SEATTLE UNIVERSITY

CRIME DENSITY AND HOTSPOT ANALYSIS : LITTLE SAIGON(2020-2025)

Presented to: Friends of Little Saigon(FLS)

Group Members: Jeevitha, Nikhil, Zanella

PROJECT PURPOSE

The purpose of this project is to help FLS understand where and when crime concentrates, what types of incidents impact community safety the most, and how environmental design improvements could reduce risks. While the data is technical, our focus is on presenting results in a way that is clear and useful for community planning.

DATA SOURCES

- SPD 911 call data (2020–2025)
- Seattle business licenses
- Transit corridors & Light Rail stations
- Neighborhood boundaries from King County GIS

King County

METHODOLOGY OVERVIEW

Data Collection

- SPD 911 calls (2020–2025) filtered to Little Saigon
- Business locations, transit corridors, and neighborhood boundaries added
- All layers standardized to consistent projection (StatePlane WA North)

Data Preparation

- Cleaned duplicates and incomplete records
- Categorized incidents using Final_Call field
- Identified top 5 crime types for focused analysis

Spatial Analysis Methods

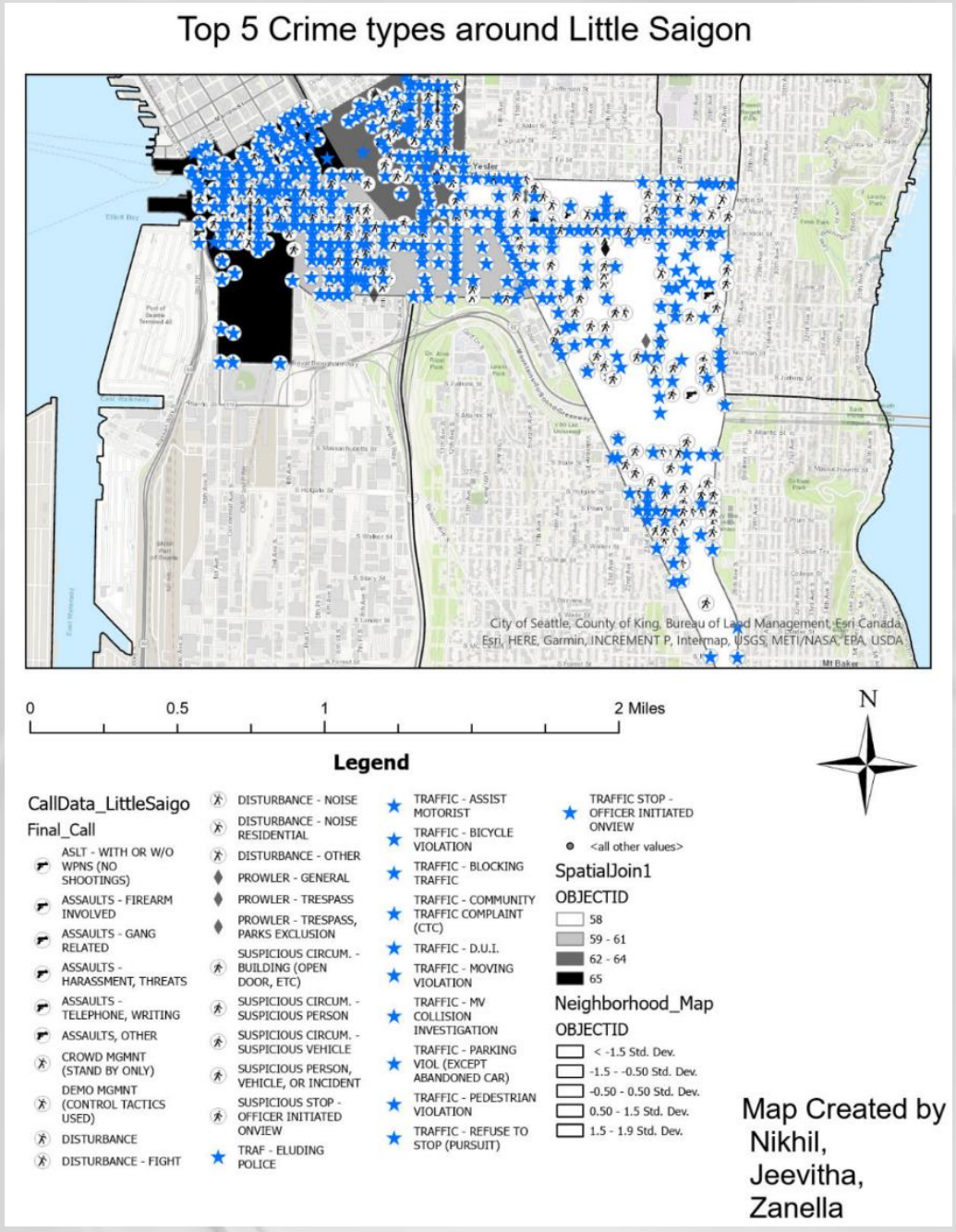
- **Temporal Analysis:** Divided incidents into Q1–Q3 patterns
- **Hotspot Analysis:** Kernel Density Estimation + contour mapping
- **Centrographic Analysis:** Mean Center, Standard Distance, Directional Ellipse
- **Spatial Statistics:** Average Nearest Neighbor and Global Moran's I

Mapping & Interpretation

- Overlaid crime with businesses and transit pathways
- Compared cluster patterns across multiple methods
- Interpreted results for community relevance and CPTED planning

TOP 5 CRIMES IDENTIFIED

- Gun Disturbance – 3,577
- Suspicious Activity – 2,755
- Traffic Incidents – 2,274
- Assault – 1,887
- Prowler/Trespass – 1,624



DISTRIBUTION OF ALL 911 CALLS AND BUSINESS LOCATION OVERLAY

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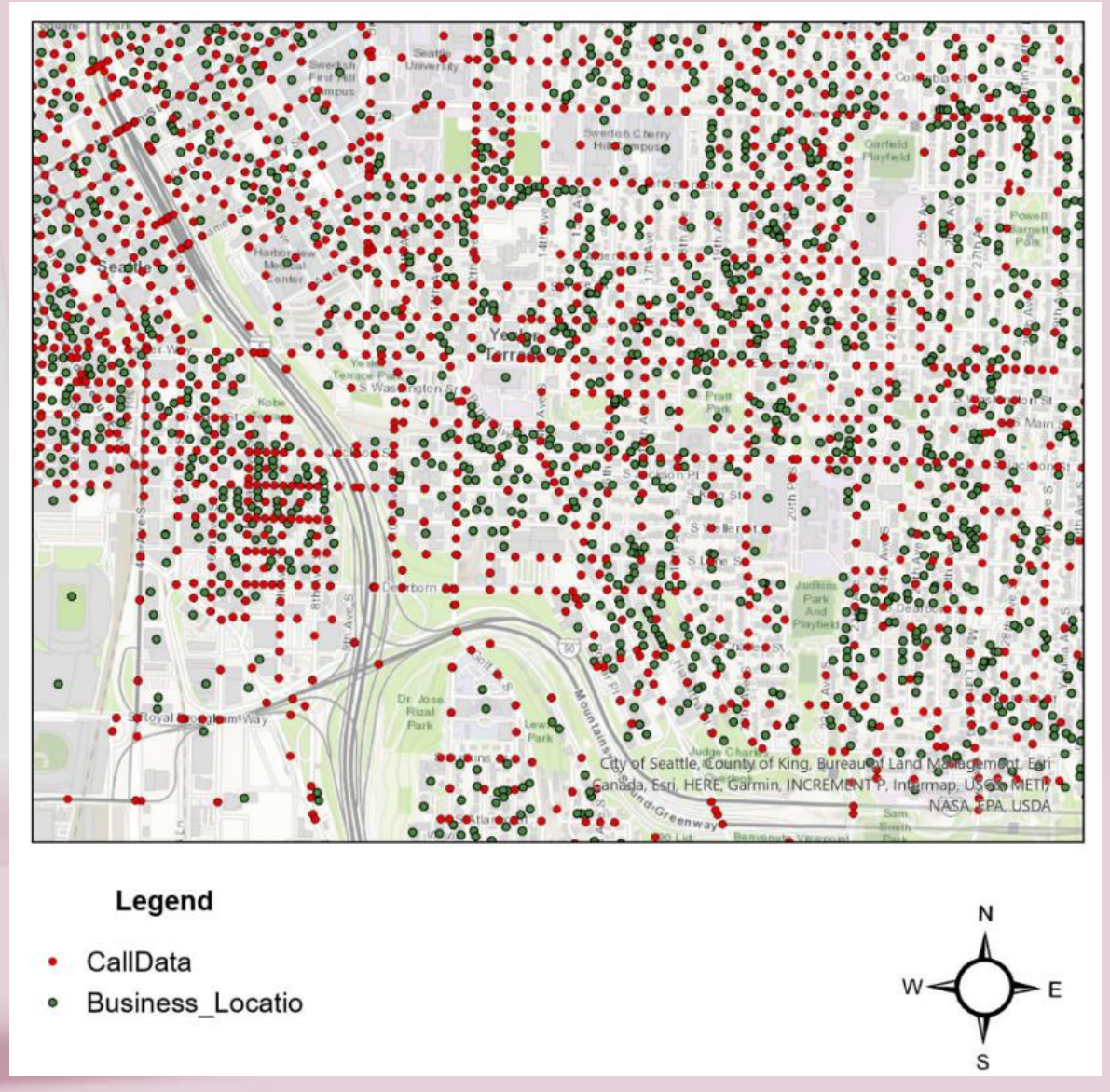
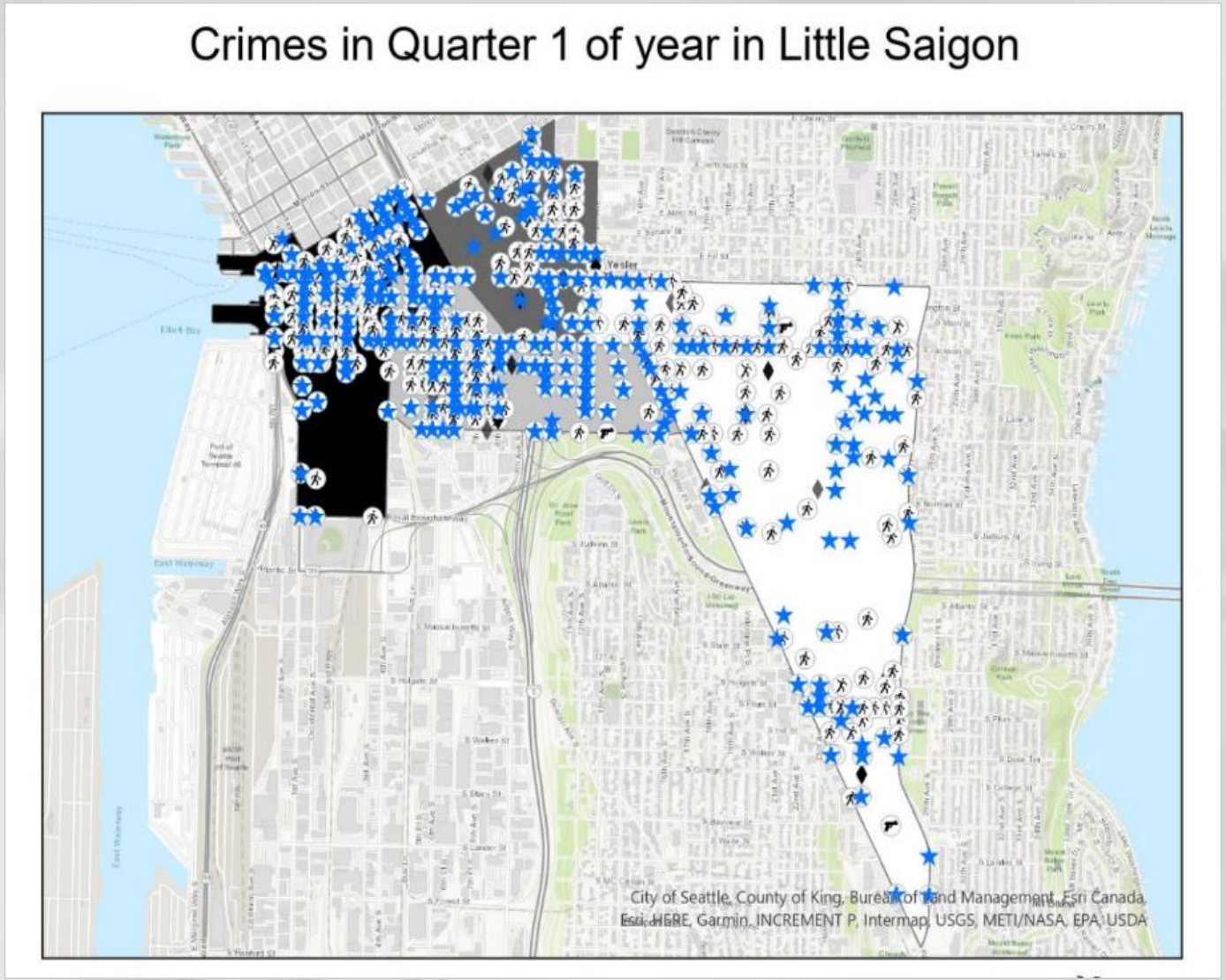


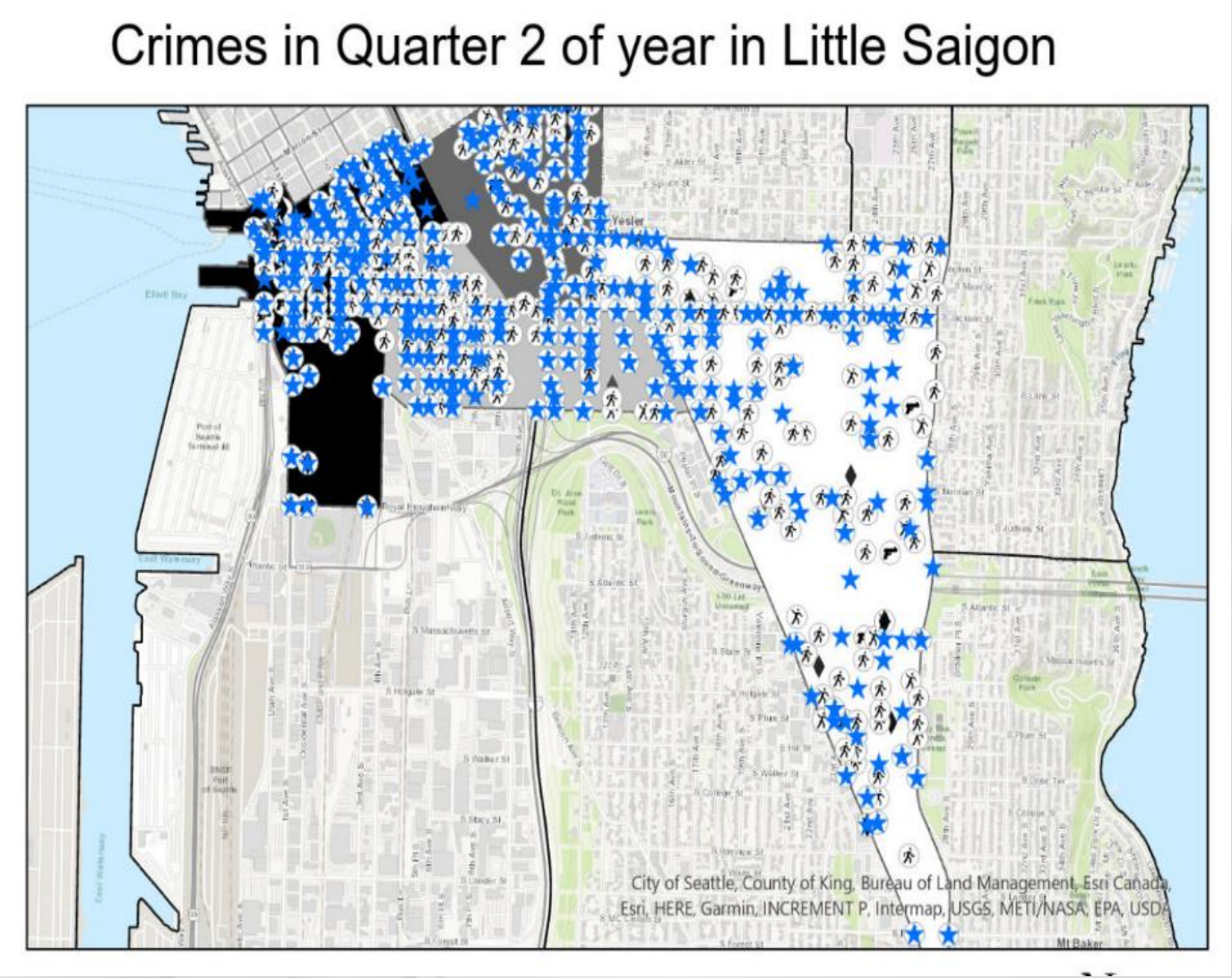
TEMPORAL ANALYSIS (Q1 – Q3)

Q1 – spike in suspicious, traffic, and gun-related calls



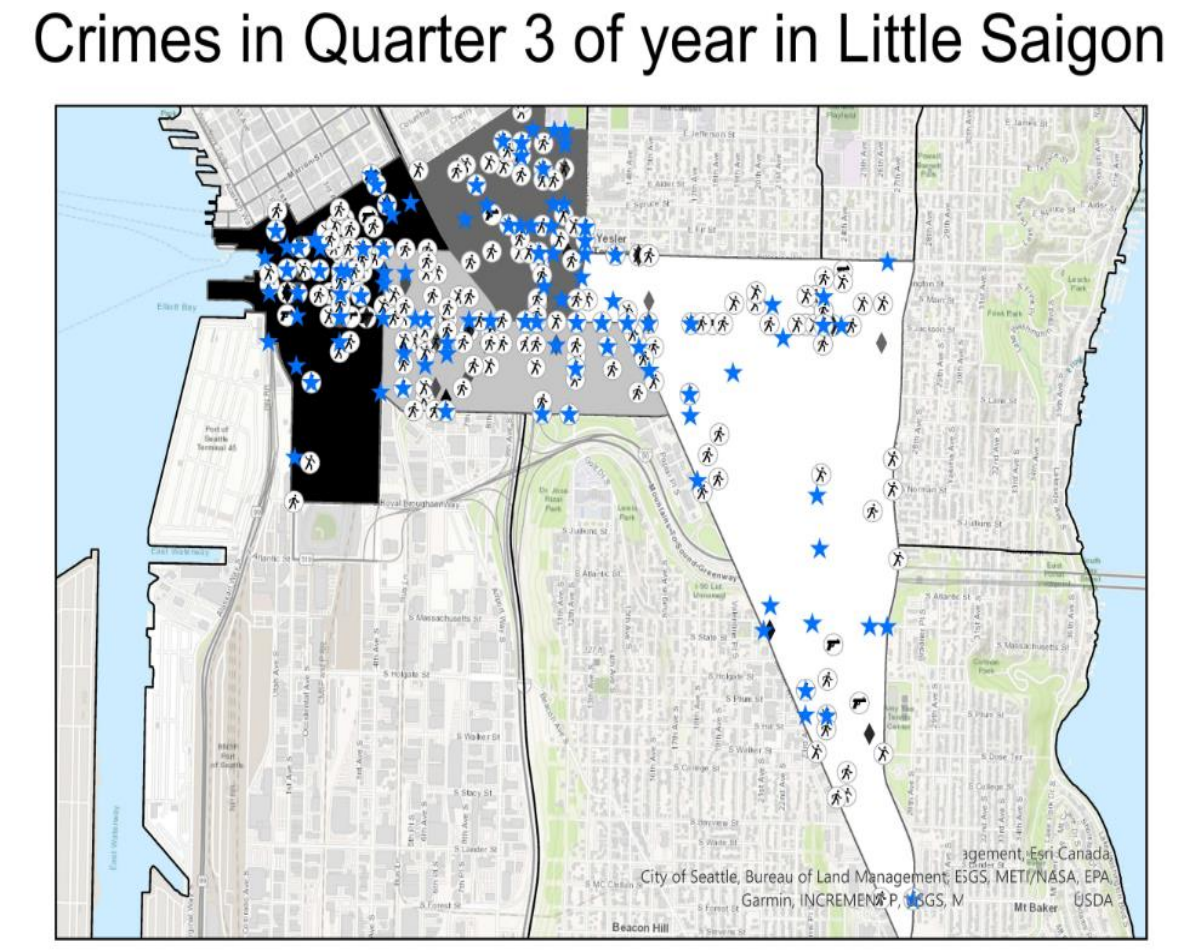
TEMPORAL ANALYSIS (Q1 – Q3)

Q2 – increase in noise, trespass, disorder

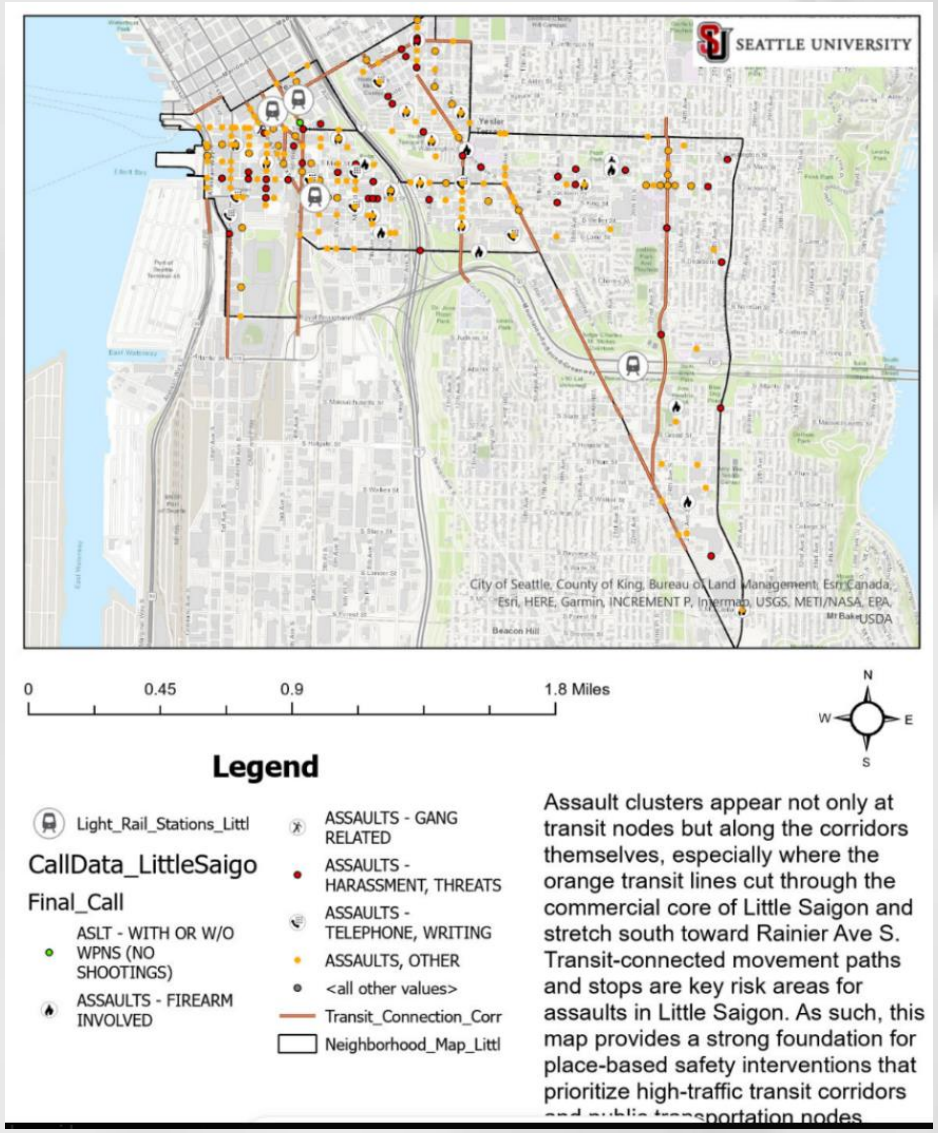


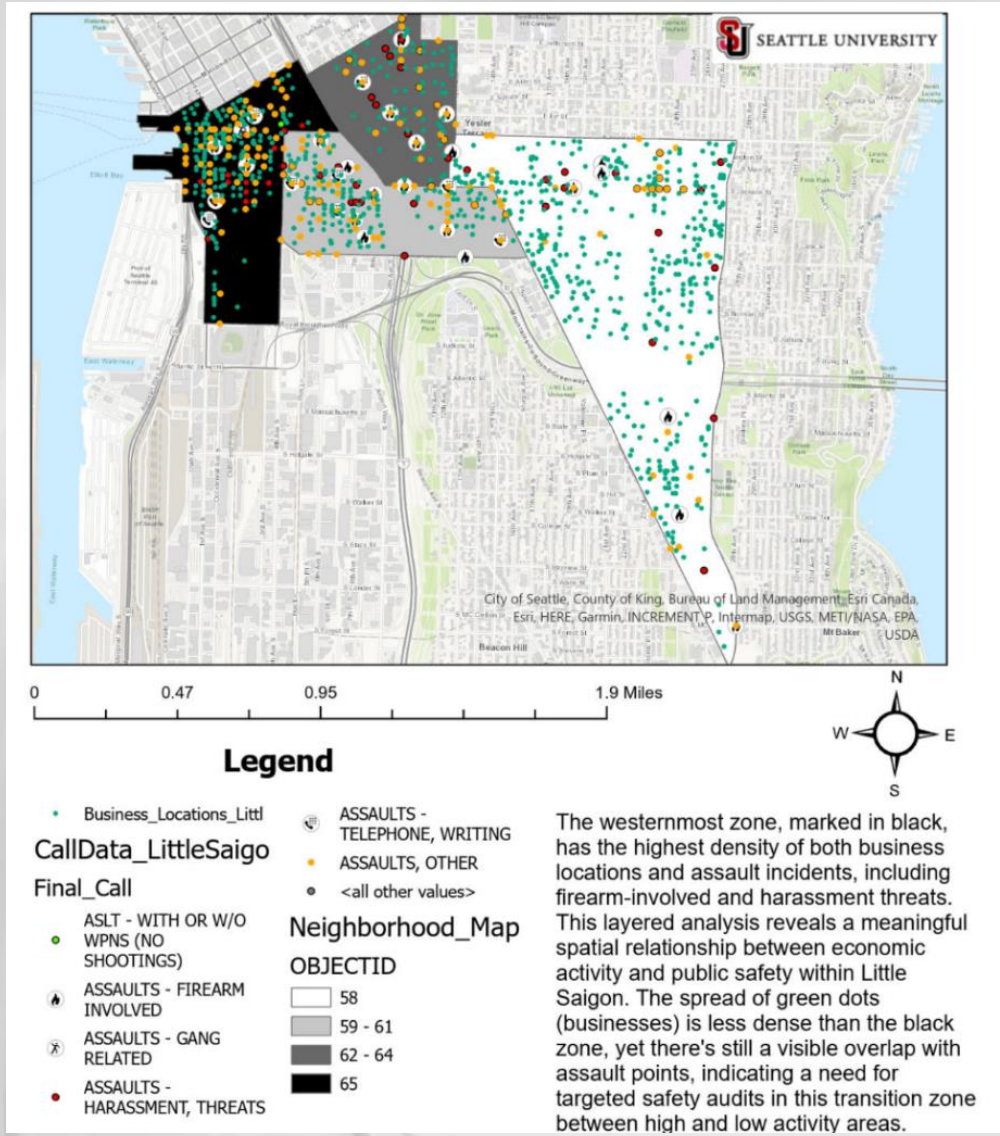
TEMPORAL ANALYSIS (Q1 – Q3)

Q3 – July peak: suspicious stops, traffic violations, trespass
Northwest zone = hotspot year-round



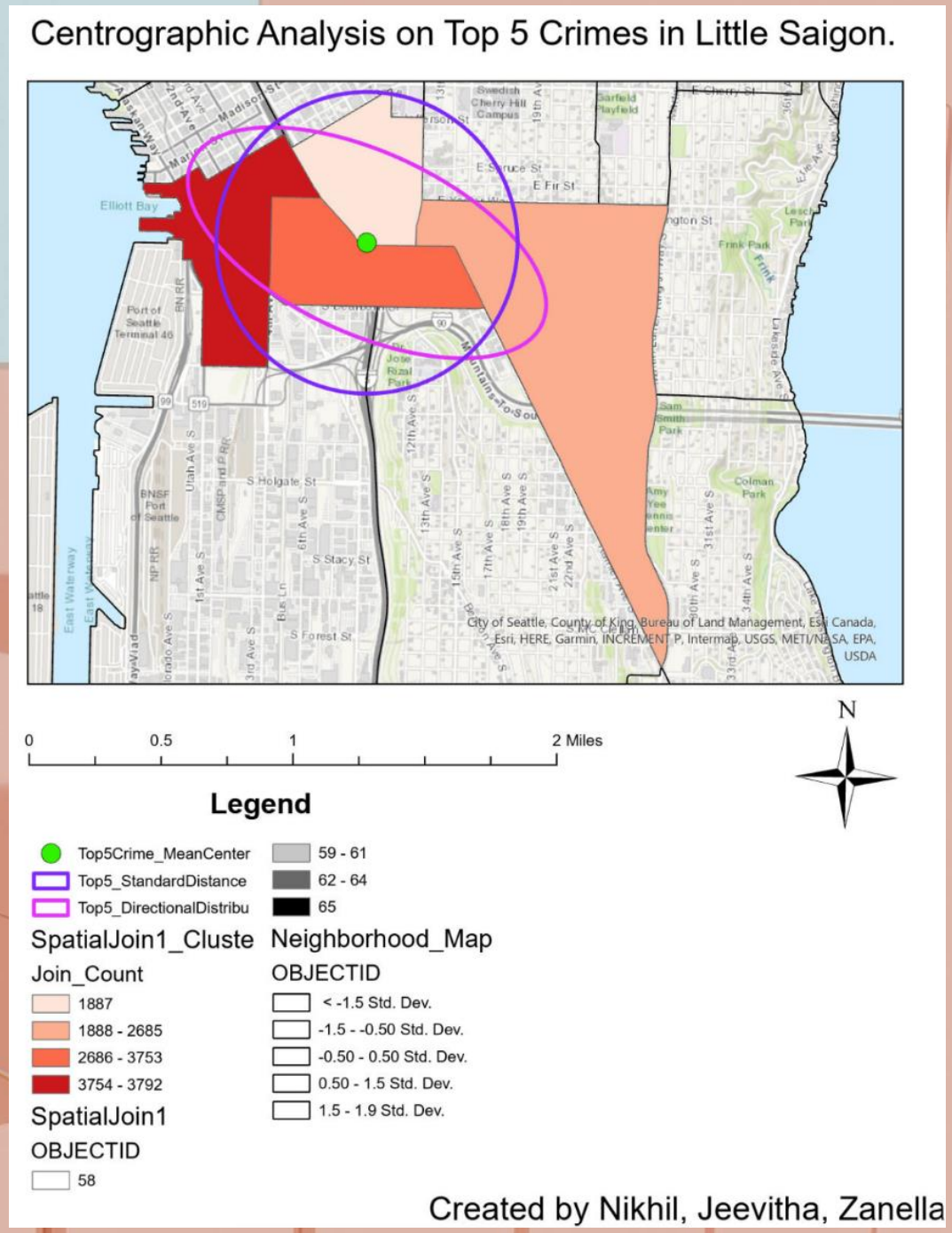
TRANSIT INFLUENCE, BUSINESS AND CRIME INTERACTION



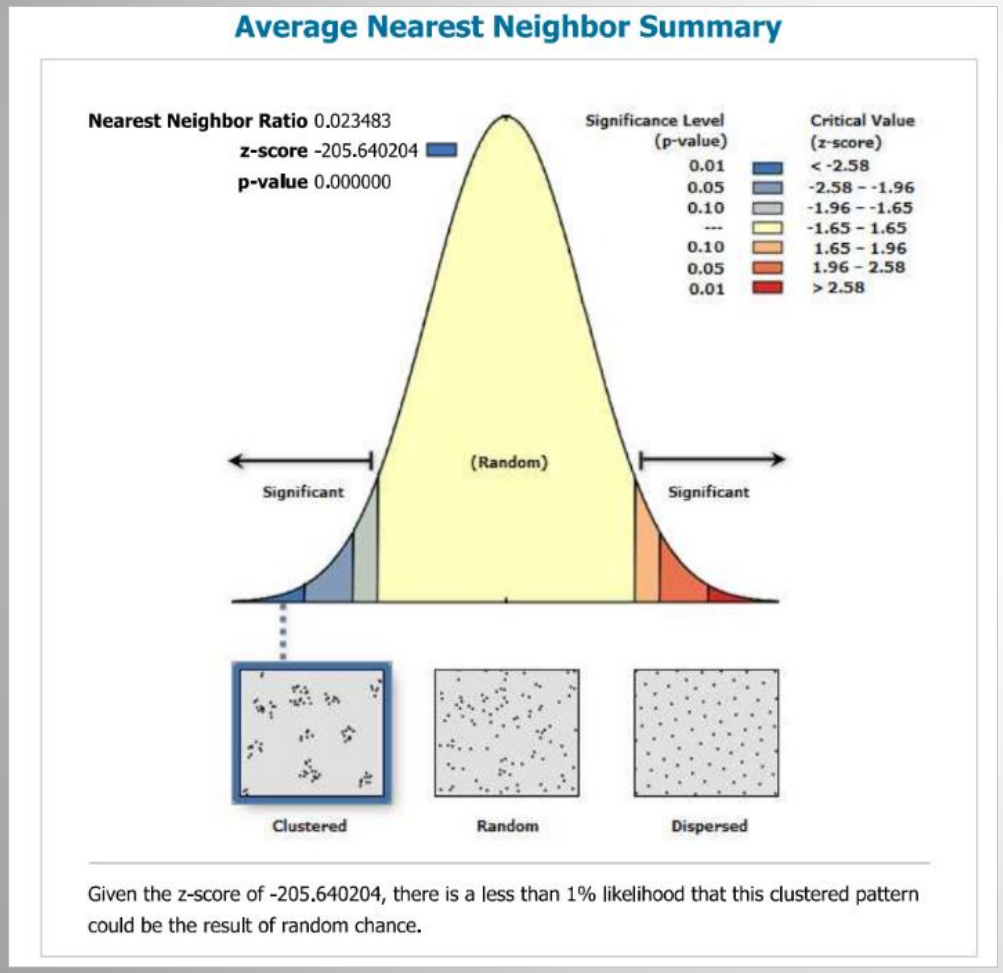


CENTROGRAPHIC ANALYSIS

Mean Center
Standard Distance Circle
Directional Ellipse



AVERAGE NEAREST NEIGHBOR (ANN)



- Ratio = 0.023 → Extremely clustered
  z-score = –205.64
  p-value = 0.000

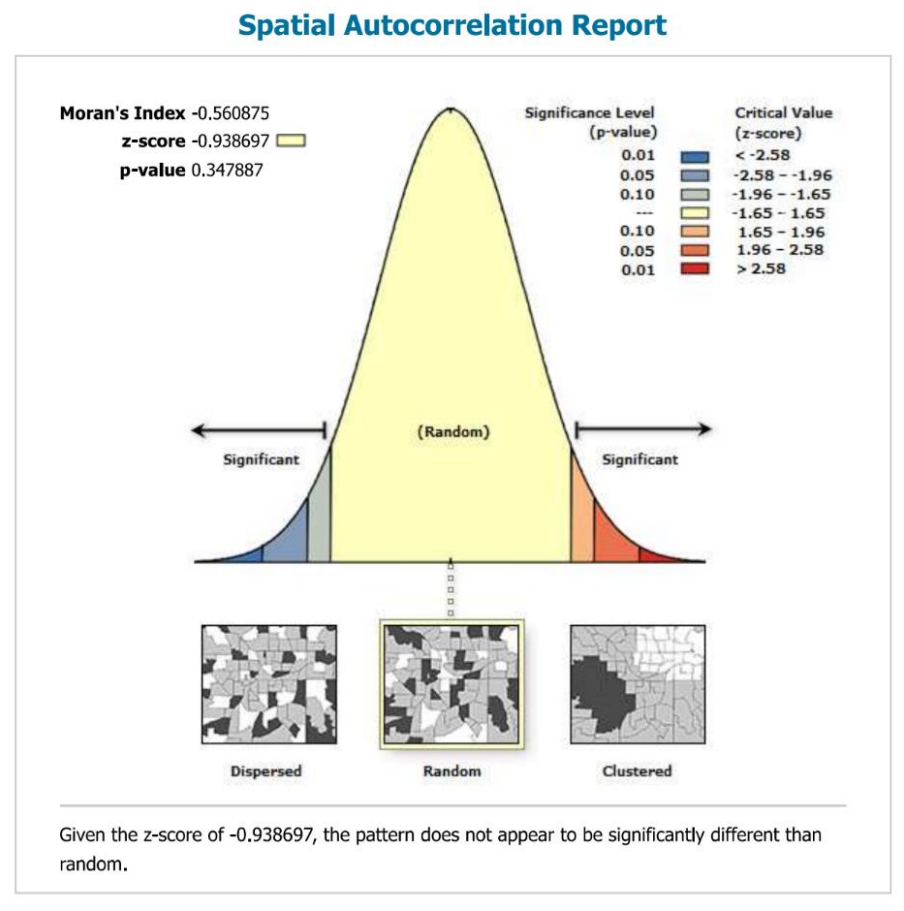
Average Nearest Neighbor Summary

Observed Mean Distance	1.0520 feet
Expected Mean Distance	44.7992 feet
Nearest Neighbor Ratio	0.023483
z-score	-205.640204
p-value	0.000000

Dataset Information

Input Feature Class:	CallData_LittleSaigonArea_Top5
Distance Method:	EUCLIDEAN
Study Area:	97273599.406004
Selection Set:	False

GLOBAL MORAN'S I



- Moran's I = –0.56
- p-value = 0.347
- Interpretation = looks random at neighborhood scale

Global Moran's I Summary

Moran's Index	-0.560875
Expected Index	-0.333333
Variance	0.058759
z-score	-0.938697
p-value	0.347887

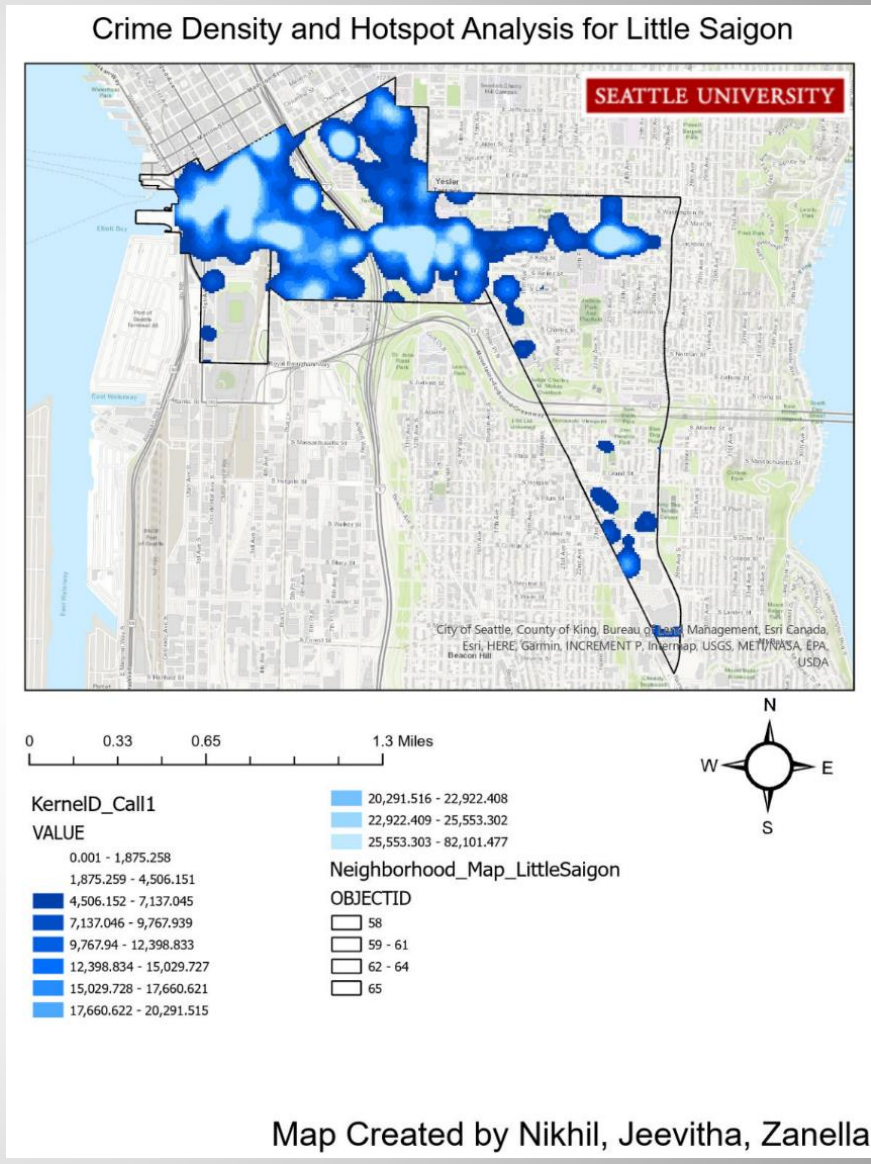
Dataset Information

Input Feature Class:	Neighborhood_Map_SpatialJoin1
Input Field:	JOIN_COUNT
Conceptualization:	INVERSE_DISTANCE
Distance Method:	EUCLIDEAN
Row Standardization:	True
Distance Threshold:	4739.4518 feet
Weights Matrix File:	None
Selection Set:	False

KERNEL DENSITY (KDE) MAP

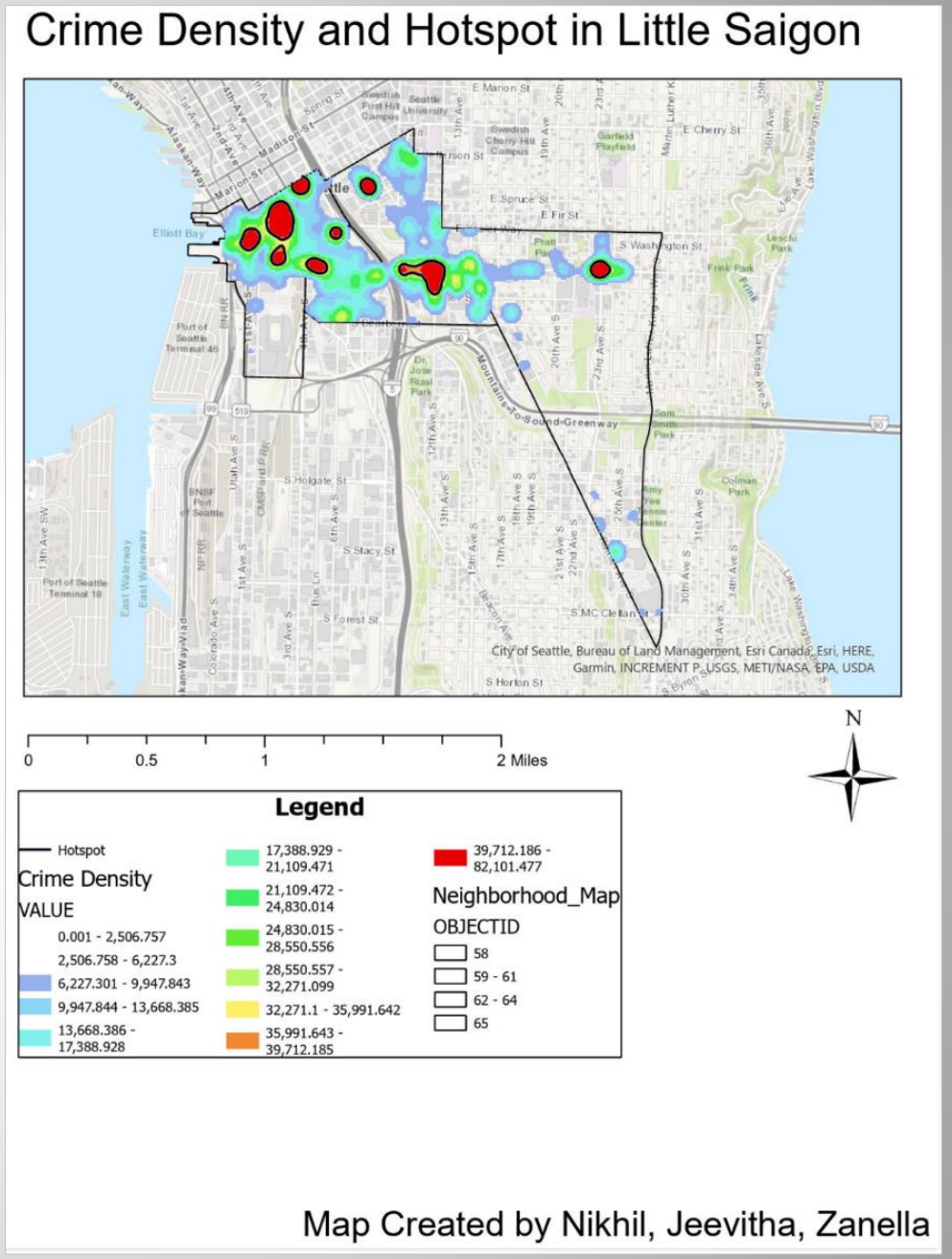
1. The Northwest Commercial Core is the Primary Hotspot
   - S Jackson St corridor
   - 12th Ave S and 10th Ave s
   - Occidental Avenue area
   - Transit adjacent blocks next to the light rail and major bus stops
2. Secondary Linear Hotspots Along Transit Corridors
   - S Jackson St
   - Yesler Way
   - Rainier Ave S
   - Rainier Ave S
   - MLK Jr. Way S

- Crime is not randomly scattered; it follows major movement routes where people, vehicles, and offenders intersect.
- The KDE surface visually confirms the results of Directional Ellipse and Mean Center.



HOTSPOT CONTOURING MAP

- The black outlined clusters correspond to locations that consistently exceed KDE intensity thresholds
- These contours accurately isolate micro-hotspots that appear in the KDE surface but are easier to interpret and communicate to FLS.
- The contours reinforce:
  - S Jackson St commercial blocks
  - 12th Ave S intersection clusters
  - The western boundary near the stadiums and port-related foot traffic
- These zones are “persistent hotspots,” meaning they appear across:
  - Seasonal crime (Q1–Q3)
  - Top 5 crime types
  - Centrographic measures
- This multi-method agreement greatly strengthens the reliability of your findings.



CEPTED RECOMENDATIONS

Natural Surveillance

Territoriality & Activation

Managing Edges & Transit Safety

Support safe Transit movements

Partner with Business on safety Audits

Prioritize High Impact Blocks

KEY TAKEAWAYS

To summarize:

- Crime in Little Saigon is not spread evenly, it is **block-specific and persistent**.
- The northwest commercial core is the central hotspot for all five major crime types.
- Transit corridors strongly shape where crime happens.
- Place-based CPTED improvements will make the biggest difference.

We hope these insights support FLS in improving safety and quality of life in the neighborhood.

THANK YOU FOR LISTENING

RFERENCES

Seattle police department crime data - https://www.Seattle.Gov/police/information-and-data/crime-dashboard

seattle geodata portal - https://data-seattlecitygis.Opendata.Arcgis.Com/

king county GIS center - https://kingcounty.Gov/services/gis/gisdata.Aspx

light rail stations

city of seattle - transit connection corridors

active business license tax certificate | city of seattle open data portal