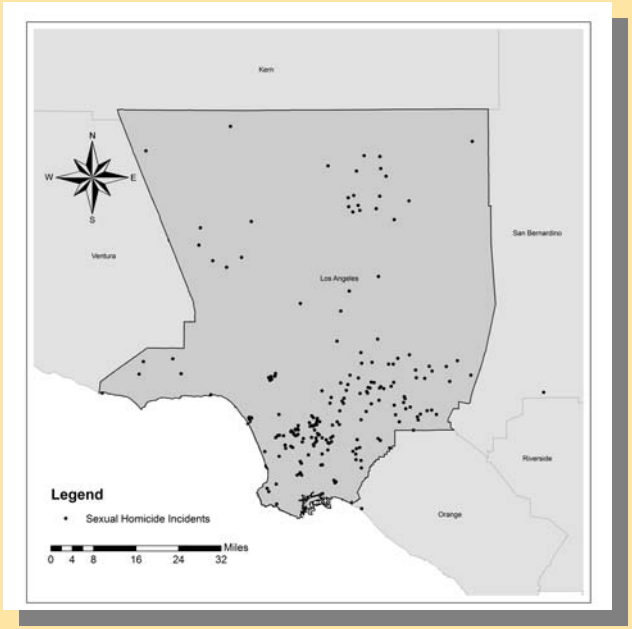


Spatial Configuration of Sexual Homicide

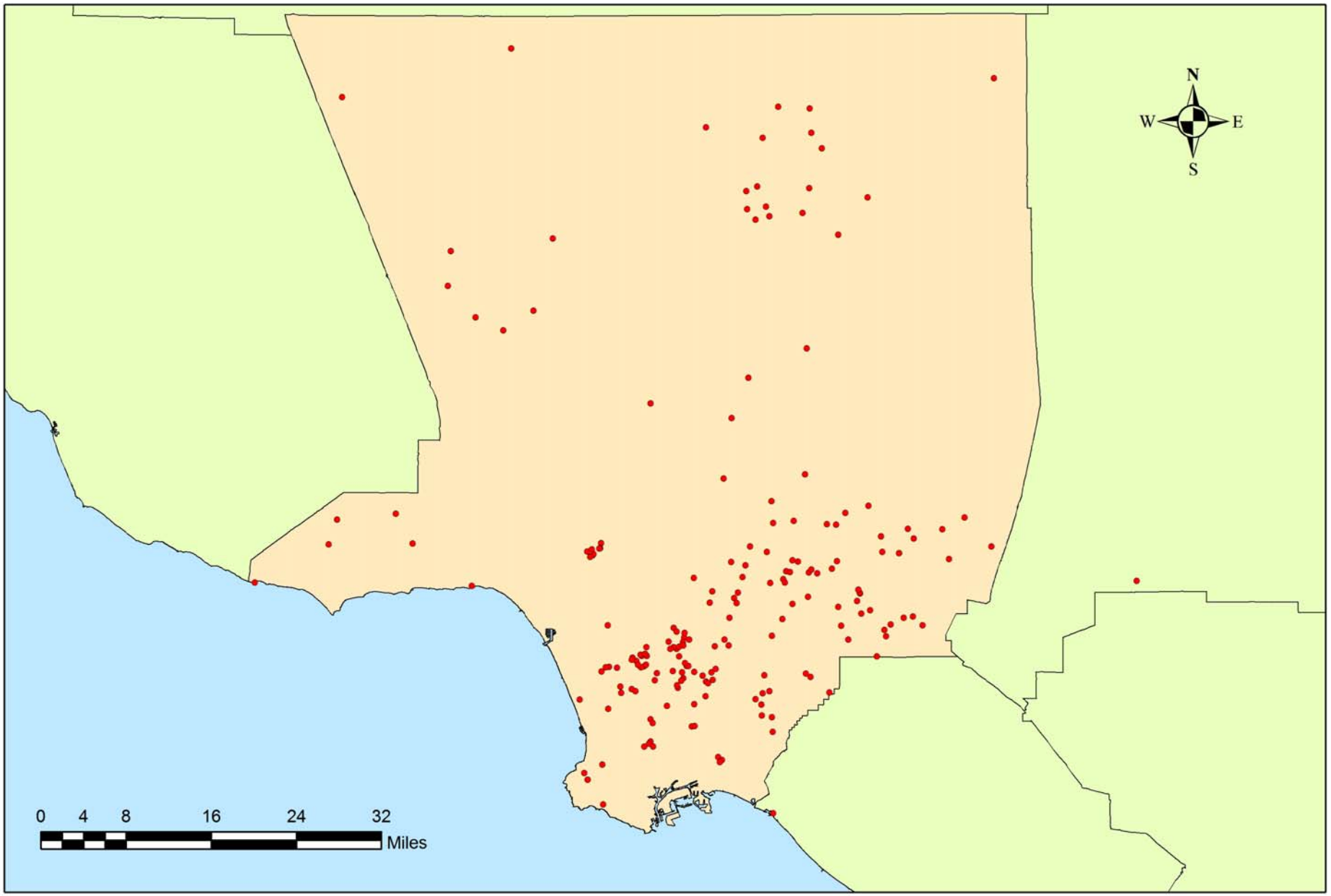
A 25-year study of sexual homicides in Los Angeles County (1980 through 2004)

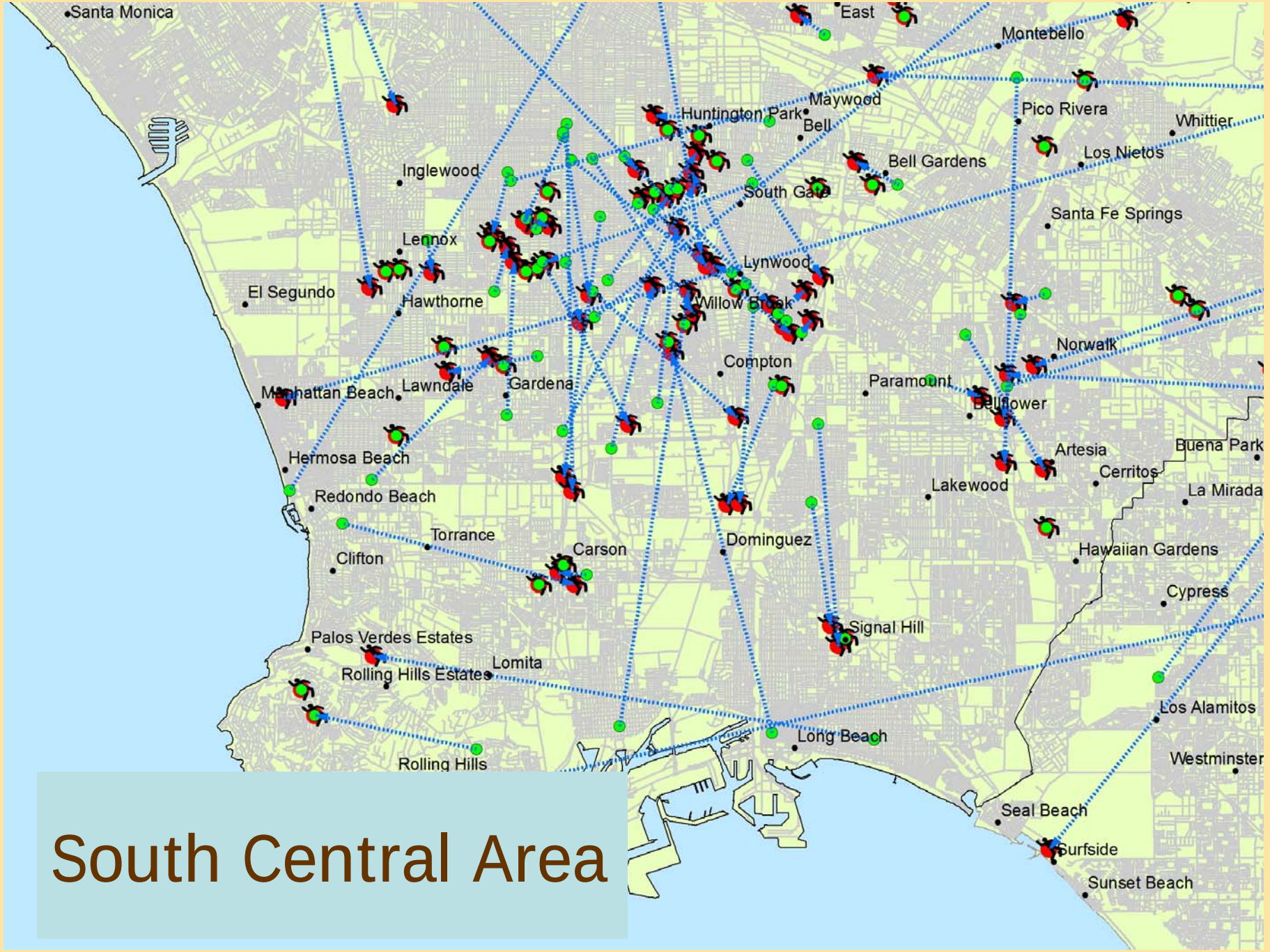
Isaac T. Van Patten, Radford University

&

Paul Q. Delhauer, LASD Homicide Bureau

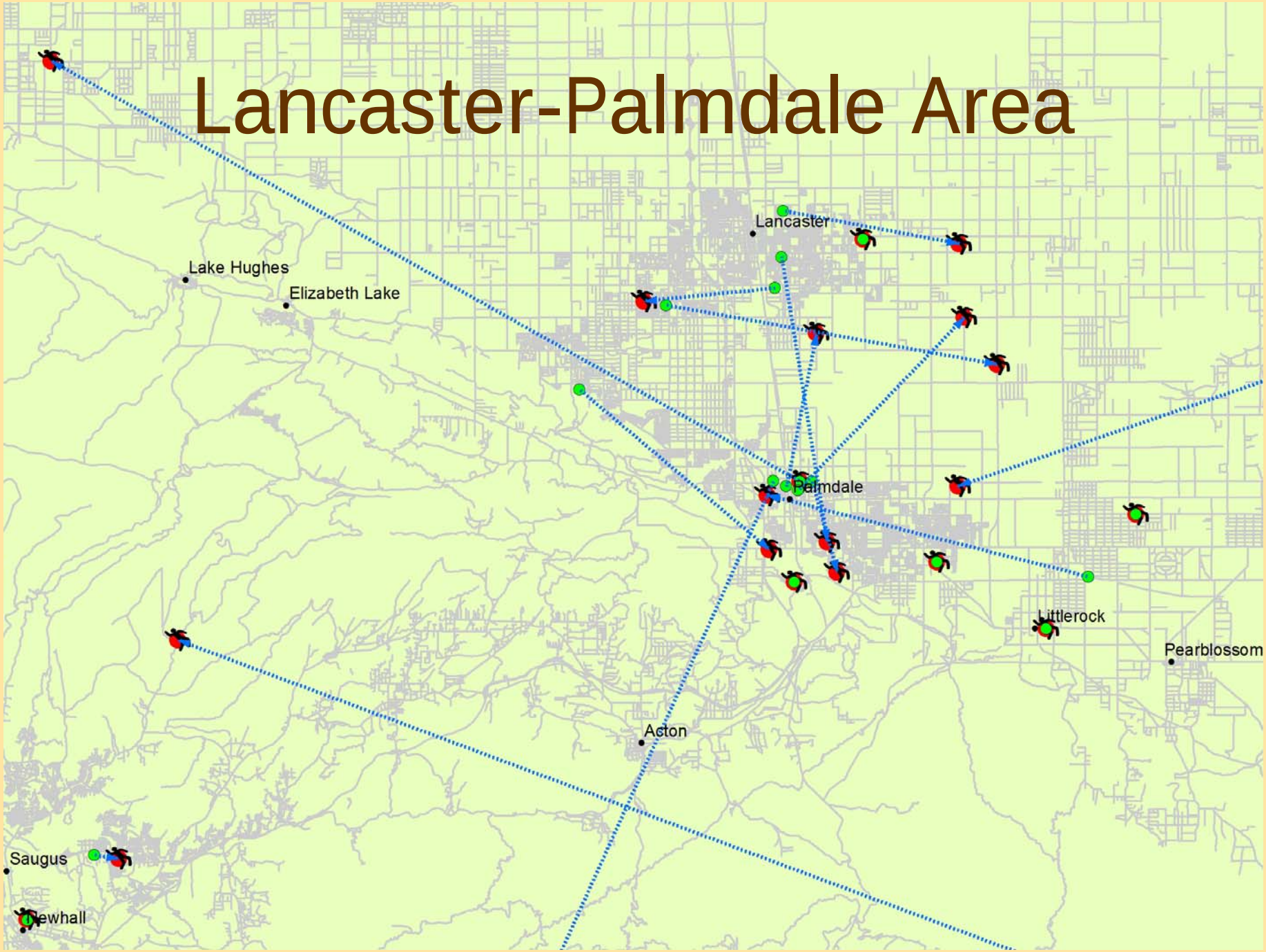
Los Angeles County Sexual Homicides



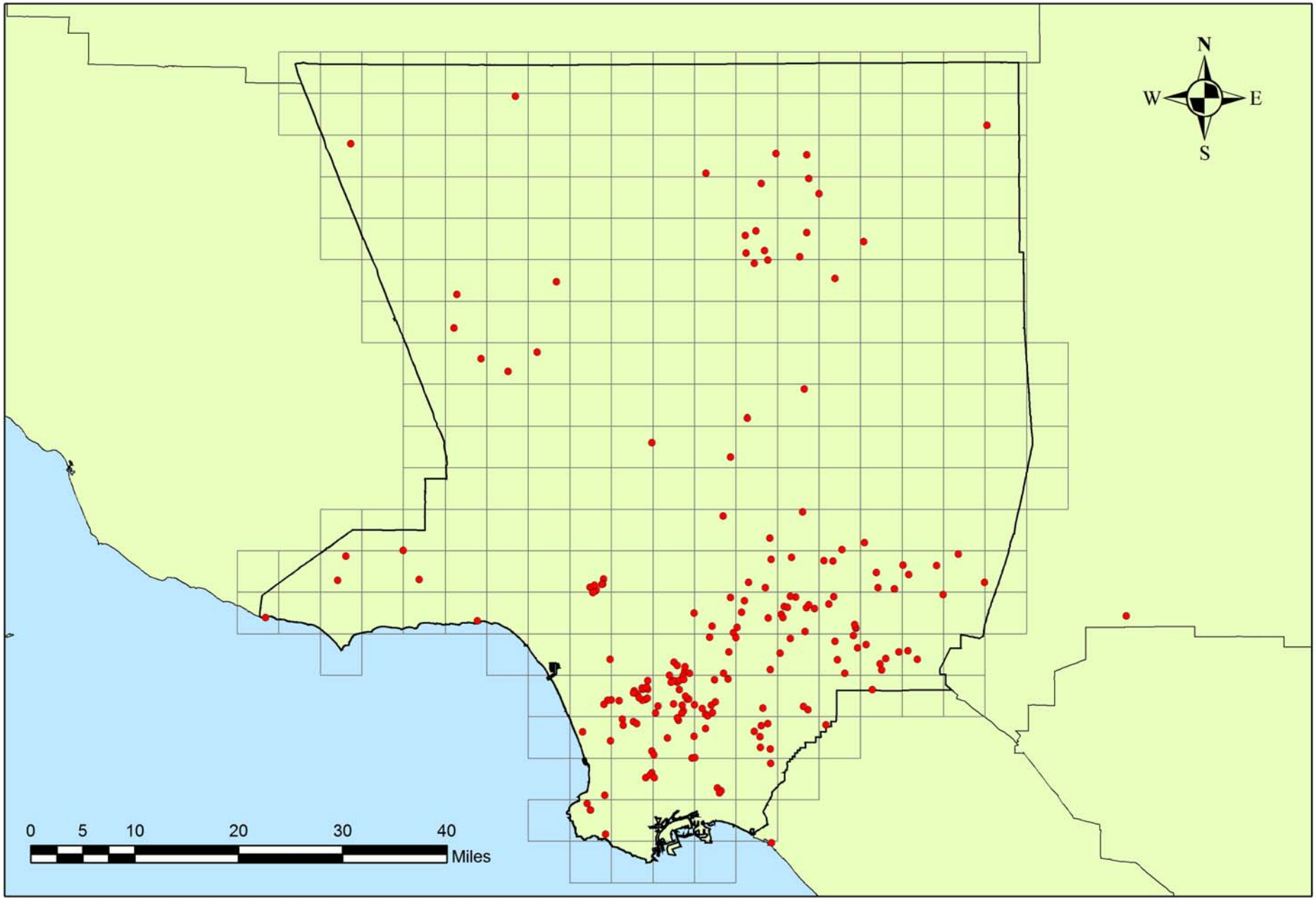


South Central Area

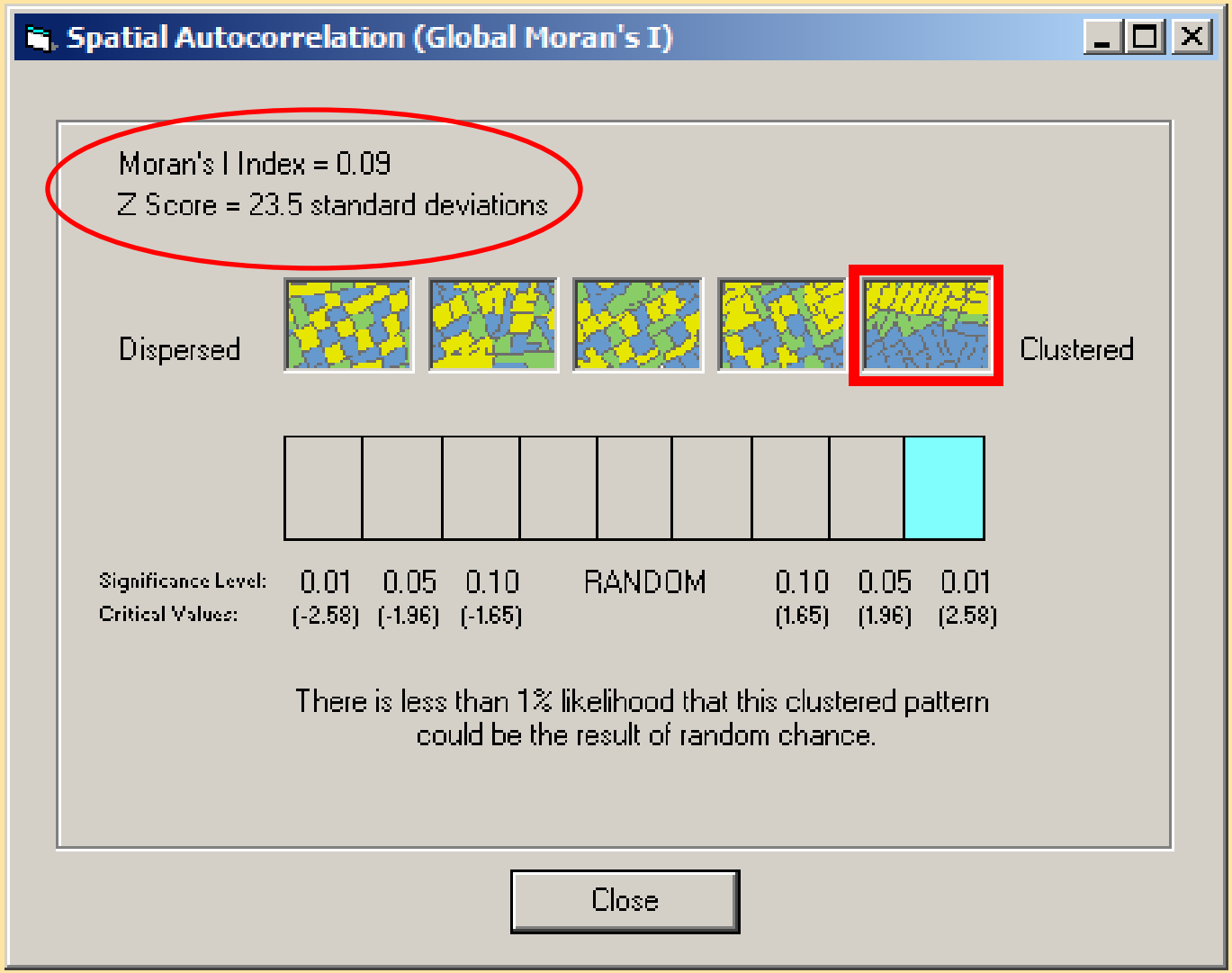
Lancaster-Palmdale Area



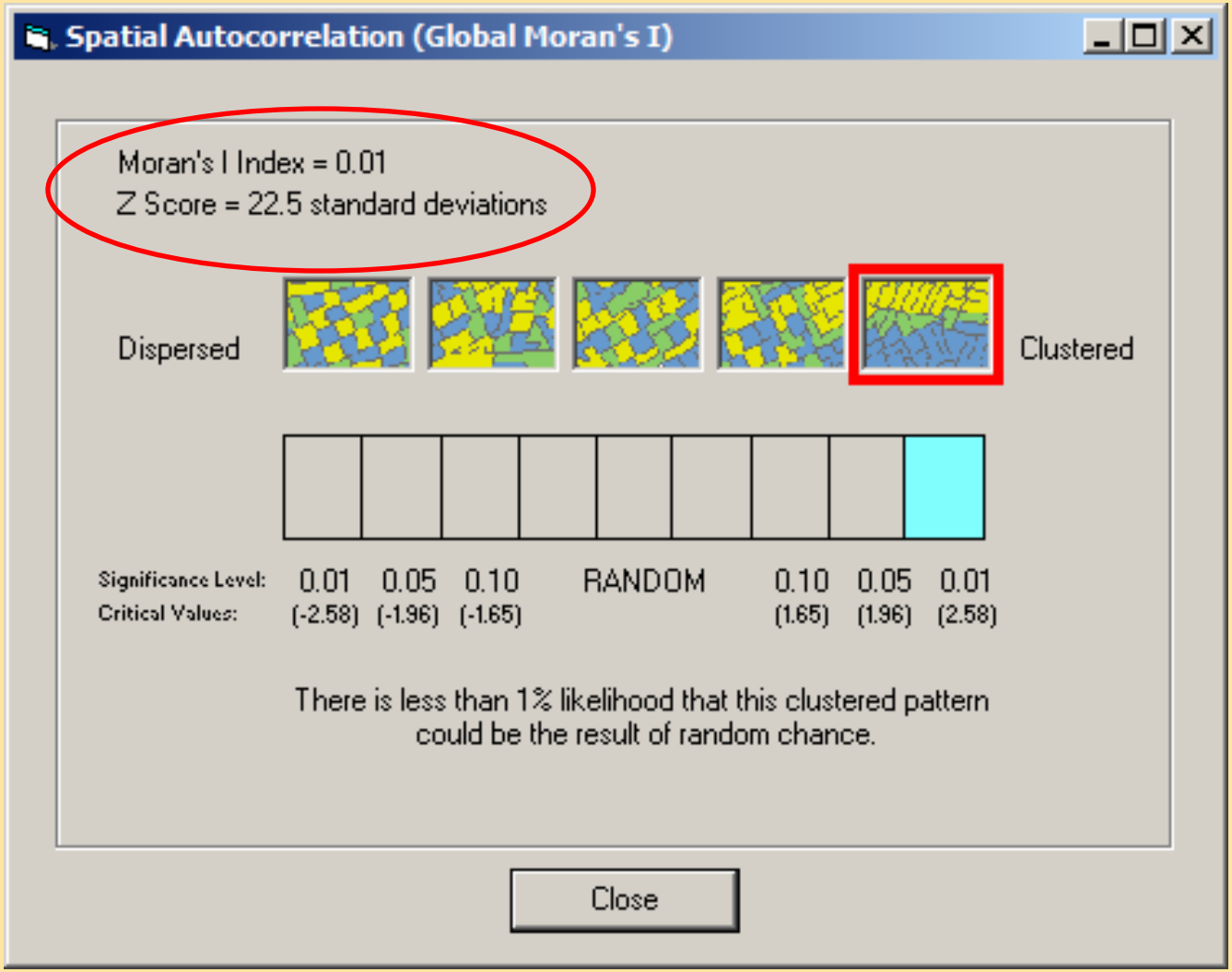
Four-Mile Grids for Aggregation



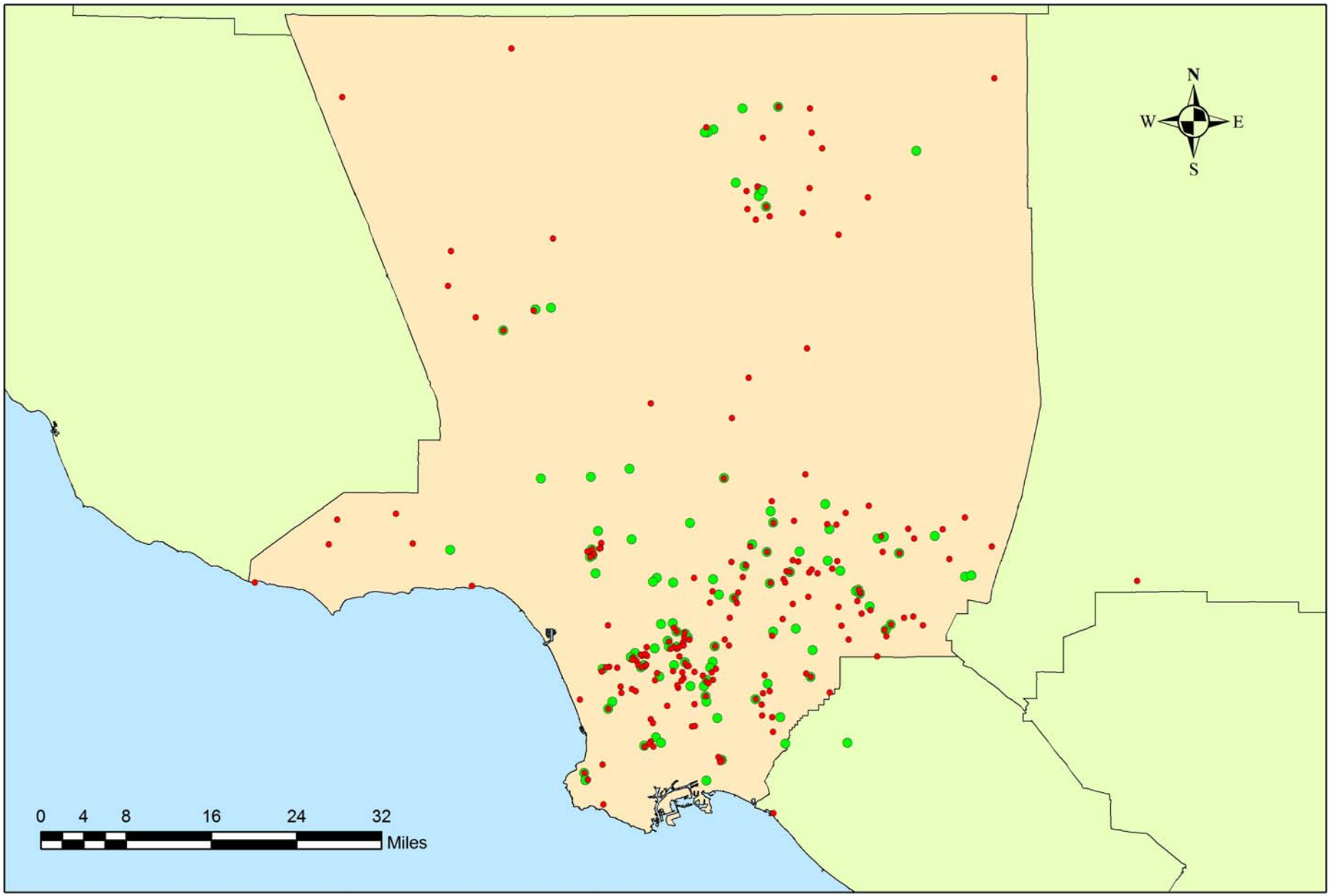
Incidents: Spatial Autocorrelation



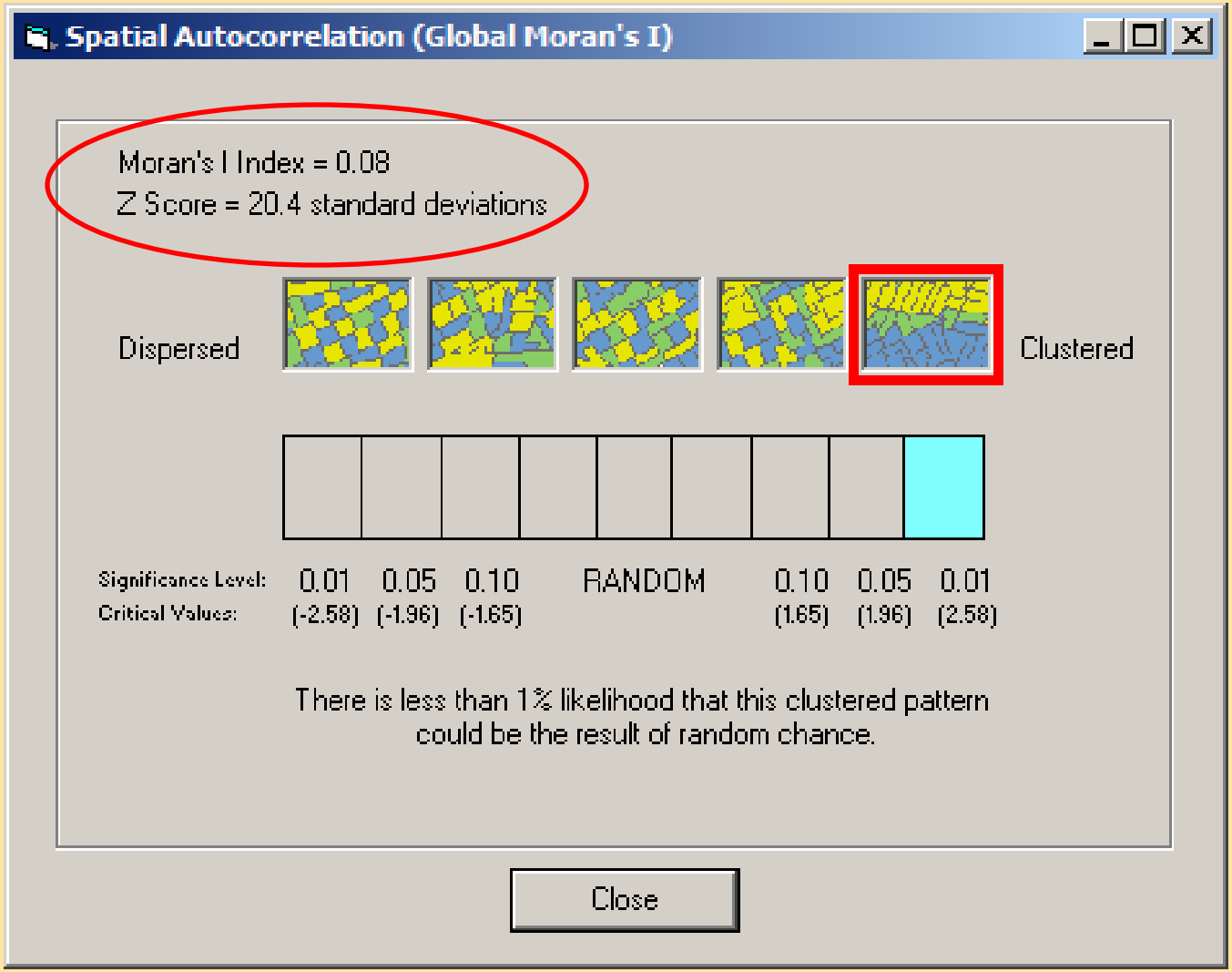
Moran's I based on TAZs



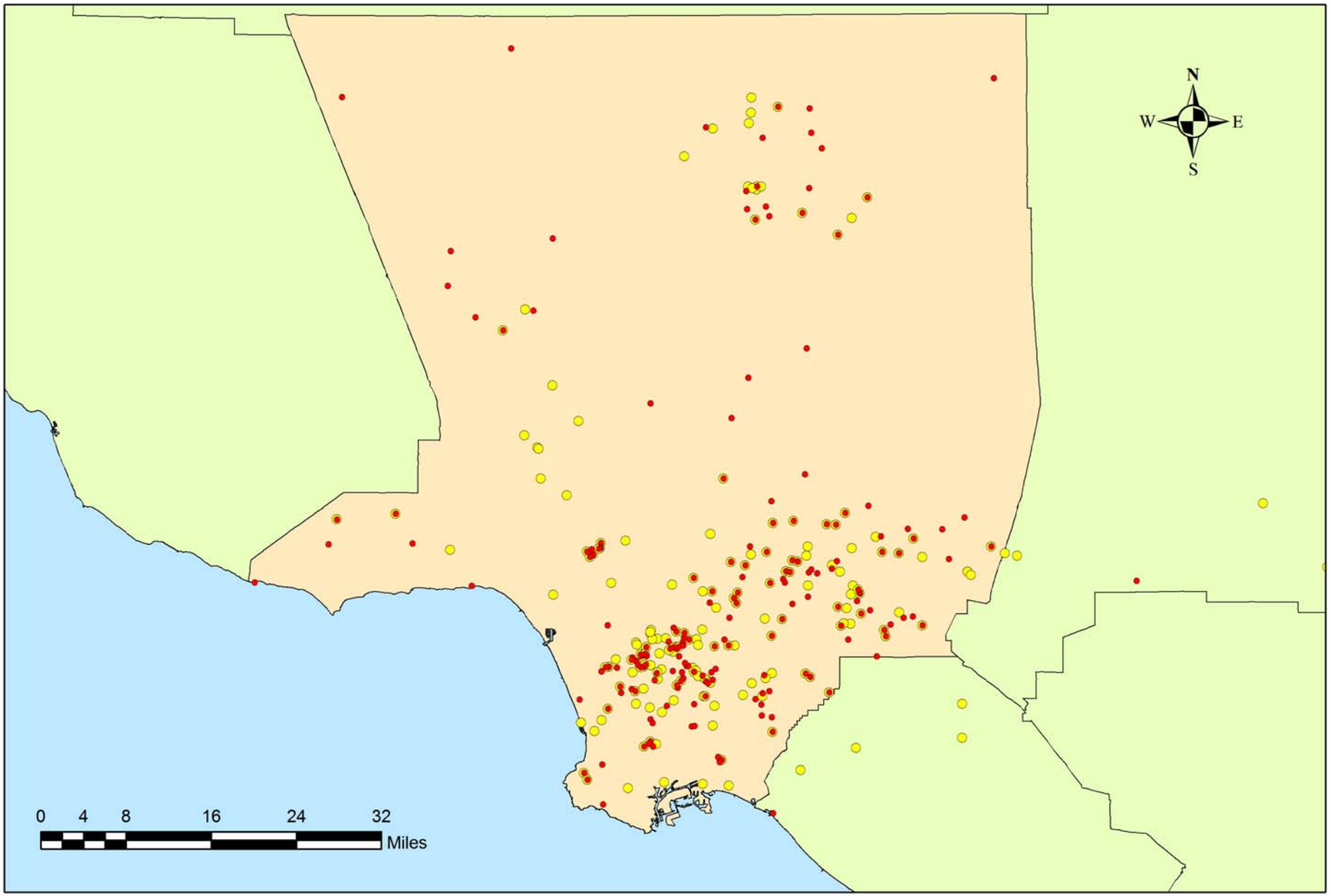
Offender Residence & Incident Site



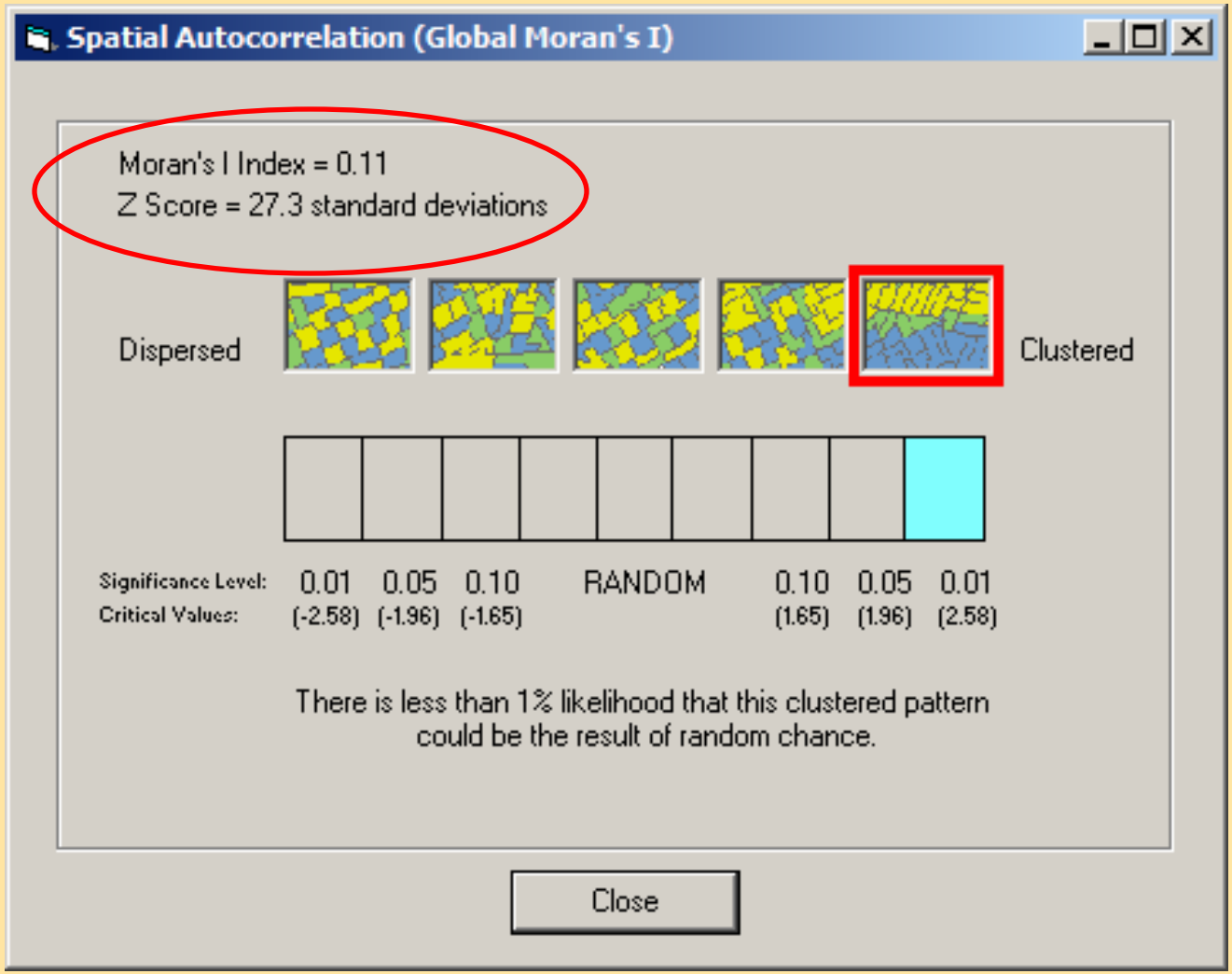
Offender Residence: Spatial Autocorrelation



Victim Residence & Incident Site



Victim Resident: Spatial Autocorrelation



The Data

TABLE 1 – *Sample size by location*

Location	Count	Percent of total (N=197)
Incident/Occurrence Site	197	100%
Victim Residence	192	97.5%
Encounter Site	136	69%
Attack Site	127	64.5%
Murder Site	126	63.9%
Offender Residence	110	55.8%
Post-Offense Location	98	49.7%

TABLE 2 – *Victim and offender demographics*

	Offender		Victim	
	N	Percent	N	Percent
Male	139	98.6	38	19.1
Female	2	1.4	161	80.9
Total	141*	100	199	100

* *refers to known, primary offenders only*

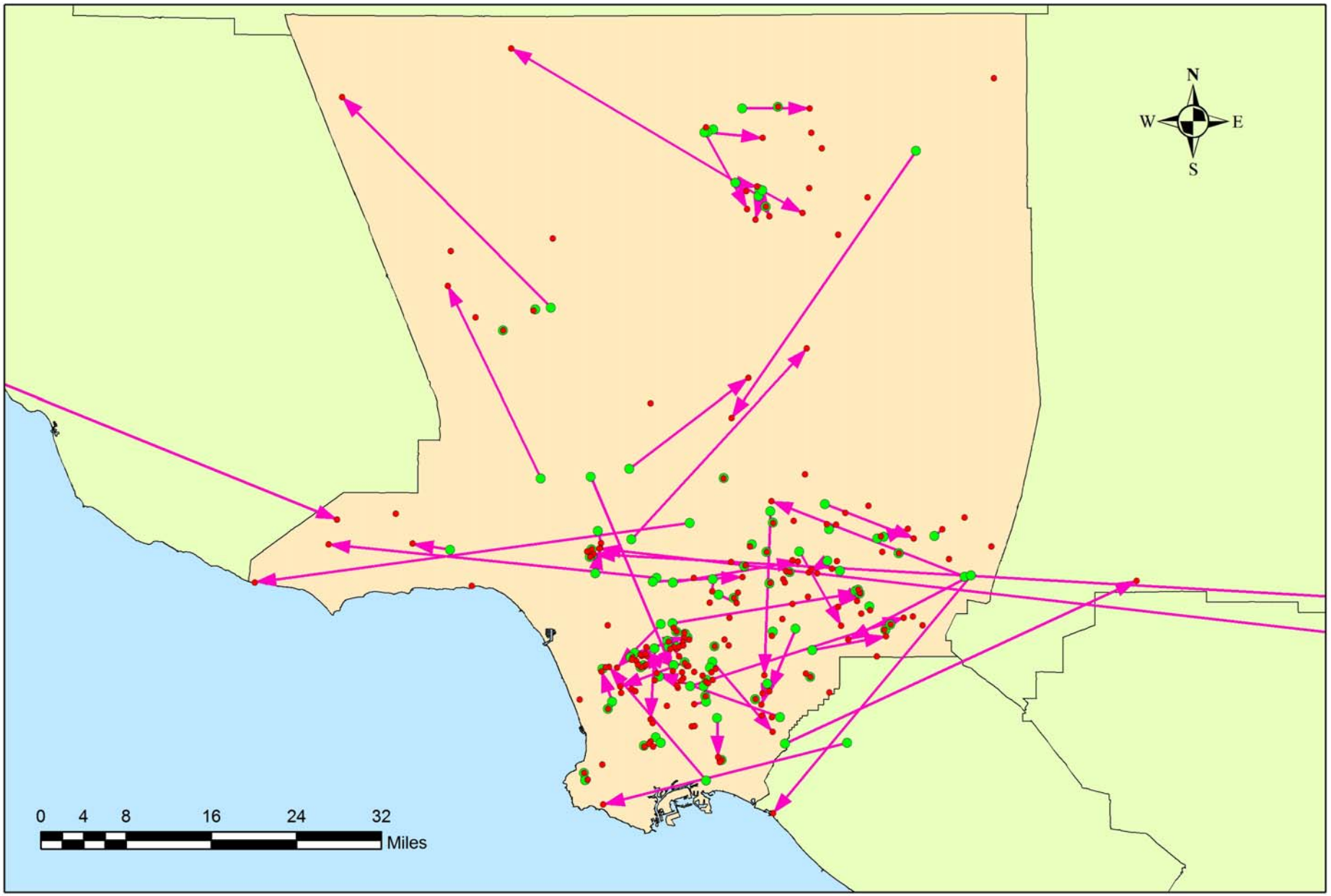
Coarse Racial Mix

	Offender		Victim	
	N	%	N	%
Non-white	84	60%	105	52.8%
White	56	40%	94	47.2%

Breakdown of Racial Mix

	Offender		Victim	
	N	%	N	%
Asian	0	0	7	3.6
Hispanic	44	31.4	43	21.6
American Indian	0	0	1	0.5
Black	40	28.6	54	27.1
White	56	40	94	47.2
Total	140*	100	199	100

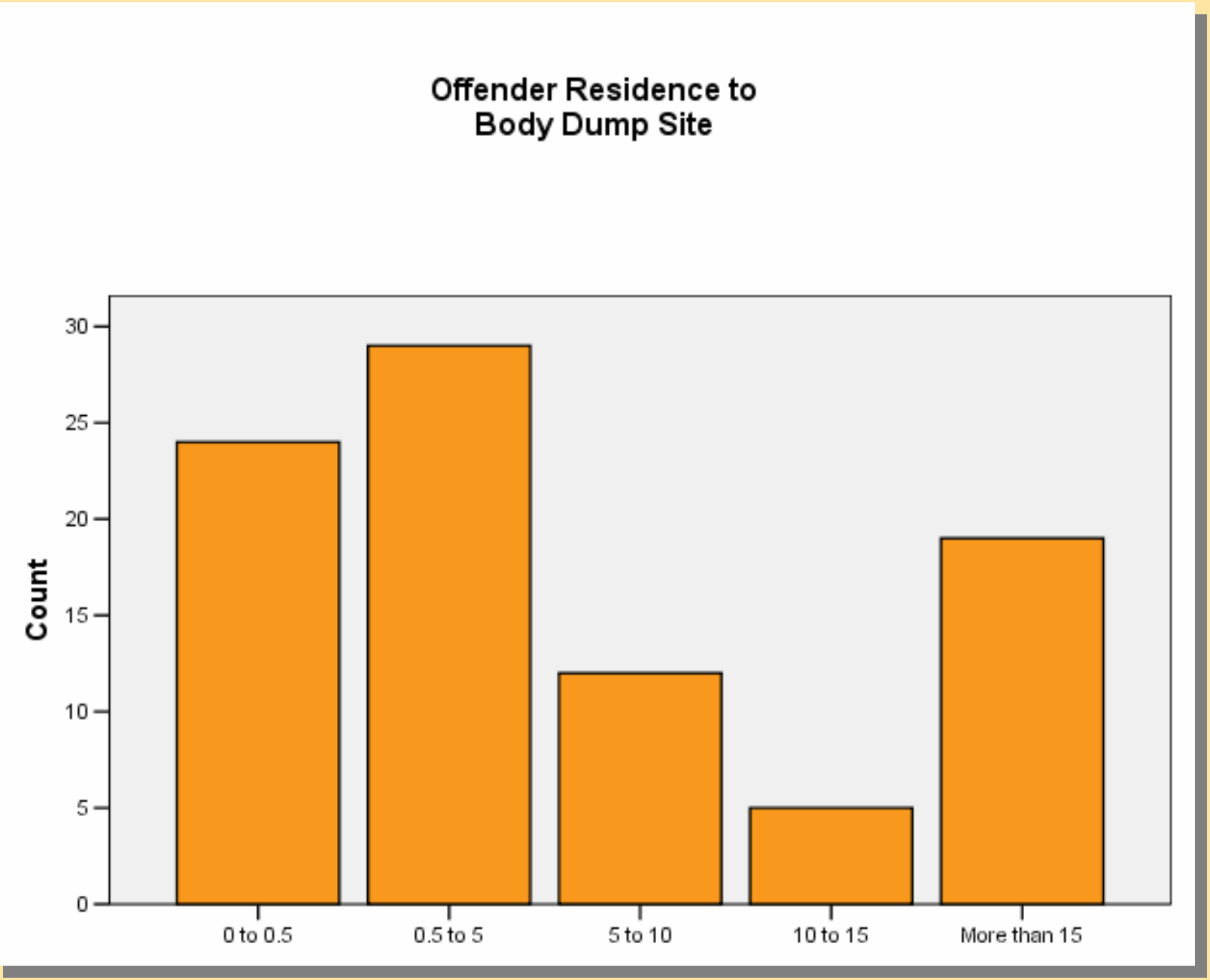
Journey to Crime:
Offender Residence to Body Disposal Site



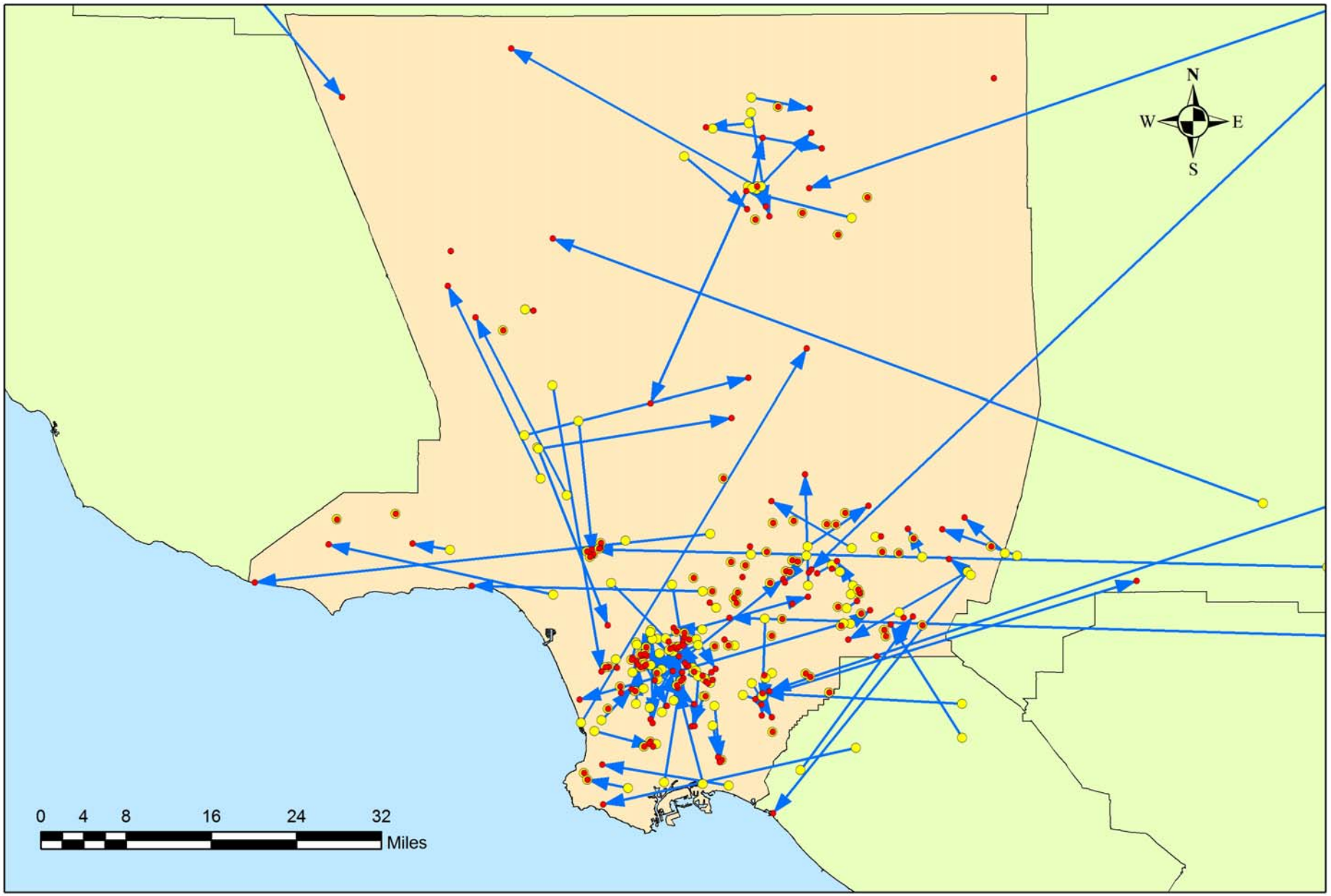
JTC: Offender Residence to Body Dump

	Miles
Mean Distance	54.21
Median	2.43
Standard Deviation	364.24
Minimum (non-zero)	.004
Maximum	3410.87
N	89*

* Includes only non-zero trips, there were 21 zero-distance “trips”


Offender Residence to
Body Dump Site
Count
30
25
20
15
10
5
0
0 to 0.5
0.5 to 5
5 to 10
10 to 15
More than 15

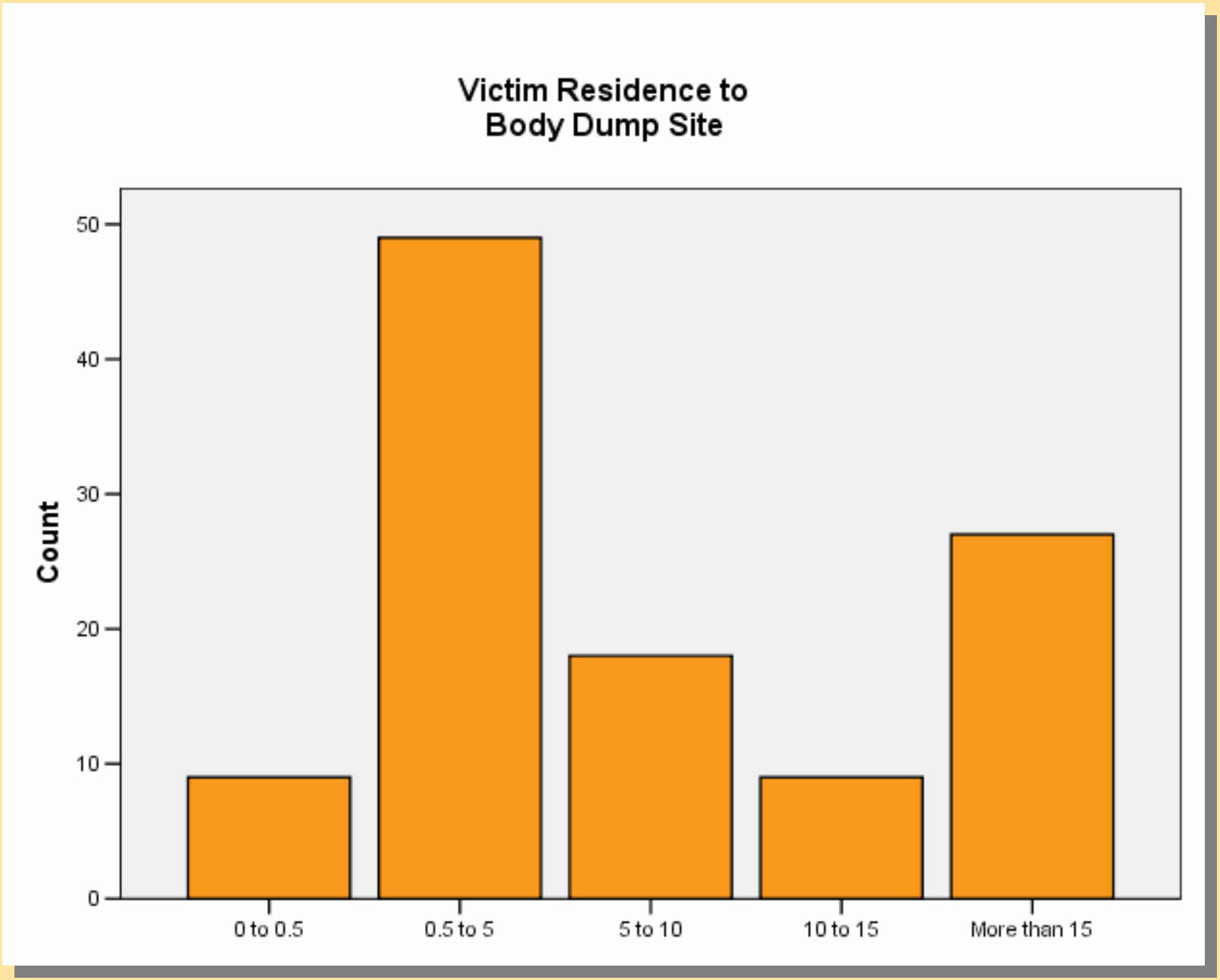
Journey to Crime:
Victim Residence to Body Disposal Site



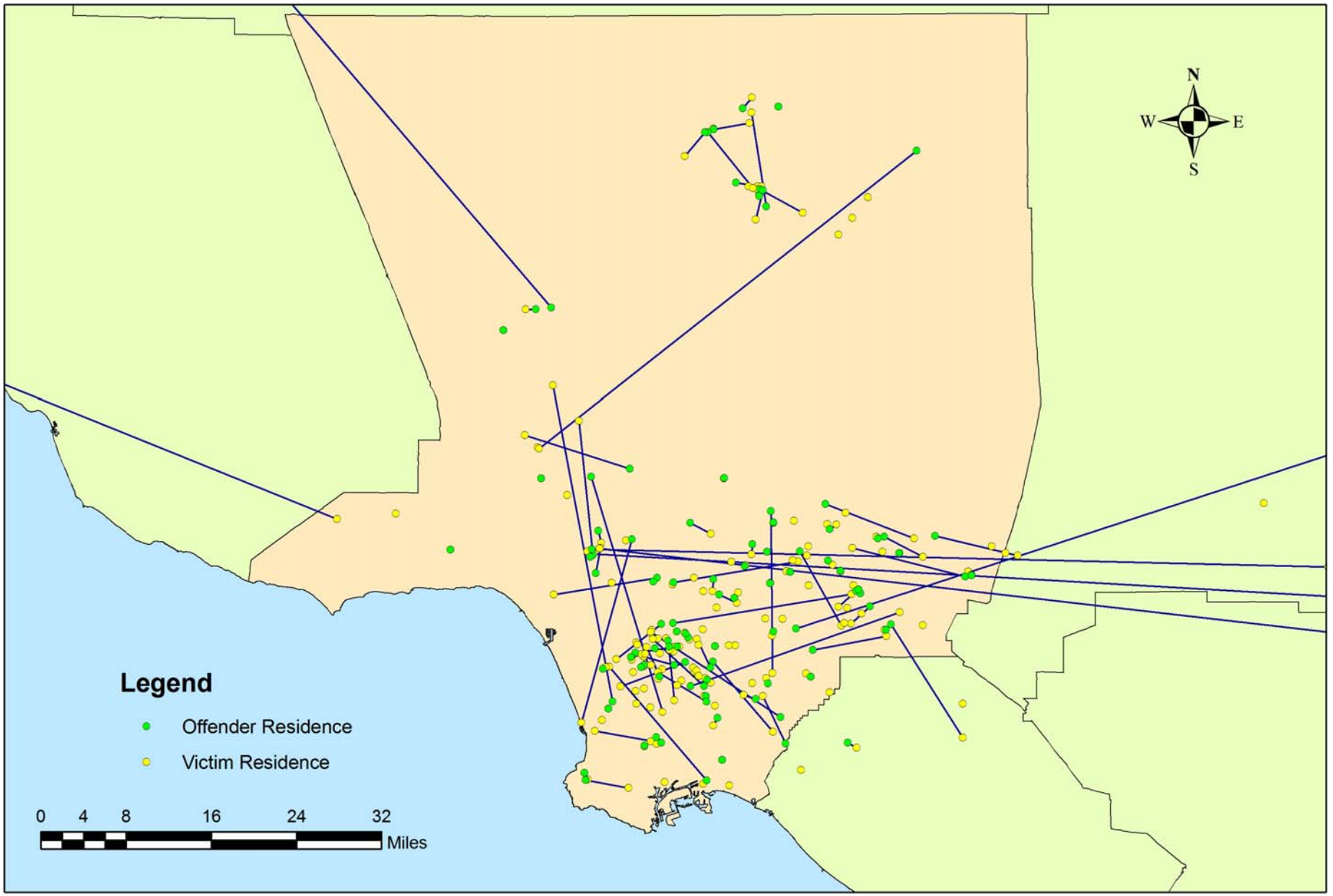
JTC: Victim Residence to Body Dump

	Miles
Mean Distance	56.92
Median	4.62
Standard Deviation	275.53
Minimum (non-zero)	.032
Maximum	2276.29
N	112*

* Includes only non-zero trips


Victim Residence to
Body Dump Site
Count
50
40
30
20
10
0
0 to 0.5
0.5 to 5
5 to 10
10 to 15
More than 15

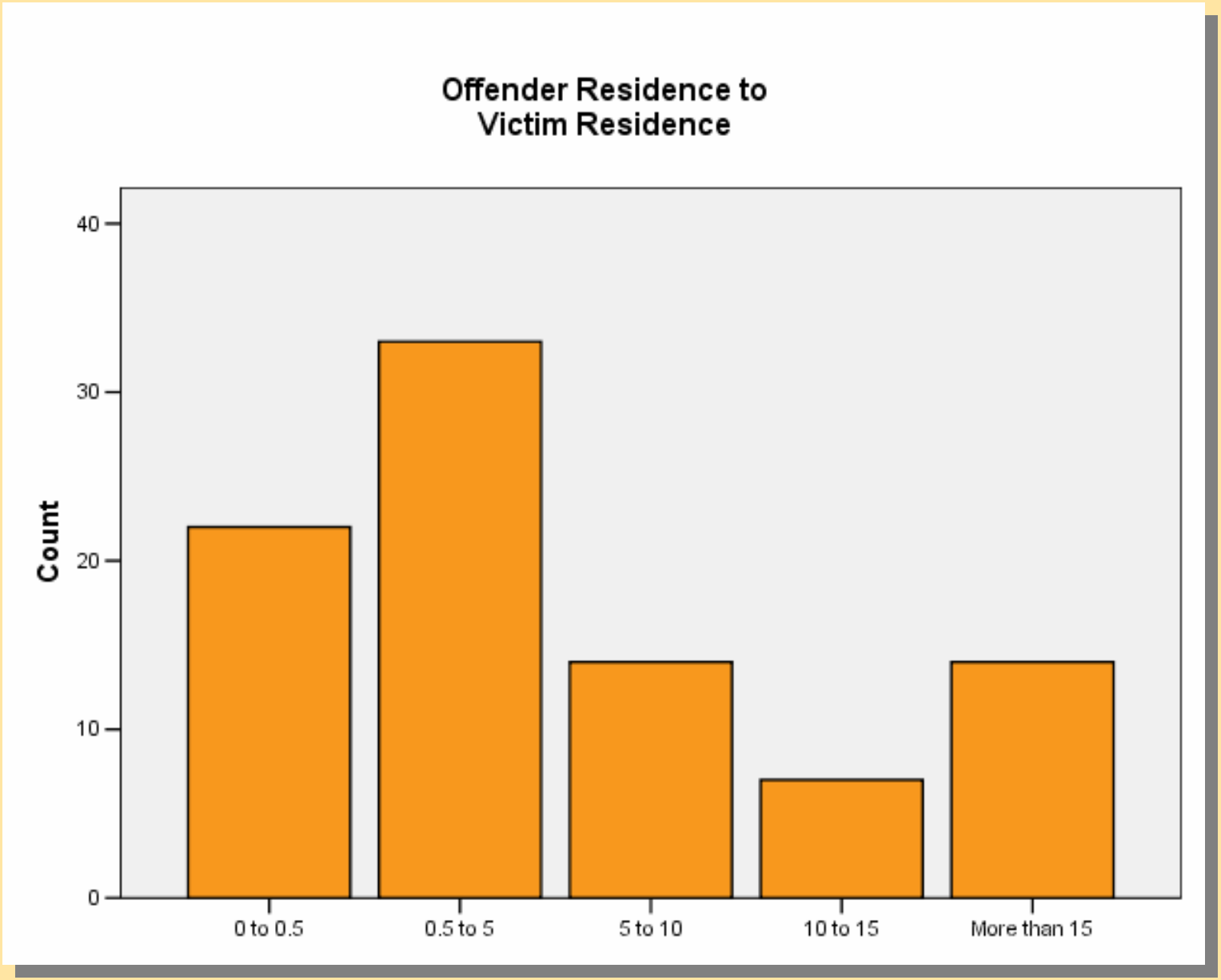
Offender to Victim Residence Links



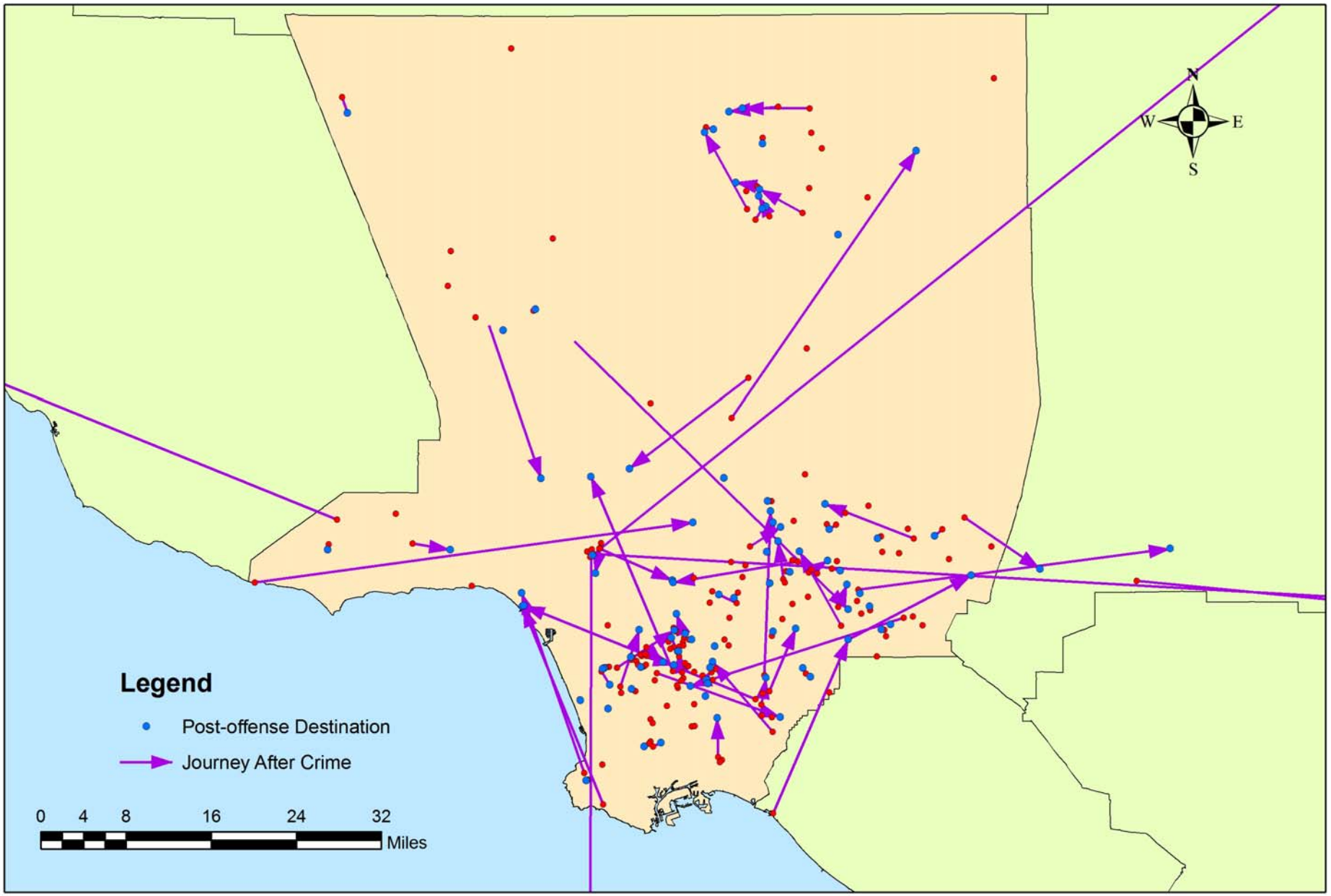
Offender Residence to Victim Residence

	Miles
Mean Distance	69.25
Median	2.88
Standard Deviation	382.48
Minimum (non-zero)	.004
Maximum	3410.87
N	90*

* Includes only non-zero trips


Offender Residence to
Victim Residence
Count
40
30
20
10
0
0 to 0.5
0.5 to 5
5 to 10
10 to 15
More than 15

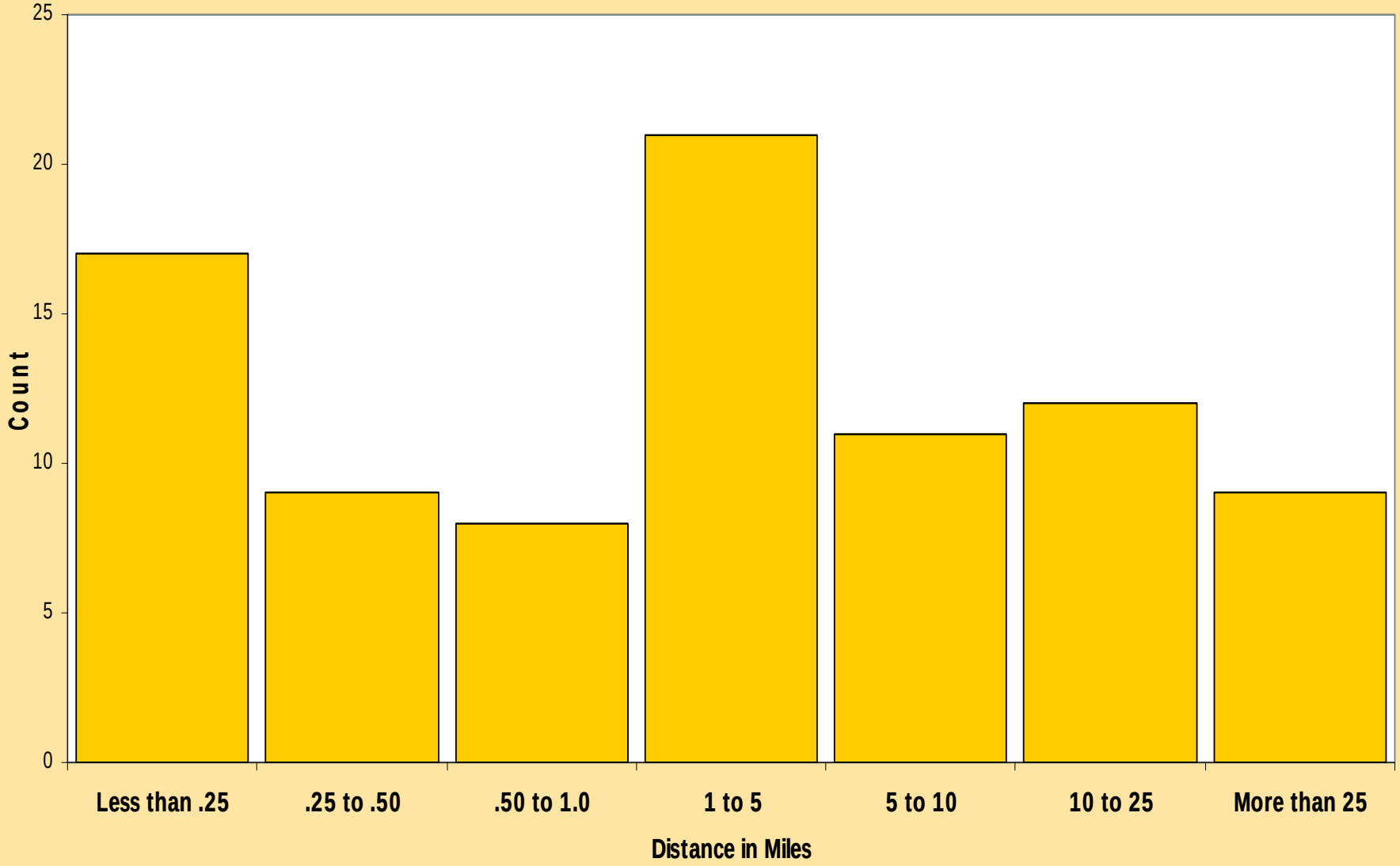
Journey After Crime



Journey After Crime

Distance Category (Miles)	Count	Percent	Cumulative
Less than .25	17	19.5	19.5
.25 to .50	9	10.3	29.8
.50 to 1.0	8	9.2	39.0
1 to 5	21	24.1	63.1
5 to 10	11	12.6	75.7
10 to 25	12	13.8	89.5
More than 25	9	10.3	100
Total	87	100	

Journey After Crime



Mobility Triangles

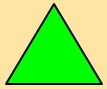
A Comparison of Traditional and Distance Triangles in Total Homicide and Single Motive Homicide

A Homicide Geometry[1]

- The geometric relationship between offender residence, victim residence and event location
- Dots
  - All three are co-located
- Lines
  - At least two are co-located, with the third being separate
- Triangles
  - All three are separated

[1]*Groff & McEwen, 2006*

A Homicide Geometry[1]



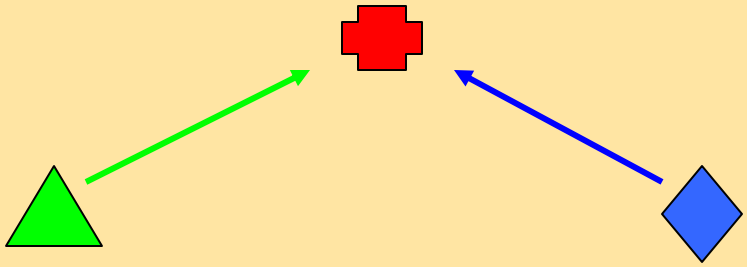
Victim Residence

Event Location

Offender Residence

Dot Geometry

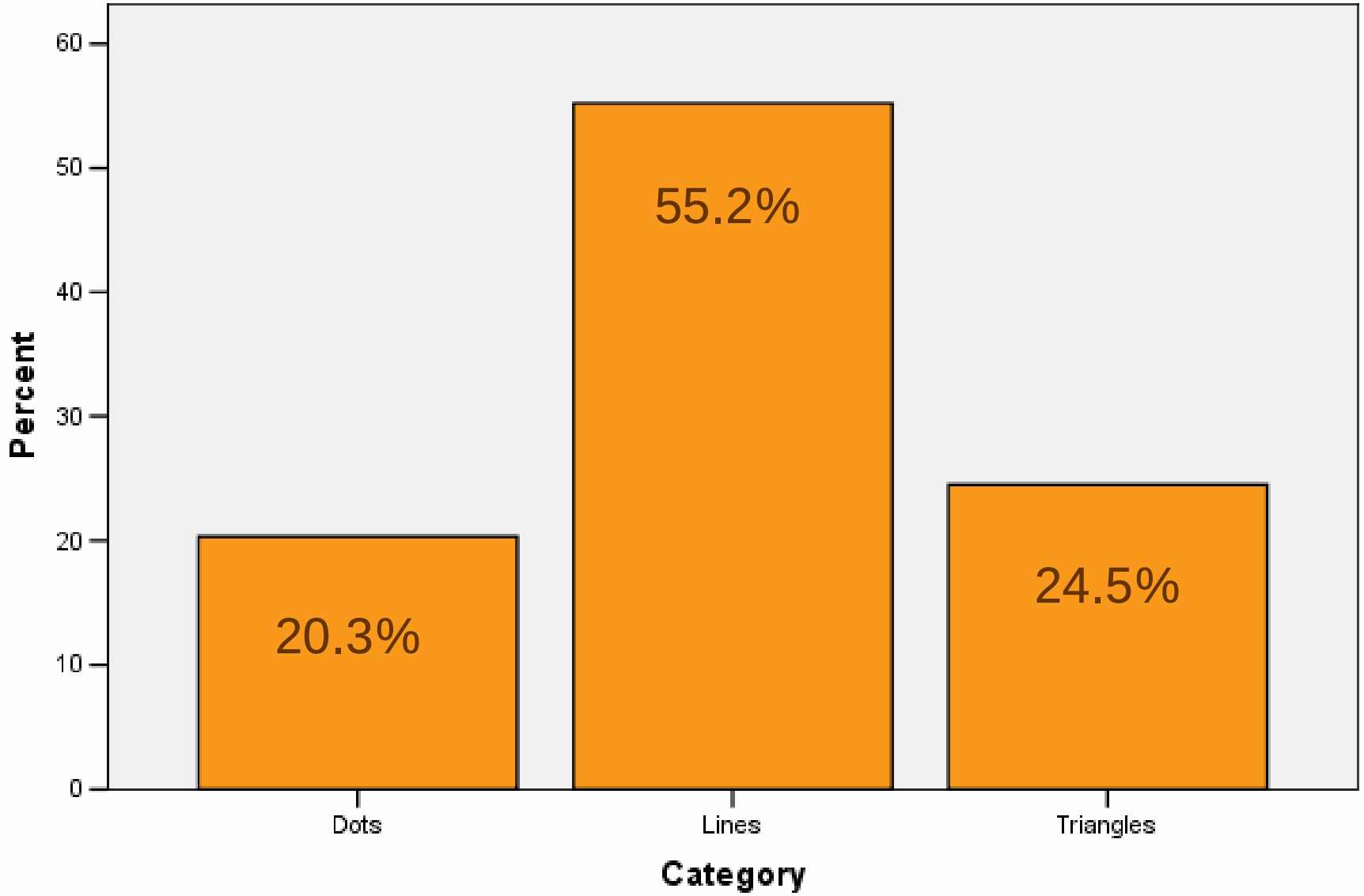
Line Geometry



Triangle Geometry

[1]*Groff & McEwen, 2006*

Sexual Homicides: Geometry



Case Status by Geometry

	Dots		Lines		Triangles	
	N	%	N	%	N	%
Open	19	48.7	55	51.9	7	14.9
Closed	20	51.3	51	48.1	40	85.1
Total	39	100	106	100	47	100

Total N = 192

$X^2 = 19.126$, $p < .001$, Cramer's $V = .32$

Tita & Griffiths, 2005

- Mobility-based triangles
  - Neighborhood based on areal analog
- Five classes
  - Internal – all share census tract
  - Predatory – offender from outside
  - Intrusion – victim from outside
  - Offense mobility – incident outside
  - Total mobility – all three have different census tract

Groff & McEwen, 2006

- Distance triangles
  - Neighborhood based on distance analog
- Five classes
  - Neighborhood – all events within .25 miles
  - Offender Mobility – offender from outside
  - Victim Mobility – victim from outside
  - Offense Mobility – offense is outside
  - Total Mobility – all locations more than .25 miles

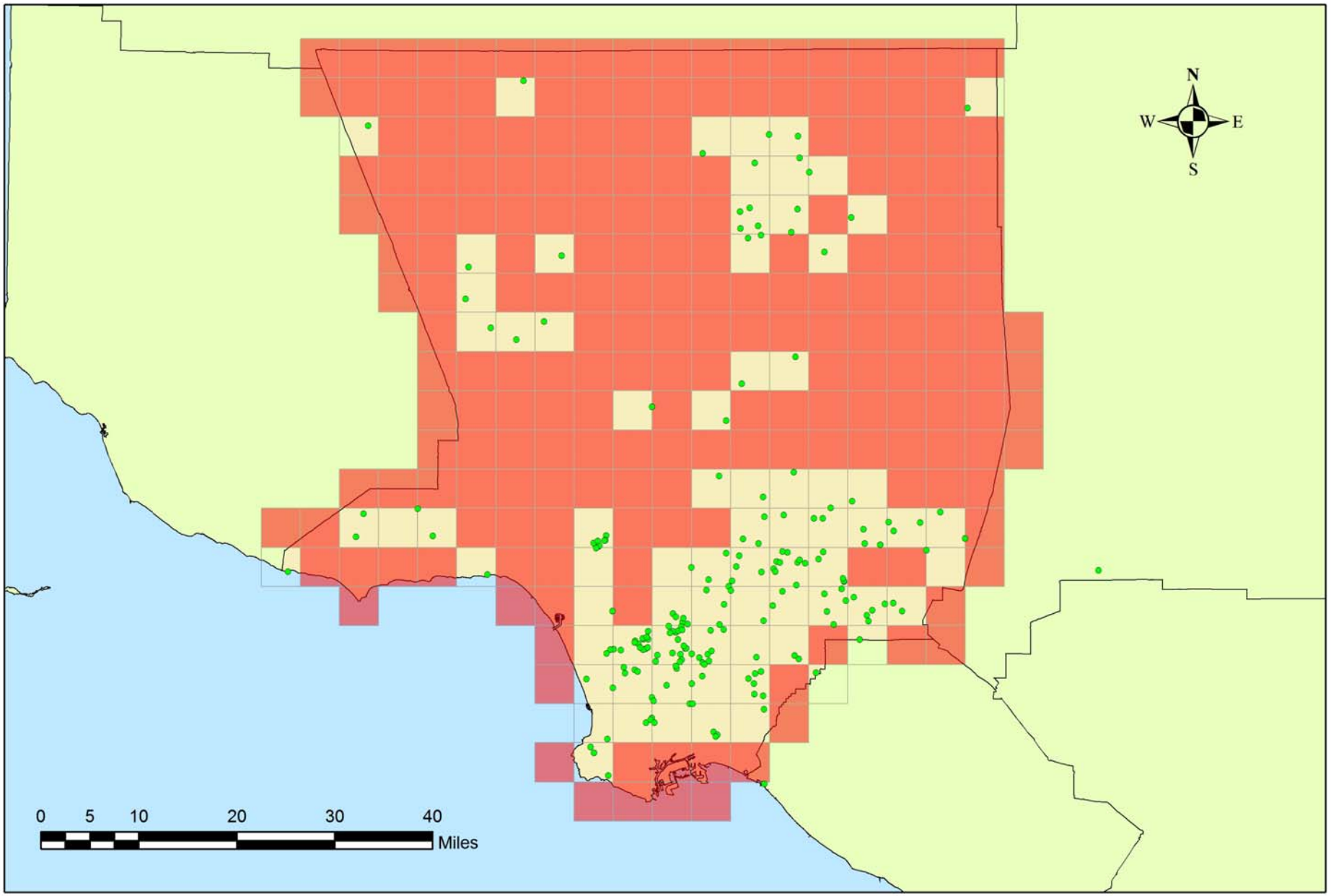
At walking speed, it takes approximately 10 minutes to cover .25 miles

The MAUP Problem

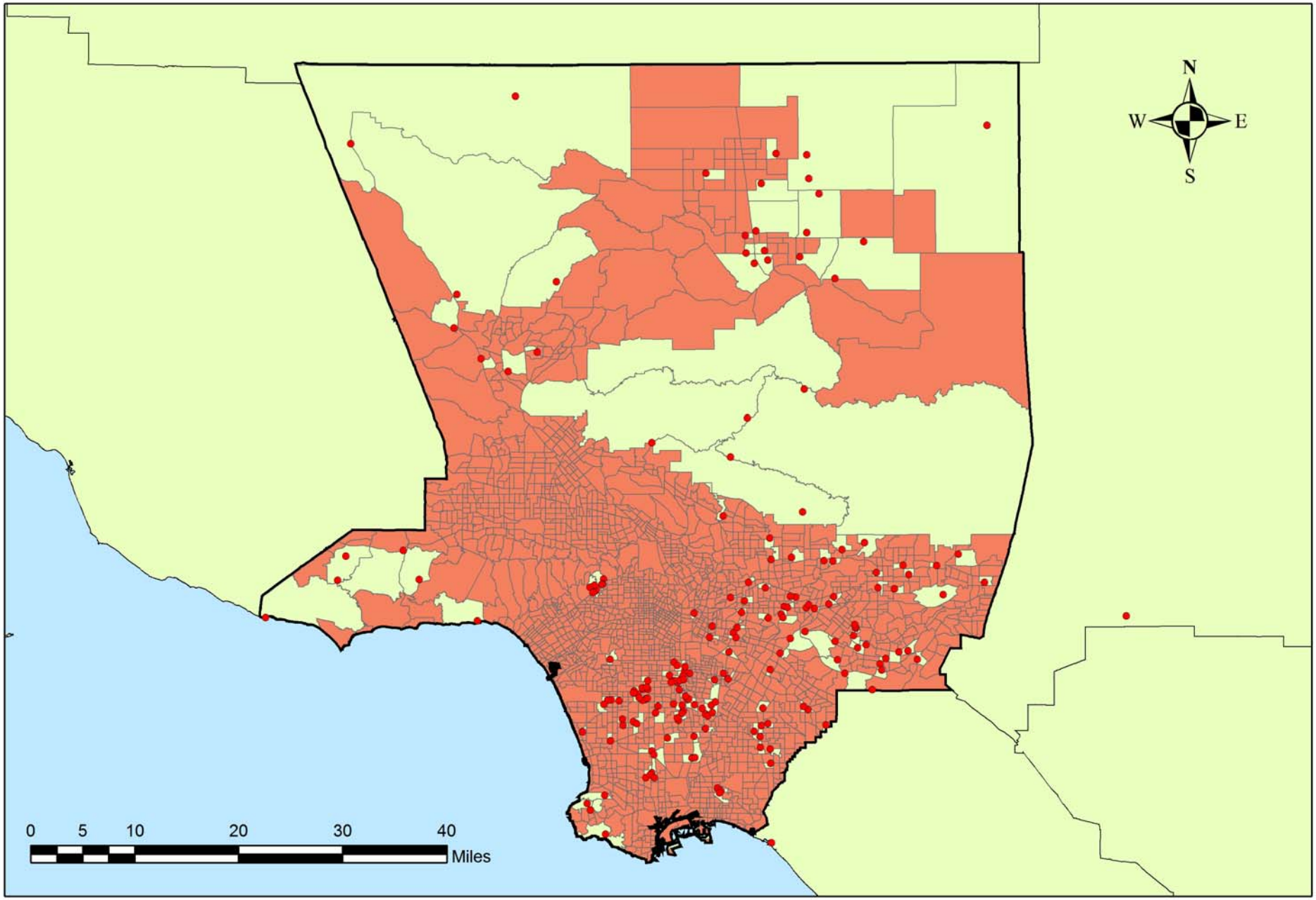
- The modifiable areal unit problem “is a geographic manifestation of the ecological fallacy in which conclusions based on data aggregated to a particular set of [areal units] may change if one aggregates the same underlying data to a different set of [areal units].”

Waller, LA & Gotway, CA (2004). *Applied Spatial Statistics for Public Health Data*

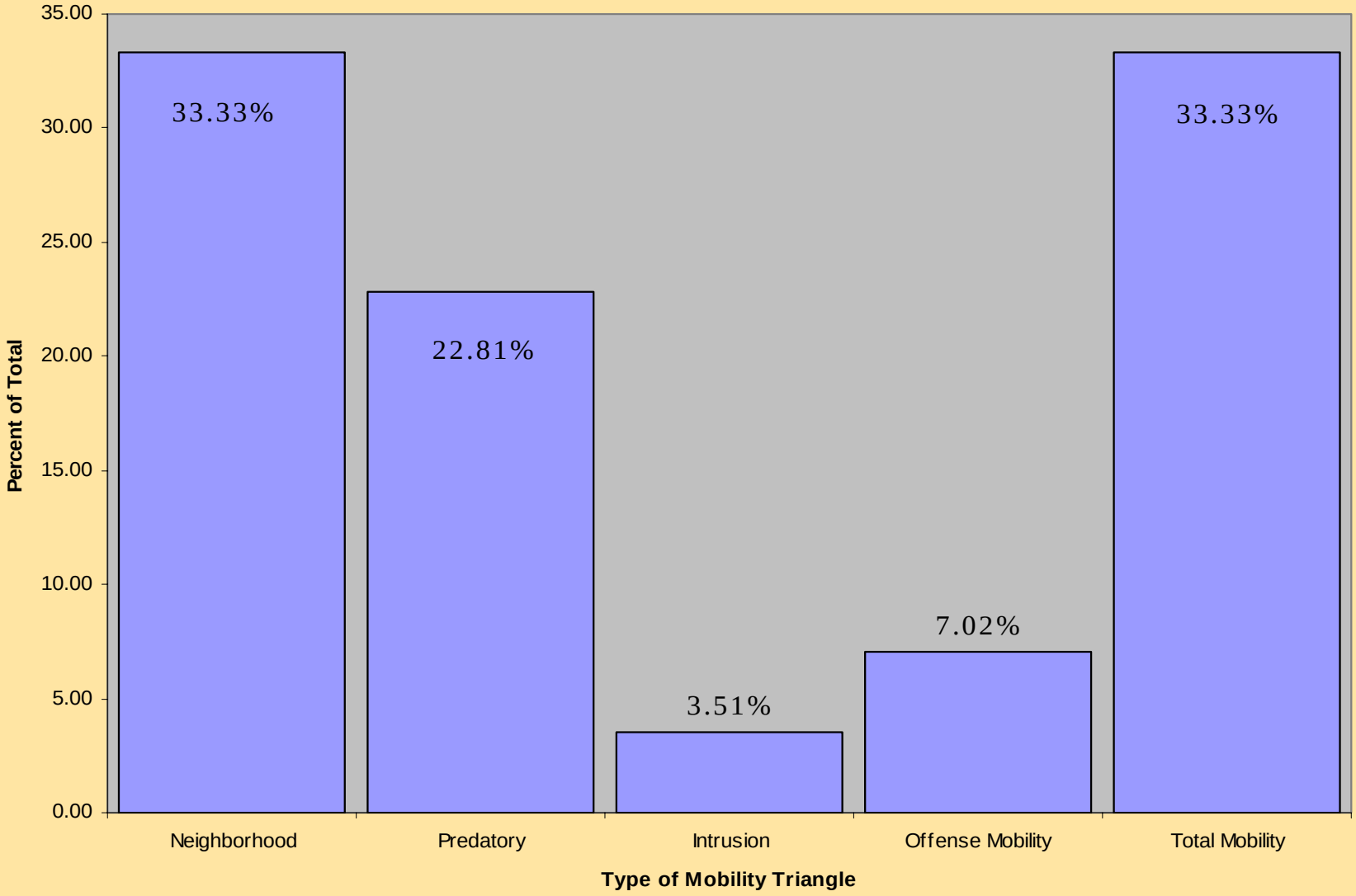
Modifiable Areal Unit Problem: Four Mile Grid



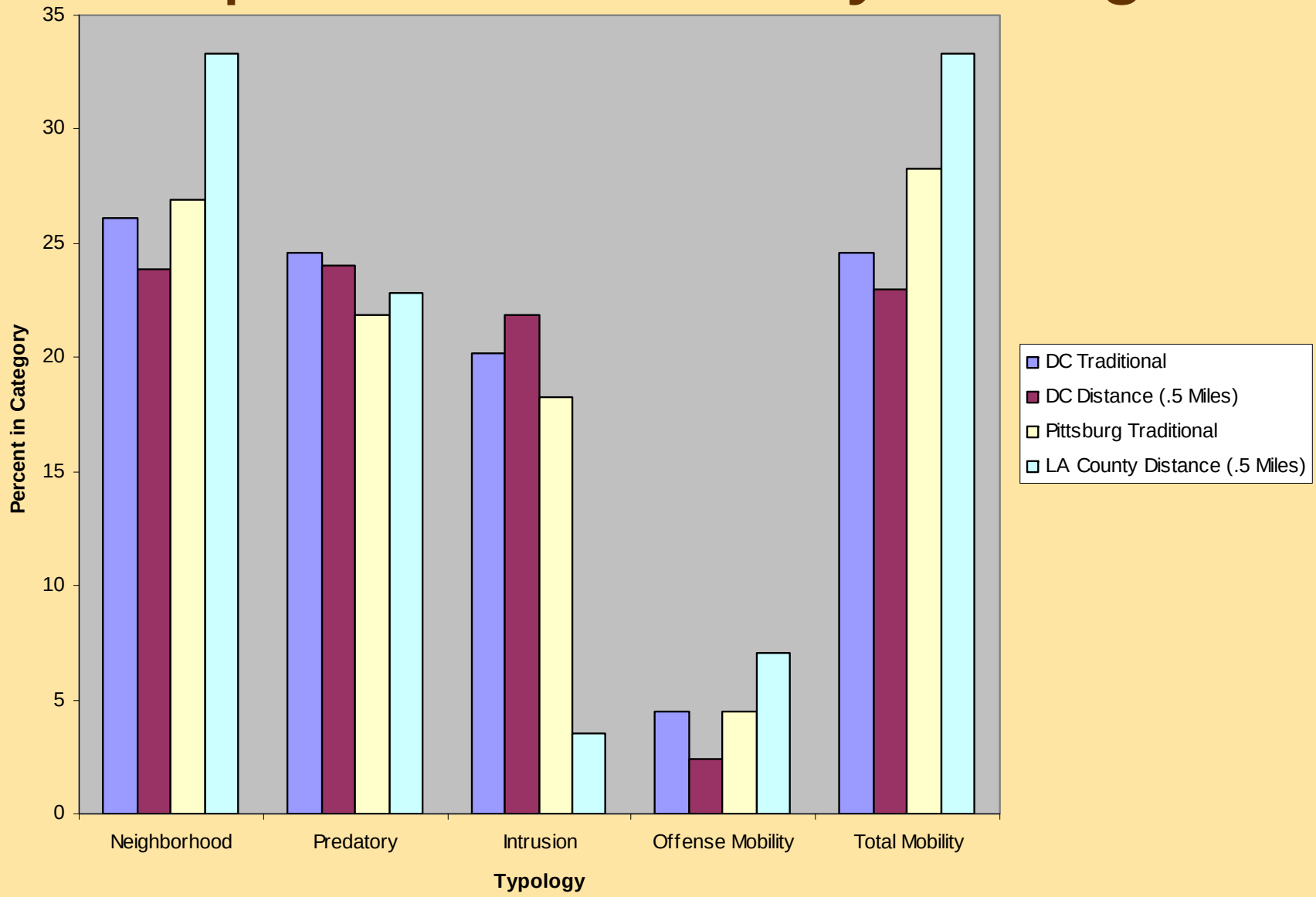
MAUP - Traffic Analysis Zones



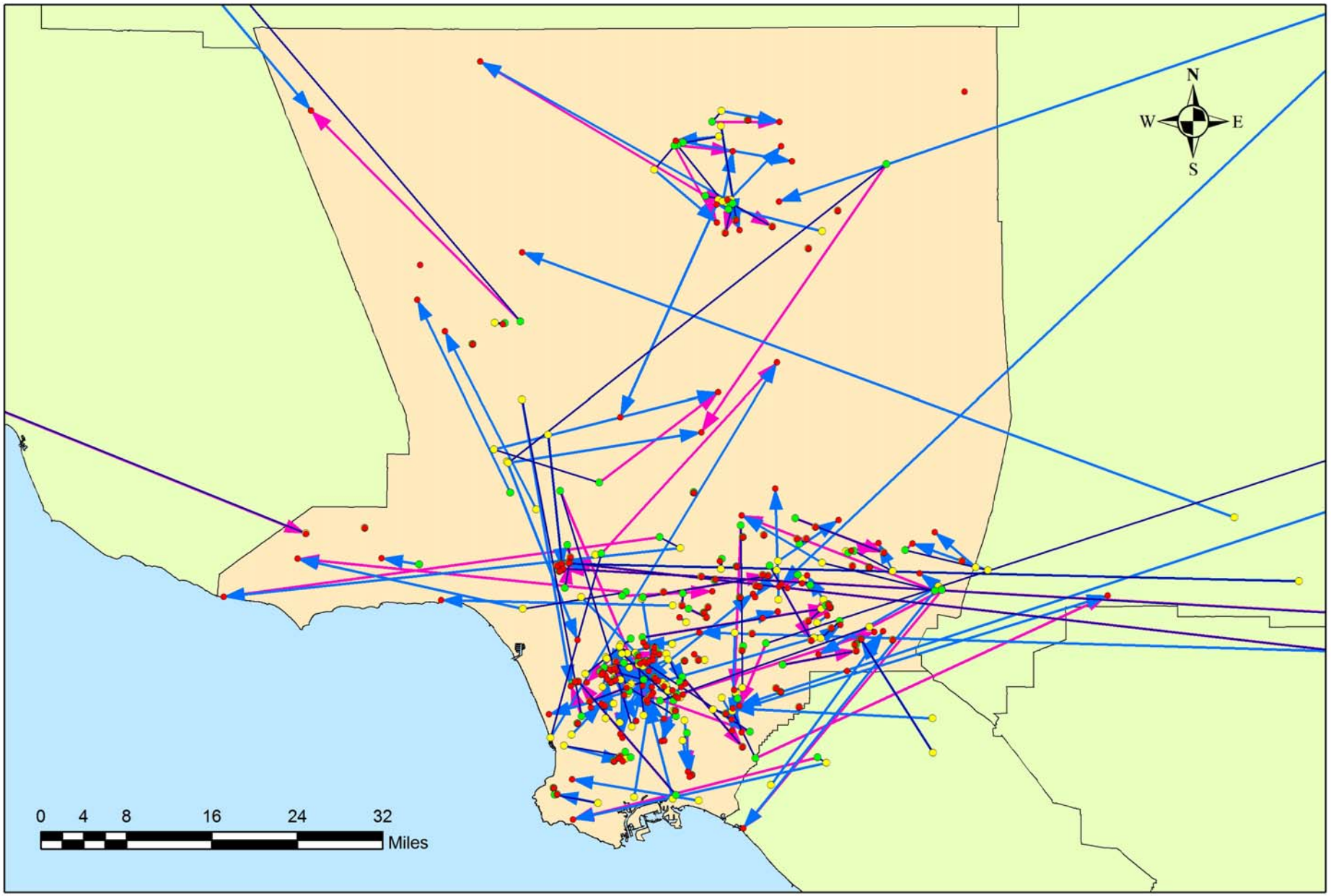
LA Distance Mobility Triangles



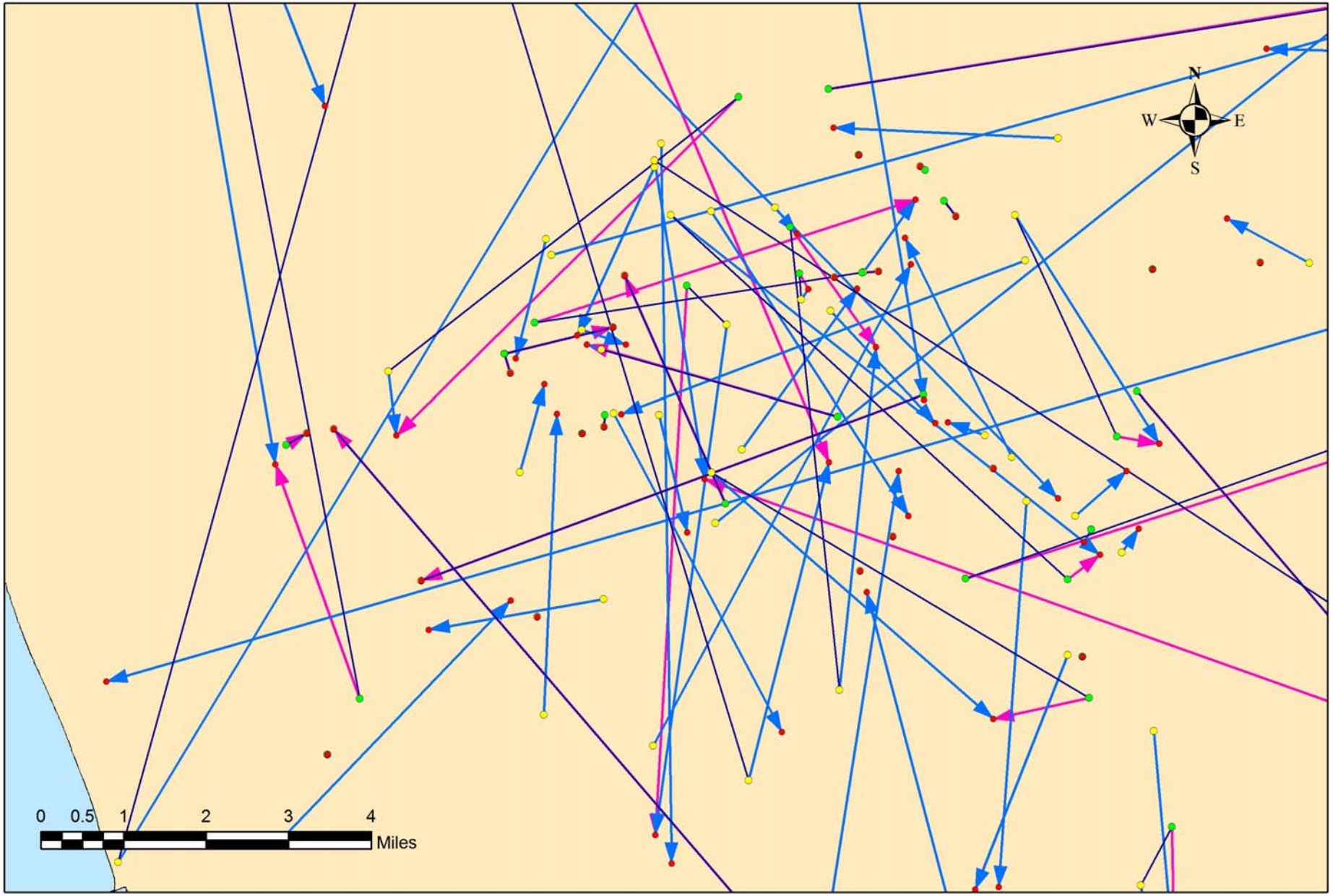
Comparison of Mobility Triangles

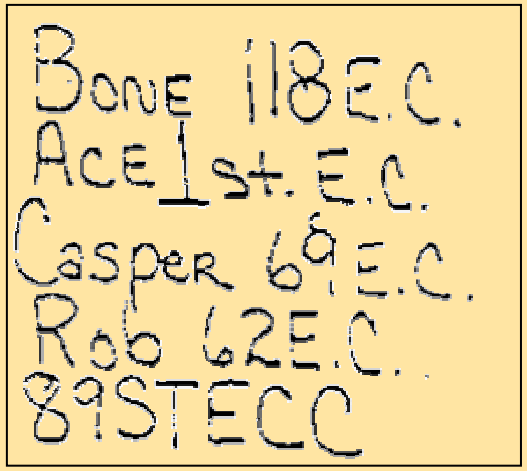


The Complex Geometry of Mobility Triangles



The Complex Geometry of Mobility Triangles In South Central Los Angeles





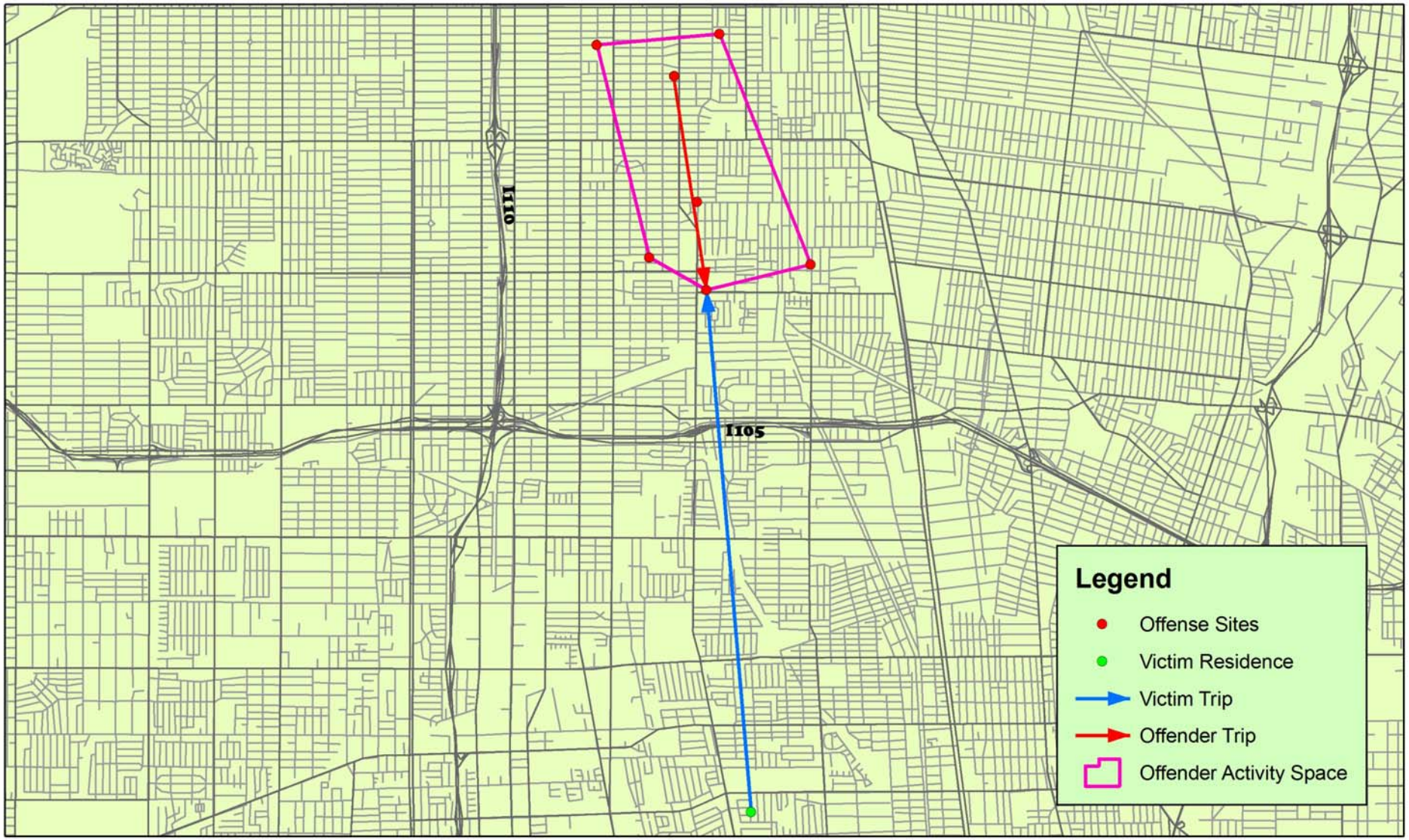
Case Example

LASD Case No: 1983-01063-0183

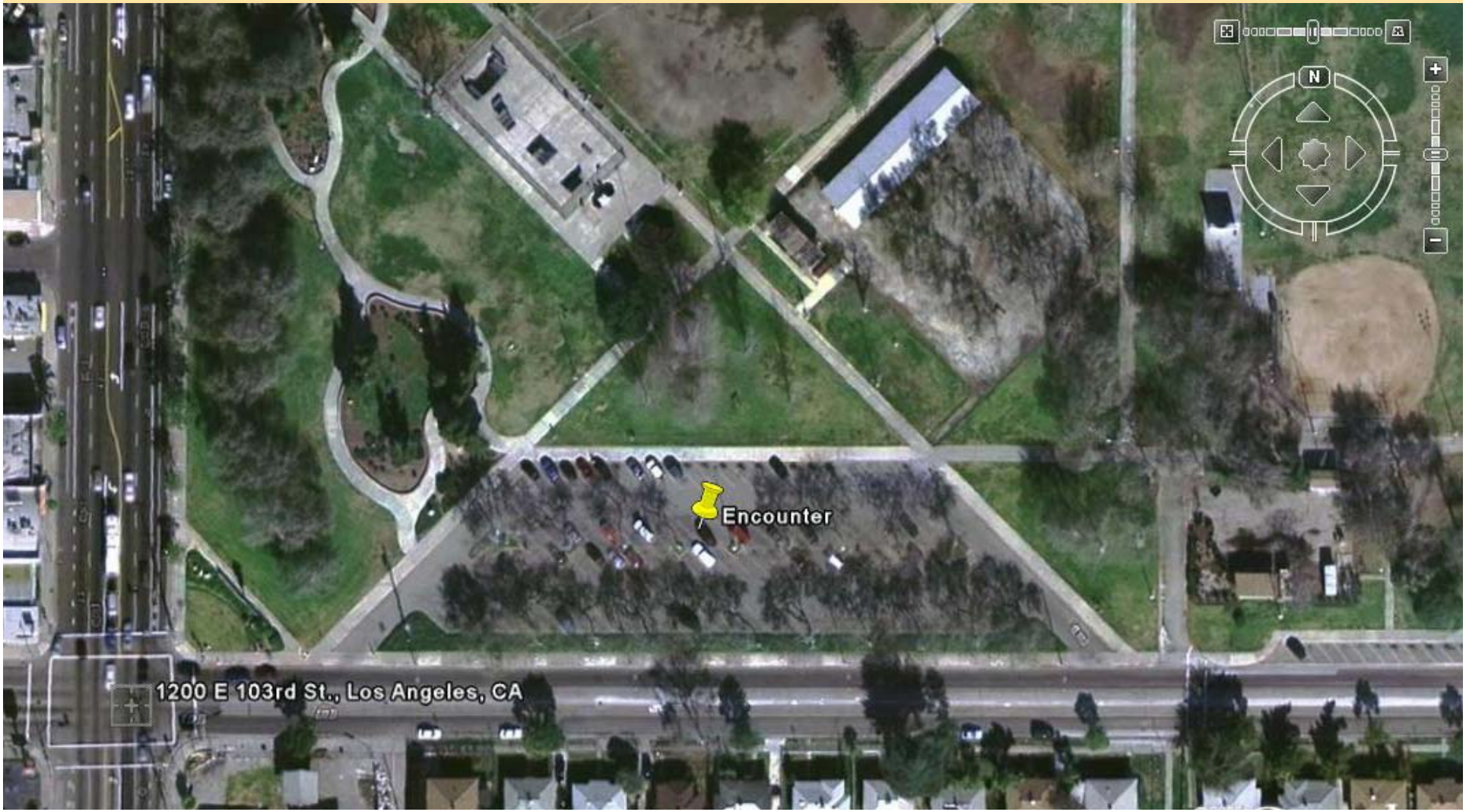
76th Street East Coast Crips

“Party On”

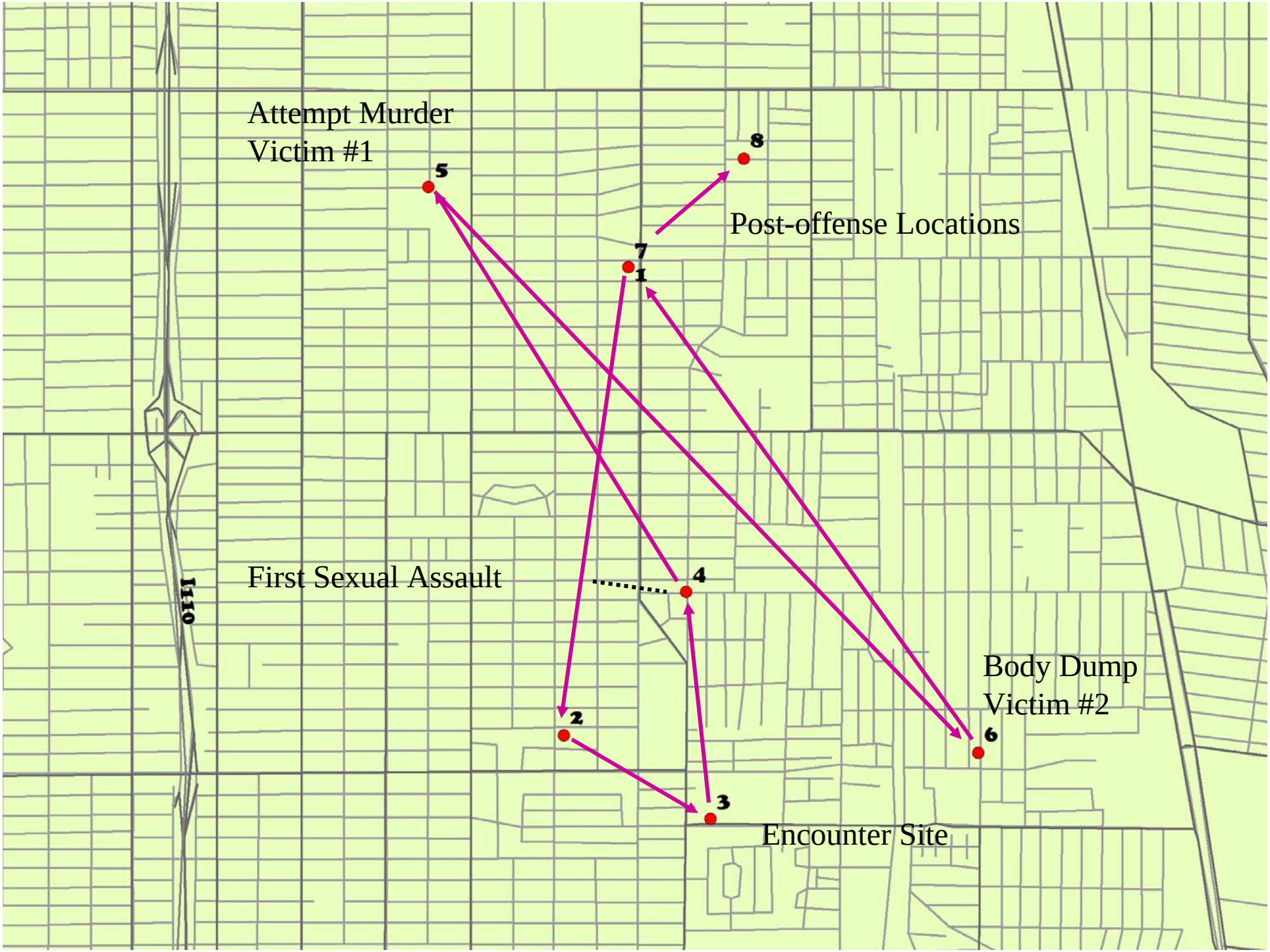
Offender Activity Space and Journey to Encounter

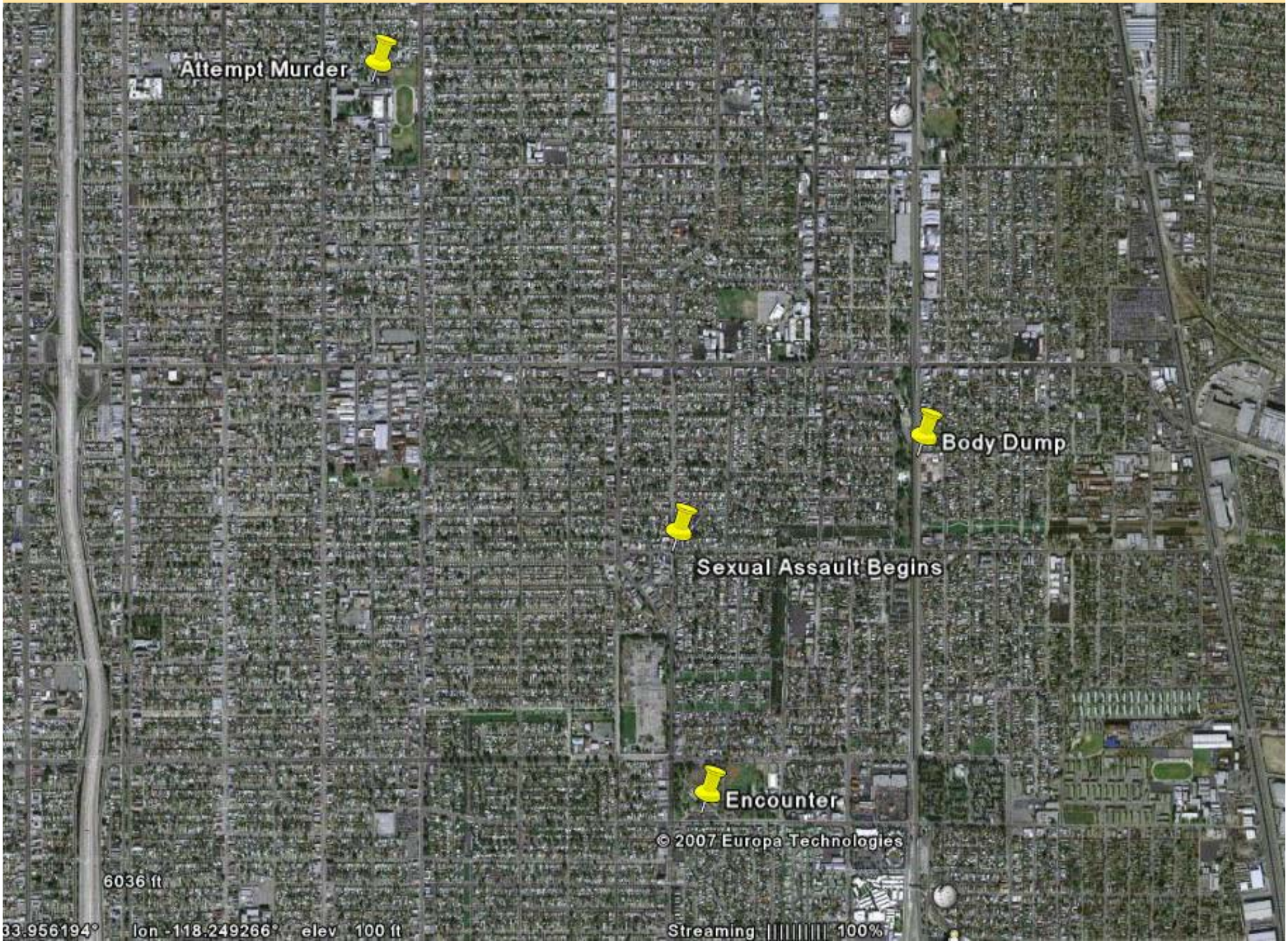


Will Rogers Memorial Park



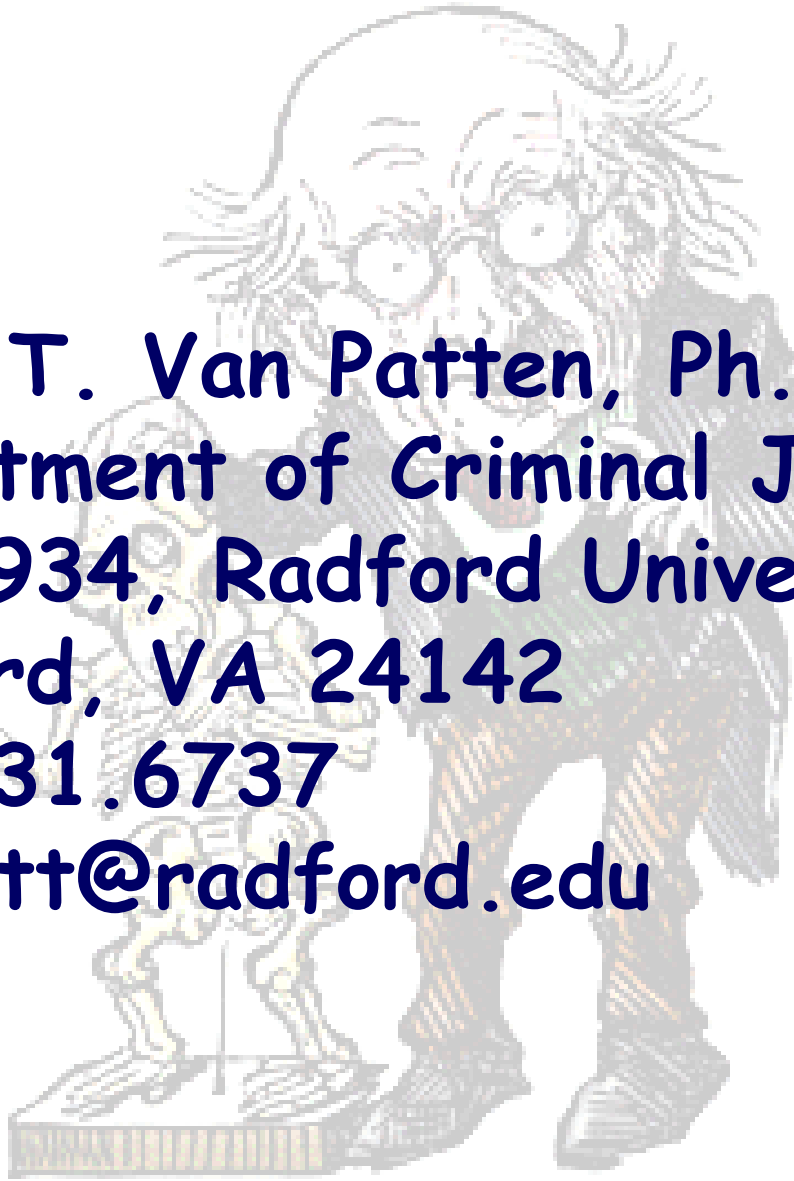
Offender Activity Space


Attempt Murder
Victim #1
5
8
Post-offense Locations
7
1
First Sexual Assault
4
I110
Body Dump
Victim #2
2
6
3
Encounter Site


Attempt Murder
Body Dump
Sexual Assault Begins
Encounter
© 2007 Europa Technologies
6036 ft
33.956194°
lon -118.249266°
elev 100 ft
Streaming 100%

With appreciation to the men and women of the LASD Homicide Bureau

"The Bulldogs"



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