Every Block Counts: Targeting Strategy Analysis

Comparing Block Selection Options for Place-Based Violence Intervention

Mayor's Office of Criminal Justice

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Contents

1 Executive Summary

This report analyzes three targeting strategies for the Every Block Counts (EBC) intervention, a place-based violence reduction initiative targeting high-crime micro-places in New York City. The analysis uses **five years of crime data** (October 2020 - September 2025) to compare how different crime metrics would identify target blocks.

1.1 Key Findings

Table 1: Analysis Overview

Metric	Value
Total Physical Blocks Analyzed	89,292
Analysis Period	2020-10-01 to 2025-09-30
Gun Violence Incidents	30,472
Violent Street Crime Incidents	212,197
All Violent Crime Incidents	481,587

Critical Policy Takeaways:

1. **Crime is highly concentrated**: The top 100 blocks (approximately 0.1% of all blocks) account for a disproportionate share of violent crime
2. **Different metrics identify different blocks**: Gun violence targeting and violent street crime targeting show only partial overlap
3. **Blended approaches offer tradeoffs**: A 50/50 blend of gun violence and street crime captures meaningful portions of both crime types
4. **Geographic clustering**: Top blocks concentrate in specific precincts and neighborhoods, enabling coordinated intervention

2 Introduction and Purpose

2.1 Background

The Every Block Counts (EBC) initiative is a stepped-wedge cluster randomized controlled trial testing place-based, non-police interventions at violent micro-places in NYC, scheduled to run from 2026-2030. This analysis informs the critical decision of **how to select target blocks** for intervention.

2.2 The Targeting Decision

Three primary options are considered:

Option	Crime Metric	Rationale
Option 1	Gun Violence (shootings + shots fired)	Targets most serious violence; aligns with public safety priorities
Option 2	Violent Street Crime	Captures outdoor interpersonal violence; more incidents = more statistical power
Option 3	All Violent Crime	Broadest definition; maximum volume for intervention exposure

2.3 Methodology

2.3.1 Spatial Unit Definition

The unit of analysis is the **physical block** — a section of street between two intersections. NYC contains approximately 89,292 such blocks. This definition aligns with:

- How people experience and navigate streets
- How interventions can be physically deployed
- NYPD operational geography

2.3.2 Intersection Assignment

A methodological challenge arises when crime occurs at intersections. We use an **equal-split allocation** method:

- Crimes clearly on a block face are assigned 100% to that block
- Crimes at intersections are split equally among all adjacent blocks
- Example: A shooting at a 4-way intersection contributes 0.25 incidents to each of the 4 adjacent blocks

This approach avoids arbitrary assignment while ensuring total incident counts are preserved.

2.3.3 Analysis Window

- **5-year period**: October 1, 2020 to September 30, 2025
- **Rationale**: Captures stable patterns while allowing for recent trends
- **1-year period** (October 2024 to September 2025) also analyzed for recent gun violence patterns

3 Crime Concentration Analysis

A foundational question: **How concentrated is crime across blocks?**

3.1 Concentration Curves

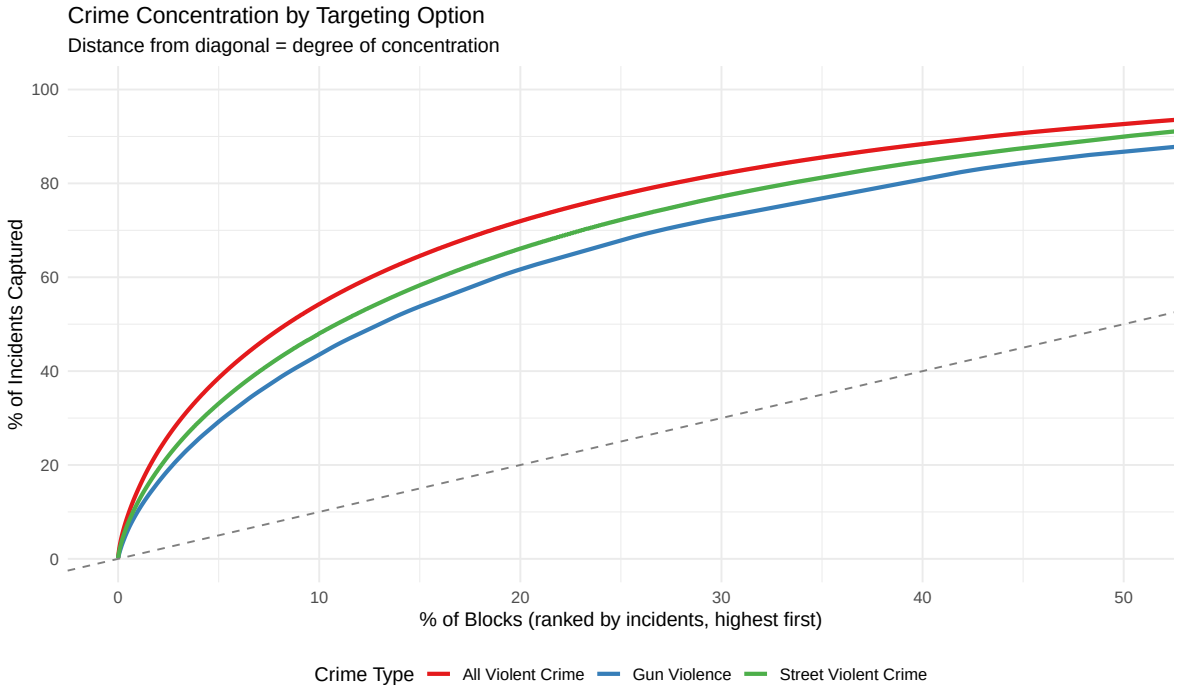

Figure 1: Crime concentration curves showing what percentage of incidents occur on the highest-crime blocks

3.2 Key Concentration Thresholds

Table 3: Percentage of crime captured by top X percent of blocks

	Crime Captured		
Top Pct of Blocks	Gun Violence	Street Violent	All Violent
1%	10.2%	12.2%	14.8%
2%	16.4%	19.1%	23%
5%	29.2%	33.1%	38.5%
10%	43.5%	48%	54.3%
20%	61.7%	66.1%	72%

Interpretation: Gun violence shows the highest concentration — a small number of blocks experience a disproportionate share. This supports the rationale for place-based intervention: targeting resources at specific locations can address a substantial portion of the problem.

4 Targeting Option Comparison

4.1 Option 1: Gun Violence Targeting

Definition: Shootings (persons shot) + Shots fired (ballistic evidence detected)

Table 4: Gun Violence Targeting Summary

Metric	Value
Total Incidents (5 years)	30,472
Blocks with 1+ incidents	12,340
Incidents in Top 100 blocks	2,701
Pct of gun violence in Top 100	8.9%

Advantages:

- Targets most serious violence
- Strongest concentration = highest efficiency
- Aligns with public priority on shootings

Disadvantages:

- Lower statistical power (fewer incidents)
- May miss blocks with chronic non-gun violence
- Gun violence may be more mobile/harder to predict

4.2 Option 2: Violent Street Crime Targeting

Definition: Violent crimes (murder, rape, robbery, felony assault, misdemeanor assault) occurring in outdoor/public locations

Table 5: Street Violent Crime Targeting Summary

Metric	Value
Total Incidents (5 years)	212,197
Blocks with 1+ incidents	52,134
Incidents in Top 100 blocks	8,285
Pct of street crime in Top 100	3.9%

Advantages:

- Higher volume = more statistical power
- Directly relevant to street-based interventions
- Captures the "feel" of block-level disorder

Disadvantages:

- Includes less serious offenses (Assault 3)
- May dilute focus on most serious harm
- Indoor/outdoor classification has noise

4.3 Option 3: All Violent Crime

Definition: All violent crimes regardless of location

Table 6: All Violent Crime Targeting Summary

Metric	Value
Total Incidents (5 years)	481,587
Blocks with 1+ incidents	58,104
Incidents in Top 100 blocks	22,440
Pct of violent crime in Top 100	4.7%

Advantages:

- Maximum statistical power
- Comprehensive violence measure

Disadvantages:

- Includes domestic violence (less place-based)
- Indoor crimes less addressable by street intervention
- Least concentrated = lower efficiency

5 Overlap Analysis

A critical question: **Do different targeting options identify the same blocks?**

5.1 Top 100 Block Overlap

Table 7: Overlap of Top 100 Blocks Across Targeting Options

Comparison	Blocks in Both	Pct Overlap
Gun AND Street Violent	8	8%
Gun AND All Violent	12	12%
Street AND All Violent	47	47%
All Three Options	5	5%

Key Insight: The overlap between gun violence and street violent crime top-100 blocks is 8%. This means:

- **8 blocks** would be selected under either strategy
- **92 blocks** are unique to gun targeting
- **92 blocks** are unique to street crime targeting

This partial overlap motivates the **blended targeting approach** discussed in Section 7.

5.2 Cross-Tier Analysis

What about blocks ranked 101-200 under one option vs. top 100 under another?

Table 8: Cross-Tier Overlap Analysis

Comparison	N Blocks
Gun Top 100: Also in Street Top 100	8
Gun Top 100: In Street 101-200	9
Gun Top 100: In Street Top 200 (combined)	17
Street Top 100: Also in Gun Top 100	8
Street Top 100: In Gun 101-200	6
Street Top 100: In Gun Top 200 (combined)	14

6 Geographic Distribution

6.1 Borough Breakdown

Table 9: Distribution of Top 100 Blocks by Borough

	Gun Violence		Street Violent		All Violent	
boro_name	Gun Top 100	Gun Pct	Street Top 100	Street Pct	Violent Top 100	Violent Pct
Bronx	28	28	31	31	30	30
Brooklyn	31	31	6	6	23	23
Manhattan	30	30	42	42	35	35
Queens	9	9	19	19	9	9
Staten Island	2	2	2	2	3	3
NA	0	0	0	0	0	0

Interpretation: The geographic distribution differs across targeting options. Gun violence targeting may concentrate more heavily in certain boroughs compared to street crime targeting.

6.2 Top Precincts

Table 10: Top 15 Precincts by Gun Violence Top-100 Blocks

Precinct	Gun Top 100	Gun 101-200	Street Top 100	Street 101-200
23	9	3	3	2
79	6	3	0	1
42	5	3	4	2
73	5	5	0	3
25	4	4	7	5
28	4	0	4	3
60	4	1	2	1
24	3	3	0	1
32	3	5	4	0
34	3	0	0	3
40	3	1	8	6
43	3	2	2	4
44	3	4	4	2
48	3	2	0	2
52	3	3	3	3

7 Crime Capture Rates

Key Question: If we select blocks using one metric, how much of other crime types do we capture?

Table 11: Crime Capture Rates: What pct of each crime type is captured?

		Pct Captured		
Targeting Option	Tier	Gun Violence	Street Violent	All Violent
Gun Violence	Top 100	8.9%	1.2%	1.6%
Gun Violence	101-200	5.4%	1%	1.2%
Street Violent	Top 100	1.9%	3.9%	3.5%
Street Violent	101-200	1.9%	2.5%	2.5%
All Violent	Top 100	2.3%	3.1%	4.7%
All Violent	101-200	2.2%	2.2%	2.7%

Reading This Table:

- Row 1: If we select the top 100 blocks by gun violence, we capture X% of gun violence, Y% of street crime, and Z% of all violent crime
- The diagonal represents "perfect targeting" (gun to gun, street to street)
- Off-diagonal shows cross-capture efficiency

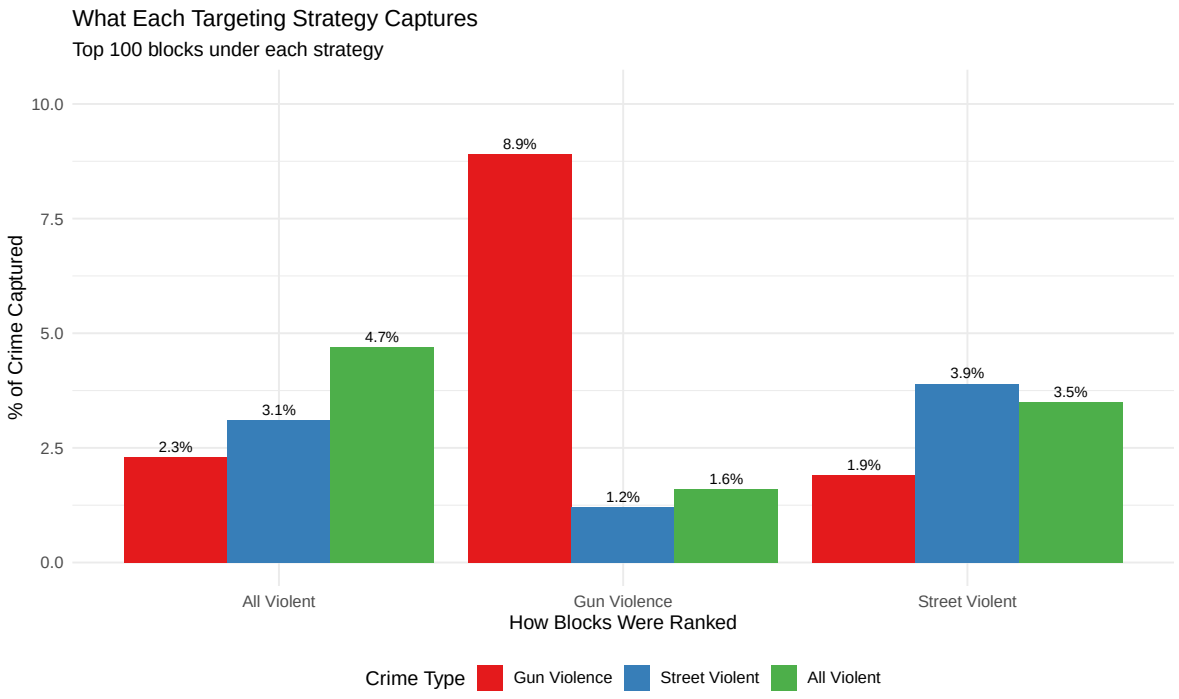

Figure 2: Crime capture rates by targeting option (Top 100 blocks)

8 Blended Targeting Approach

8.1 The Rationale for Blending

Given that:

1. Gun violence and street crime identify **partially different** blocks
2. Gun violence is **most serious** but has **fewer incidents**
3. Street crime provides **more statistical power** but includes **less serious offenses**

A **blended approach** may offer an optimal balance.

8.2 How Blending Works

We create a composite score that weights both metrics:

$$\text{Blend Score} = w_1 \times \text{Gun (normalized)} + w_2 \times \text{Street (normalized)}$$

Where:

- **Normalization**: Each count is divided by the maximum across all blocks, scaling to 0-1
- **Weights**: Sum to 1.0 (e.g., 70/30 means $w_1 = 0.7$, $w_2 = 0.3$)

8.2.1 Example Calculation

Consider Block A with 10 gun incidents and 50 street crimes, where the city maximum is 30 gun and 200 street:

- Gun normalized = 10/30 = 0.33
- Street normalized = 50/200 = 0.25
- 70/30 blend = 0.7(0.33) + 0.3(0.25) = 0.31
- 50/50 blend = 0.5(0.33) + 0.5(0.25) = 0.29

Blocks are then ranked by their blend score.

8.3 Blend Options Analyzed

Blend	Gun Weight	Street Weight	Interpretation
Gun Only	100%	0%	Pure gun violence targeting
70/30	70%	30%	Gun-prioritized with street consideration
50/50	50%	50%	Equal weighting
30/70	30%	70%	Street-prioritized with gun consideration
Street Only	0%	100%	Pure street crime targeting

8.4 Blend Performance Comparison

Table 13: Crime Capture by Blended Targeting Strategy (Top 100 Blocks)

Blend Strategy	Gun Violence Captured	Street Crime Captured	All Violent Captured
Gun Only	8.9%	1.2%	1.6%
70/30	8.6%	1.8%	2.2%
50/50	7.3%	2.6%	2.8%
30/70	4.5%	3.6%	3.6%
Street Only	1.9%	3.9%	3.5%

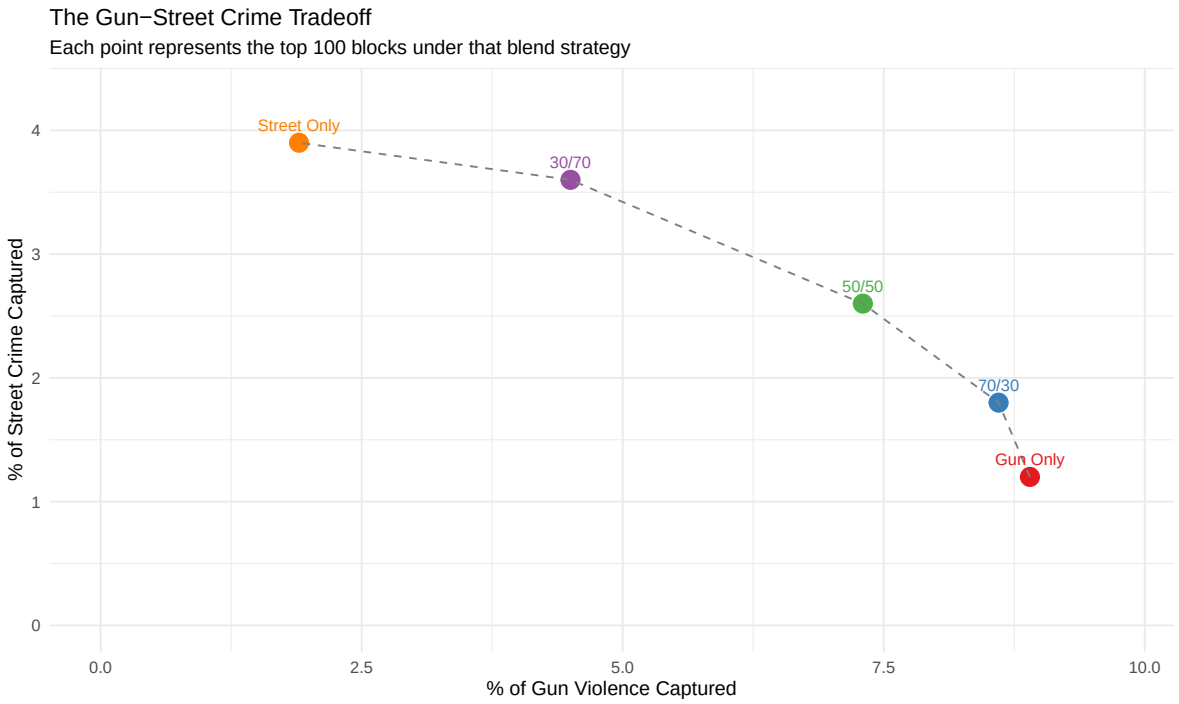

Figure 3: Tradeoff between gun violence and street crime capture across blend strategies

8.5 Blend Overlap

How much do the different blends share blocks?

Table 14: Block Overlap Between Blend Strategies (out of 100)

Comparison	Shared Blocks
Gun Only vs 70/30	0
Gun Only vs 50/50	0
Gun Only vs Street Only	8
70/30 vs 50/50	0
50/50 vs 30/70	0

Key Insight: Adjacent blends (e.g., 70/30 vs 50/50) share most blocks. The transition from gun-only to street-only is gradual, allowing fine-tuned calibration.

9 Gun Violence Frequency Distribution

Understanding the distribution of gun violence across blocks helps set **minimum thresholds** for eligibility.

9.1 5-Year Distribution

Table 15: Gun Violence Frequency Distribution (5 Years)

Incident Count	N Blocks	Pct of Blocks	Cumulative Pct
1	7205	58.4	58.4
2	1975	16.0	77.7
3	831	6.7	85.1
4	631	5.1	90.2
5	385	3.1	93.4
6-7	512	4.1	97.5
8-9	307	2.5	100.0
10-14	306	2.5	60.9
15-19	98	0.8	61.7
20+	90	0.7	78.4

9.2 Cutoff Analysis

How many blocks would qualify at different thresholds?

Table 16: Gun Violence Cutoff Analysis (5-Year Period)

Minimum Incidents	Qualifying Blocks	Gun Violence Captured
3+	3,160	68.6%
4+	2,329	60.1%
5+	1,698	51.5%
6+	1,313	45.1%
8+	801	34.1%
10+	494	25.5%
15+	188	13.6%

Recommendation: A threshold of **5+ incidents in 5 years** provides a reasonable balance between:

- Sufficient blocks for intervention capacity
- Meaningful concentration of violence
- Statistical stability (blocks with only 1-2 incidents may be random)

10 Crime Composition on Target Blocks

What types of crime occur on blocks selected by each strategy?

10.1 Offense Category Distribution (ofns desc)

Table 17: Top 10 Offense Categories: Pct Composition o
Blocks

ofns_desc	Gun Violence_Top 100	Gun Violence_101-200	Street Violent_Top
ASSAULT 3 & RELATED OFFENSES	51.7%	52.9%	52.4%
FELONY ASSAULT	35.3%	33.5%	27.9%
ROBBERY	12.2%	12.8%	19.4%
MURDER & NON-NEGL. MANSLAUGHTER	0.8%	0.7%	0.3%

Key Insight: Blocks selected by gun violence targeting tend to have higher proportions of serious offenses (felony assault, robbery) compared to street crime targeting, which captures more misdemeanor assault.

11 Recommendations and Next Steps

11.1 Summary of Key Findings

Finding	Implication
Crime is highly concentrated	Place-based intervention is efficient
Gun and street crime identify different blocks	Choice matters; consider blending
50/50 blend captures substantial portions of both	Viable compromise strategy
Geographic clustering exists	Enables coordinated precinct-level deployment
Most blocks have few gun incidents	Minimum threshold needed for eligibility

11.2 Recommended Approach

Based on this analysis, we recommend:

1. **Primary metric**: 70/30 or 50/50 blend of gun violence and street crime
    - Prioritizes serious violence while ensuring statistical power
    - Captures diverse block "types" for intervention testing
2. **Minimum threshold**: 3+ gun violence incidents OR 15+ street violent crimes in 5 years
    - Ensures blocks have demonstrated, persistent problems
    - Provides sufficient pool for randomization
3. **Geographic balance**: Ensure representation across multiple precincts and boroughs
    - Supports generalizability of findings
    - Enables implementation learning across contexts

11.3 Next Steps

This analysis represents **Phase 1** of targeting development. Subsequent phases will:

1. **Layer additional data**: 311 calls (mental health, homeless, sanitation), building violations, vacant lots
2. **Develop eligibility criteria**: Combine crime thresholds with environmental indicators
3. **Randomization design**: Stratify by precinct, crime type, environmental profile
4. **Stakeholder input**: Review findings with NYPD, community partners, and research advisors

12 Technical Appendix

12.1 Data Sources

Dataset	Source	Date Range	Records
NYPD Complaint Data	NYC Open Data	2006-2025	8M
NYPD Shooting Data	NYC Open Data	2006-2025	30K
Shots Fired Reports	MOCJ Internal	2017-2025	42K
LION Street Network	NYC DCP	2025	242K segments
Physical Blocks	Derived from LION	2025	89K blocks

12.2 Crime Definitions

Violent Crime Key Codes (ky cd):

- 101: Murder and Non-Negligent Manslaughter
- 104: Rape
- 105: Robbery
- 106: Felony Assault
- 344: Assault 3 and Related Offenses

Outdoor Location Keywords:

- Location: FRONT OF, OPPOSITE OF, OUTSIDE, REAR OF, STREET, SIDEWALK
- Premise: PARK, STREET, PUBLIC PLACE, HIGHWAY, BRIDGE, VACANT LOT

12.3 Code Repository

All analysis code is available in the EBC project repository:

- `00-load_data.R`: Data ingestion
- `00a-create_working_data.R`: Dataset preparation
- `03-EDA.R`: Targeting analysis
- `04-EBC_Targeting_Analysis_Report.Rmd`: This report

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