Assessing the Impact of Gambling on Public Safety in Massachusetts

Project overview and baseline analysis

Christopher W. Bruce

Trainer and consultant in crime analysis and data-driven policing

MASSACHUSETTS GAMING COMMISSION

MASSGAMING

Previous studies on casino impact

CASINOS, CRIME, AND COMMUNITY COSTS

TABLE 1.—DEMOGRAPHIC AND CRIME DATA: CASINO VERSUS NONCASINO COUNTIES

Variable	Casino Counties			Noncasino Counties		
	Mean	Std. Dev.	Sample Size	Mean	Std. Dev.	Sample Size
Population	145,330	288,149	3,533	73,209	252,381	59,053
Population density (pop./sq. mi.)	204	491	3,533	217	1,462	59,045
Area (square miles)	2,021	3.056	3,533	1,008	2,883	59,060
Per capita personal income	$11,306	$2,689	3,533	$10,808	$2,618	59,040
Per capita unemployment ins.	$78	$54	3,533	$65	$51	59,024
Per capita retirement comp.	$10,771	$6,544	3,538	$9,831	$6,243	59,028
Aggravated assault rate	259	276	3,245	188	245	54,551
Rape rate	29	28	3,182	20	32	53,882
Robbery rate	82	136	3,254	44	143	54,623
Murder rate	5.9	9.3	3,254	5.5	10.5	54,628
Larceny rate	2,548	1,423	3,254	1,738	1,940	54,622
Burglary rate	1,056	666	3,254	770	1,110	54,619
Auto theft rate	267	264	3,254	167	276	54,627

Notes: Crime rates are annual incidents per 100,000 population. Monetary amounts are in 1982–1984 dollars.

This project

- More detailed analysis of changes
  - Crimes
  - Non-crime police incidents (calls for service)
  - Collisions
- Changes in hot spots
- Identification of specific "casino-related" incidents
- Analysis of specific patterns and problems
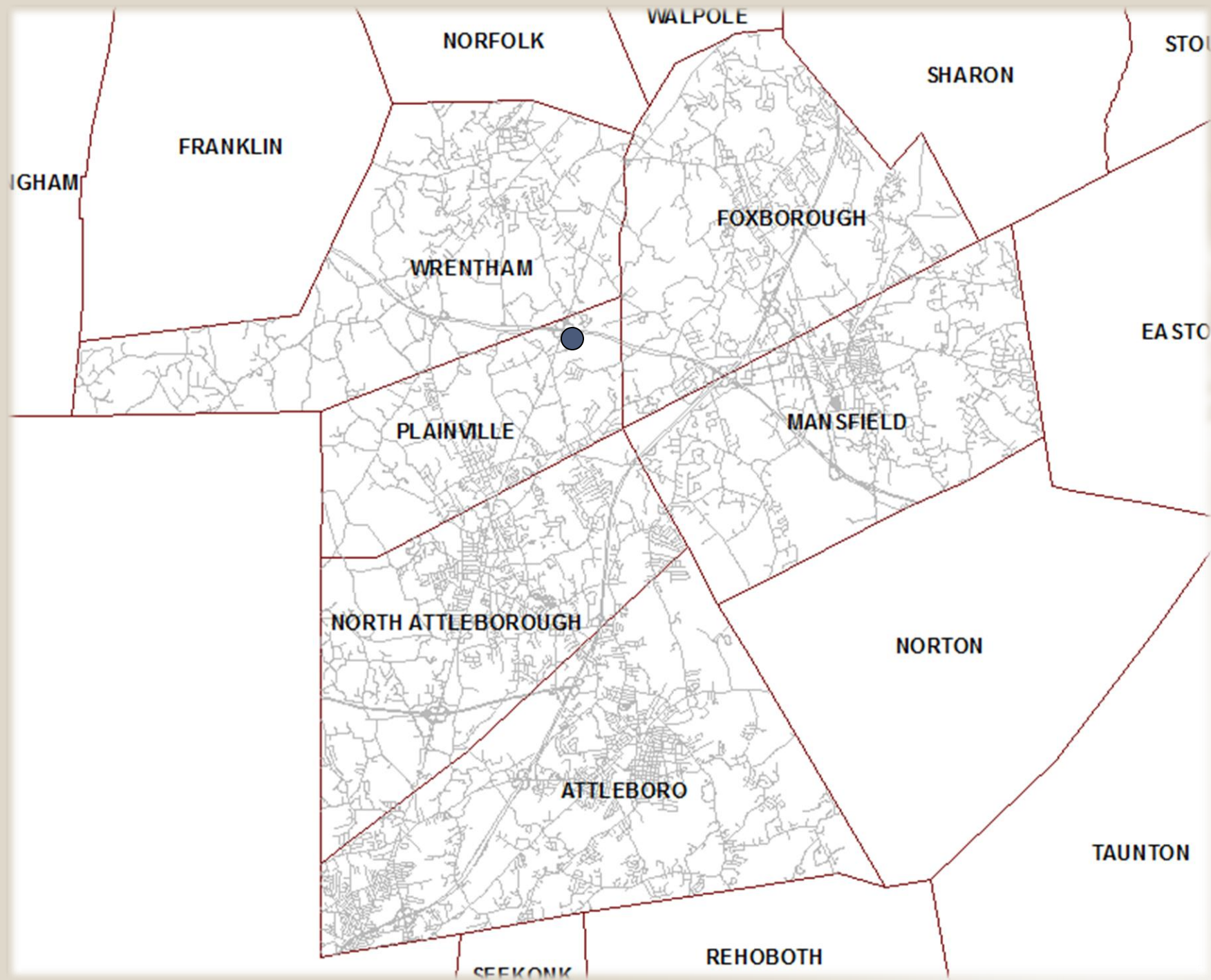
Major project areas

- Extract data from each police agency's computer-aided dispatch and records management system

- Establish baseline volume of calls for service, crime, and collisions in cities and towns near casinos

- Train agencies to record "casino-related" incidents after casino opens

- Analyze changes after casino opening

- Work with SEIGMA to integrate crime and public safety analysis with other social and economic impacts

Police data systems
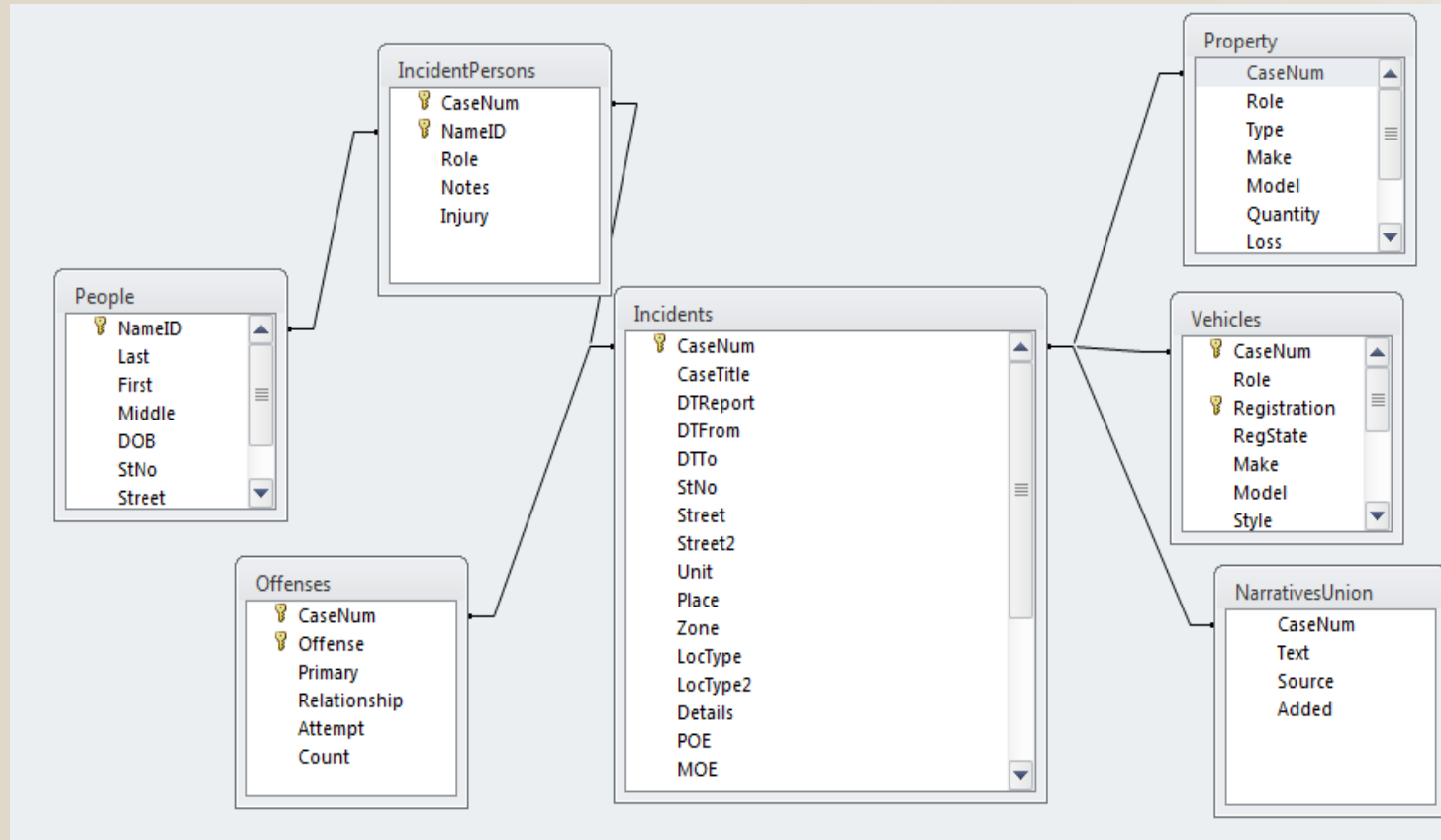
Translating to common code library

IncTypesPlainville

INCID_TYPE_DESC	Total	Translation
911 Hangup/Accidental	259	911 Hangup or Error
Burglar Alarm	2005	Alarm
Animal Complaint	402	Animal Complaint
Assault & Battery	39	Assault
Stolen Motor Vehicle	40	Auto Theft
Bomb Scare	2	Bomb Threat
Vacation Checks	142	Building Check
Building Check	1436	Building Check
Breaking & Entering	136	Burglary
Burglary	6	Burglary
Child Abuse	6	Child Abuse or Neglect
Area Patrols	853	Crime Enforcement
Bike Patrols	1	Crime Enforcement
Sudden Death	21	Death
Disabled Motor Vehicle	688	Disabled Vehicle
Disturbance	371	Disorderly
Neighbor Dispute	45	Disorderly
Indecent Exposure	2	Disorderly
Fight In Progress	32	Disorderly
Fireworks Complaint	62	Disorderly
Noise Complaint	312	Disorderly

IncTypesAttleboro

inctype	Total	Translation
911 CALL	2769	911 Hangup or Error
ABN M/V	168	Abandoned Vehicle
KIDNAPPI	2	Abduction
BURG ALR	7860	Alarm
ANIMAL	1338	Animal Complaint
ARS NON	3	Arson
ARS RES	1	Arson
ARS/OTHE	3	Arson
ASSLT F	7	Assault
ASSLT KN	30	Assault
ASSLT NO	39	Assault
ASSLT DW	60	Assault
AS SIMPL	376	Assault
MV THEFT	307	Auto Theft
M/C THEF	35	Auto Theft
BOMB THR	10	Bomb Threat
SEC CHK	607	Building Check
BLDG CHK	64892	Building Check
B & E NR	311	Burglary
B & E RE	725	Burglary

Baseline analysis: Plainville annual crime totals

Crime	2010	2011	2012	2013	2014	Avg.	St. Dev.	C.V.
Sexual Assault	1	2	2	1	6	2.4	1.9	0.79
Robbery	2	1	3	1	2	1.8	0.7	0.39
Aggravated Assault	8	6	6	1	4	5.0	2.4	0.48
Simple Assault	24	18	28	18	21	21.8	3.8	0.17
Burglary	36	28	26	31	37	31.6	4.3	0.14
Thefts from Vehicles	21	66	25	32	41	37.0	16.0	0.43
Auto Thefts	3	5	4	5	8	5.0	1.7	0.34
Forgery	5	5	6	9	6	6.2	1.5	0.24
Credit Card Fraud	12	10	15	13	13	12.6	1.6	0.13
Bad Checks	1	4	4	2	2	2.6	1.2	0.46

Baseline analysis:
Average annual crime totals per city

Crime	Plainville	Attleboro	Mansfield	N. Atttle.	Wrentham
Sexual Assault	2.4	33.0	11.2	2.6	0.4
Robbery	1.8	21.4	5.0	2.8	0.0
Agg. Assault	5.0	91.2	37.4	3.2	3.0
Simple Assault	21.8	285.6	128.0	58.2	5.2
Burglary	31.6	209.4	151.8	39.8	19.2
Theft from MV	37.0	161.6	0.6	96.4	9.2
Auto Theft	5.0	62.8	17.8	10.2	2.4
Forgery	6.2	40.8	25.0	5.6	0.0
Credit Card Fraud	12.6	29.0	21.2	26.2	0.8
Bad Checks	2.6	12.4	5.0	4.0	0.0

Baseline analysis: Crime participants

Average offender age, by offense, agency, and sex, 2010–2014

Offense	Plainville		Attleboro		Mansfield		N. Attleboro		Wrentham		All	
	M	F	M	F	M	F	M	F	M	F	M	F
Sexual Assault	32.7		32.9	27.1	30.9	14.0	31.8		55.0		32.5	25.7
Robbery	30.1	27.3	26.0	24.5	26.7	32.8	25.1	23.7			26.1	26.6
Aggravated Assault	24.8	29.9	31.2	34.3	33.0	33.7	31.8	40.2	28.3	24.0	31.2	34.0
Simple Assault	33.1	36.5	32.2	31.9	33.2	29.7	33.7	33.3	43.5	36.8	32.8	31.8
Arson	14.0		29.1	15.0	30.0	28.0			17.0		27.7	23.7
Burglary	31.9	34.3	29.4	30.7	26.5	29.6	28.1	32.8	25.0	20.8	28.5	30.5
Shoplifting	32.1	30.7	30.3	30.2	30.4	28.1	28.0	27.2			29.5	28.6
Thefts from Vehicles	27.4	35.0	25.1	21.6	28.2	29.7	22.4	24.8	22.5		24.2	24.0
Thefts of Vehicle Parts			40.2	33.5			23.7				38.3	33.5
Thefts from Buildings	28.6	30.9	28.0	28.8			26.2	25.9			28.1	29.1
Other Thefts	27.7	44.1	31.2	31.7	26.8	33.1	28.3	30.2	27.8	24.4	30.5	31.7
Auto Theft	29.2	23.0	29.2	28.3	31.2	31.6	22.9	25.5	31.0	33.5	29.2	29.2
Counterfeiting/Forgery	26.7	29.2	30.0	31.4	26.3	24.9	25.7	23.9			28.6	29.4
Fraud/Con Games	52.4	20.0	44.5	35.3	32.1	28.9			33.0	52.0	40.0	33.5
Credit Card Fraud	29.6	34.1	32.6	34.1	33.7	34.1	28.0	31.8	34.0	32.0	31.4	33.5
Identity Theft			35.9	35.1	33.8	37.2			47.0	25.0	35.8	35.3
Stolen Property Off.	28.0	27.2	26.7	26.5	27.7	30.6	27.0		42.0	33.0	27.4	27.7

Baseline analysis:
Crime participants

Mean distance traveled for offenders, by crime type and agency, 2010–2014, in miles

Crime	Plainville	Attleboro	Mansfield	N. Attleboro	Wrentham	All
Sexual Assault	6.44	52.09	7.77	3.79	16.17	38.28
Robbery	24.43	28.66	9.68	6.86		23.94
Aggravated Assault	142.61	13.39	6.57	97.71	4.63	20.33
Simple Assault	14.55	4.88	11.42	4.71	3.56	6.70
Arson	2.61	4.11	7.24		0.78	4.42
Burglary	8.40	9.53	4.34	15.59	6.82	9.20
Thefts from Vehicles	14.85	4.55		7.46	4.62	6.56
Thefts of Vehicle Parts		4.45		9.50		4.99
Thefts from Buildings	29.23	5.43	7.48	6.58		8.93
Other Thefts	31.34	13.60	13.50	17.94	10.33	14.45
Auto Theft	5.45	35.48	12.34	6.64	3.19	24.42
Fraud/Con Games	429.10	64.05	17.83		129.12	60.35
Credit Card Fraud	37.31	139.85	179.41	99.87	2.09	116.02
Identity Theft		68.73	31.63		22.57	58.76
Stolen Property Off.	33.54	8.40	5.20	3.10	164.97	12.60
Vandalism	83.53	8.23	6.63	4.73	9.17	12.84
Drug Offenses	8.37	10.91	23.22	7.17	8.51	13.27
Weapon Offenses	6.10	4.25	5.70	4.55		4.53
Bad Checks	18.06	10.00	6.63	13.61		10.99
Disorderly	4.77	12.79	53.35	97.59	2.40	20.92
Drunk Driving	61.84	13.00	15.15	6.47	8.74	15.75
Drunkenness	118.48	2.19	38.66	64.49	5.56	42.52
Liquor Law Violations	5.40	5.18	19.25	3.96	10.06	11.84

Baseline analysis:
Crimes by location type

Average annual crimes by category at selected location types, all participating agencies

Location Type	Violent Crimes	Property Crimes	Drug/Alcohol Crimes	Societal Crimes	Other Crimes
Air/bus/train terminal	2.2	10.0	2.4	1.8	6.6
Bank	4.6	36.6	1.2	0.4	6.4
Bar	11.2	10.2	81.4	7.0	12.8
Church	1.8	12.0	0.8	0.2	2.2
Commercial building	4.8	66.2	0.8	0.4	0.0
Construction site	0.2	16.8	0.2	0.0	0.6
Convenience store	9.0	52.2	6.0	0.8	6.8
Department store	8.2	398.6	4.2	2.8	16.6
Doctor/hospital/drug store	17.4	45.6	6.4	1.2	8.8
Field/woods	10.4	16.0	8.2	1.0	12.6
Gas station	7.0	40.2	4.4	1.4	17.6
Government/public building	12.8	26.6	4.0	0.6	25.2
Grocery store	3.4	66.6	2.2	1.0	12.6
Hotel/motel	10.2	17.6	12.8	4.0	23.8
Liquor store	0.8	18.8	3.0	1.4	4.8
Office	4.4	49.6	1.4	1.0	19.0
Parking lot/garage	36.6	253.6	189.2	9.6	48.2
Residence	550.2	1278.2	96.2	32.8	534.0
Restaurant	18.4	67.2	7.6	9.2	22.8
School	41.0	35.4	7.6	9.2	22.8
Specialty store	6.8	111.2	3.8	1.8	14.6
Street	74.0	96.0	174.2	16.2	348.8

Baseline analysis: Calls for service

All contributing agencies: Selected annual call-for-service totals

Type	2010	2011	2012	2013	2014	Avg.	St. Dev.	C.V.
Alarm	4864	5142	4493	4777	4866	4828.4	207.9	0.04
Animal Complaint	770	849	748	768	894	805.8	56.0	0.07
Disabled Vehicle	1766	1760	1664	1713	1917	1764.0	84.9	0.05
Disorderly Conduct	3564	3426	3428	2928	3161	3301.4	227.9	0.07
Domestic Dispute	950	936	973	1074	1116	1009.8	71.8	0.07
Medical Aid	1593	1790	1849	1935	1800	1795.4	113.6	0.06
Suspicious Activity	5307	5524	5978	6276	5838	5784.6	339.9	0.06
Traffic Collision	4080	3985	3773	3899	4007	3948.8	105.2	0.03
Traffic Complaint	2047	2380	2314	1924	2150	2163.0	167.7	0.08
Trespassing	93	86	110	123	115	105.4	13.8	0.13

Plainville Police Department: Selected annual call-for-service totals

Type	2010	2011	2012	2013	2014	Avg.	St. Dev.	C.V.
Alarm	361	380	325	390	473	385.8	48.9	0.13
Animal Complaint	63	83	63	93	93	79.0	13.6	0.17
Disabled Vehicle	123	118	114	132	160	129.4	16.4	0.13
Disorderly Conduct	157	158	146	160	187	161.6	13.6	0.08
Domestic Dispute	61	45	49	85	60	60.0	13.9	0.23
Medical Aid	7	12	17	6	7	9.8	4.2	0.43
Psychological Issue	32	24	26	30	27	27.8	2.9	0.10
Suspicious Activity	608	579	566	645	635	606.6	30.6	0.05
Traffic Collision	285	311	269	305	335	301.0	22.6	0.08
Traffic Complaint	240	216	177	236	253	224.4	26.5	0.12

Baseline analysis: Collisions

Average annual collision count by type, all participating agencies, 2010-2014

Collision between vehicle and...	Plainville	Attleboro*	Mansfield	N. Attleboro*	Wrentham	Total
Other vehicle in traffic	160.4	600.5	294.8	583.0	212.0	1850.7
Parked vehicle	21.6	54.5	40.8	123.0	12.2	252.1
Utility pole or post	9.4	81.5	28.4	43.5	18.8	181.6
Tree	6.4	18.0	13.0	7.5	14.6	59.5
Curb	1.4	17.0	8.4	9.5	3.8	40.1
Animal	3.4	11.0	10.2	8.0	5.6	38.2
Other movable object	4.4	4.5	6.0	13.5	6.0	34.4
Pedestrian	0.8	19.0	4.8	6.5	0.4	31.5
Guardrail/median	1.8	7.5	8.8	3.5	3.4	25.0
Other fixed object	0.4	7.5	7.0	3.5	0.0	18.4
Embankment	1.2	5.0	3.8	2.5	3.4	15.9
Bicycle	0.8	7.0	3.4	2.5	0.8	14.5
Bridge	0.0	6.5	0.4	0.5	0.4	7.8
Other	3.4	27.5	8.8	22.5	11.6	73.8
Unknown or uncategorized	4.4	53.0	2.6	27.5	7.4	94.9
Total	**219.8**	**920.0**	**441.2**	**857.0**	**301.8**	**2739.8**

*Attleboro's and North Attleboro's averages are based on 2013 and 2014 only, as the agencies do not have a longer historical collision dataset.

Baseline analysis: Temporal analysis

## All Non-Officer-Initiated Calls for Service by Hour of Day and Day of Week, All Participating Communities

Hour of Day

Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon	0.35%	0.36%	0.27%	0.19%	0.15%	0.19%	0.32%	0.44%	0.54%	0.67%	0.77%	0.78%	0.80%	0.84%	0.95%	0.80%	0.91%	0.95%	0.88%	0.71%	0.64%	0.61%	0.53%	0.39%
Tue	0.34%	0.36%	0.27%	0.18%	0.14%	0.17%	0.31%	0.42%	0.58%	0.68%	0.76%	0.75%	0.77%	0.84%	0.89%	0.81%	0.94%	0.96%	0.87%	0.78%	0.65%	0.60%	0.52%	0.38%
Wed	0.36%	0.37%	0.26%	0.18%	0.16%	0.19%	0.33%	0.46%	0.62%	0.69%	0.78%	0.77%	0.77%	0.85%	0.93%	0.81%	0.90%	0.94%	0.89%	0.75%	0.66%	0.62%	0.51%	0.39%
Thu	0.38%	0.37%	0.29%	0.22%	0.14%	0.18%	0.33%	0.44%	0.59%	0.66%	0.74%	0.75%	0.81%	0.82%	0.90%	0.79%	0.90%	0.92%	0.91%	0.76%	0.68%	0.64%	0.52%	0.41%
Fri	0.39%	0.41%	0.30%	0.21%	0.16%	0.19%	0.34%	0.47%	0.59%	0.68%	0.79%	0.79%	0.85%	0.93%	0.97%	0.89%	0.95%	0.96%	0.94%	0.80%	0.76%	0.77%	0.72%	0.55%
Sat	0.52%	0.58%	0.44%	0.31%	0.19%	0.17%	0.24%	0.33%	0.48%	0.64%	0.78%	0.86%	0.84%	0.85%	0.83%	0.79%	0.88%	0.90%	0.82%	0.79%	0.76%	0.79%	0.74%	0.61%
Sun	0.59%	0.63%	0.45%	0.33%	0.22%	0.17%	0.25%	0.26%	0.37%	0.51%	0.63%	0.72%	0.75%	0.76%	0.76%	0.69%	0.79%	0.79%	0.73%	0.65%	0.64%	0.59%	0.50%	0.37%

All Non-Officer-Initiated Calls for Service by Hour of Day and Day of Week, Plainville

Hour of Day

Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon	0.24%	0.43%	0.38%	0.35%	0.15%	0.24%	0.34%	0.53%	0.58%	0.57%	0.74%	0.61%	0.80%	0.78%	0.76%	0.91%	0.85%	1.06%	0.96%	0.74%	0.67%	0.60%	0.64%	0.50%
Tue	0.35%	0.39%	0.39%	0.27%	0.16%	0.18%	0.21%	0.44%	0.53%	0.60%	0.70%	0.66%	0.63%	0.68%	0.70%	0.69%	0.82%	1.10%	0.89%	0.65%	0.74%	0.58%	0.62%	0.35%
Wed	0.37%	0.33%	0.30%	0.27%	0.13%	0.20%	0.41%	0.55%	0.87%	0.59%	0.74%	0.58%	0.70%	0.70%	0.82%	0.85%	0.77%	0.99%	0.96%	0.74%	0.64%	0.59%	0.62%	0.43%
Thu	0.31%	0.40%	0.49%	0.26%	0.15%	0.18%	0.30%	0.48%	0.56%	0.65%	0.62%	0.74%	0.82%	0.63%	0.68%	0.81%	0.79%	0.94%	0.90%	0.72%	0.66%	0.81%	0.52%	0.53%
Fri	0.38%	0.46%	0.42%	0.32%	0.18%	0.20%	0.27%	0.59%	0.53%	0.70%	0.67%	0.74%	0.85%	0.84%	0.84%	0.96%	0.82%	0.91%	0.97%	0.86%	0.67%	0.71%	0.82%	0.63%
Sat	0.52%	0.63%	0.62%	0.37%	0.22%	0.13%	0.24%	0.31%	0.48%	0.59%	0.78%	0.92%	0.82%	0.73%	0.75%	0.75%	0.81%	0.85%	0.71%	0.70%	0.70%	0.79%	0.84%	0.67%
Sun	0.56%	0.78%	0.59%	0.40%	0.32%	0.15%	0.22%	0.27%	0.34%	0.45%	0.65%	0.76%	0.74%	0.79%	0.78%	0.82%	0.76%	0.88%	0.67%	0.64%	0.71%	0.54%	0.60%	0.46%

Baseline analysis: Spatial analysis
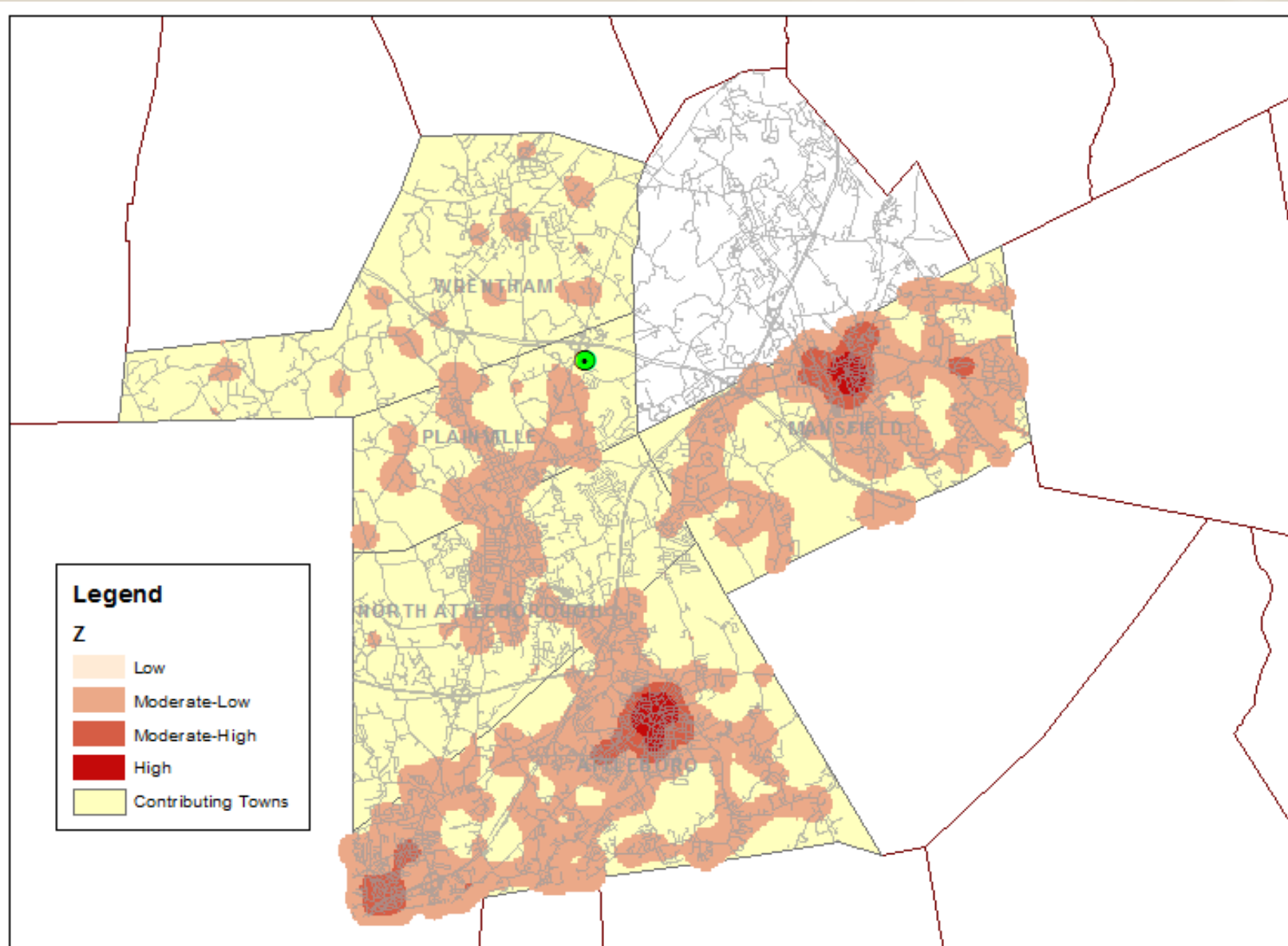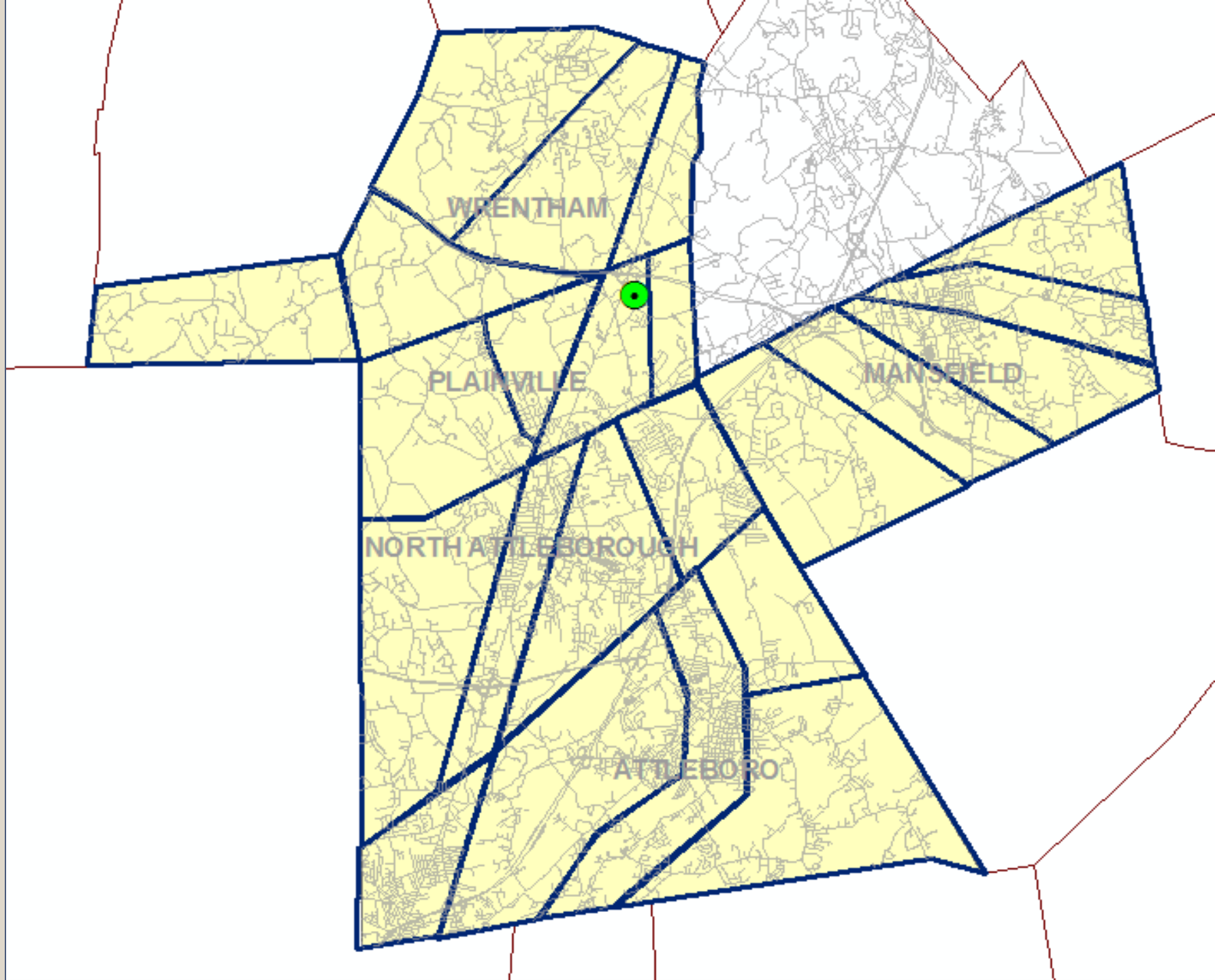
"Casino-related" codes

- Ideal
  - Offender was in the area to use the casino
  - Victim was in the area to use the casino
  - Incident occurred on casino property
  - Incident involved an employee or contractor
  - Incident involved a vehicle seen entering/leaving casino
  - Incident occurred on property of ancillary business
  - Other casino involvement
- Probable for Phase 1
  - Simple "flag" for Plainville area agencies
  - Continued work with RMS vendors and agencies for other regions

Ongoing and upcoming work

- Work with RMS vendors to provide better mechanisms for casino-related incident recording

- Integration of Foxborough, Massachusetts State Police data

- Integration of statewide incident-based reporting (IBR) data

- Full analysis of first quarter after opening of Plainridge Park

Theoretical framework for impact

Mechanism of change	Examples	Considerations
Simple increased activity and traffic at large facility	Traffic collisions and complaints Disputes General service calls	Likeliest scenario; likely in all circumstances and locations
Increase in targets exploited by non-casino-related offenders	Thefts from vehicles Robberies	Likelier if such crimes are already committed in the area
Offenders committing crimes specifically for casino funds	Fraud/Forgery/Counterfeiting Bad checks Burglaries	May be masked by offenders committing crime near homes or far from casino
Casino as an attractor for questionable behavior in the area	Prostitution Drug use Illegal gambling	Likelier in areas with existing hotel/bar clusters
Casino location-specific activity	Disorderly conduct Drunk driving	Easiest to mitigate on-site

Thank You!

Christopher W. Bruce

Trainer and consultant in crime analysis and data-driven policing

978-853-3502

cwbruce@gmail.com