.3389/FPSYG.2020.02222

PNG image of this slide >

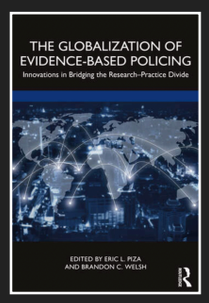


SYSTEMATIC REVIEW AND META-ANALYSIS OF RISK TERRAIN MODELING AS A SPATIAL FORECASTING METHOD (ARTICLE)

- HTTPS://CRIMESCIENCEJOURNAL.BIOMEDCENTRAL.COM/ARTICLES/10.1186/S40163-021-00149-6

THE CRIME RISK KALEIDOSCOPE (ARTICLE)

- HTTPS://DOI.ORG/10.1016/J.APGEOG.2016.12.011



DATA-INFORMED COMMUNITY ENGAGEMENT (CHAPTER IN EDITED BOOK)

- WWW.ROUTLEDGE.COM/THE-GLOBALIZATION-OF-EVIDENCE-BASED-POLICING-INNOVATIONS-IN-BRIDGING-THE/PIZA-WELSH/P/BOOK/9780367461966

TEDX (VIDEO)

- YOUTU.BE/5HKWLY1LZRS

NPSC (VIDEO)

- YOUTU.BE/-AZ_Q8SHGX0