State of Connecticut Motor Vehicle Theft Trends (2008-2017)

IMRP

Summary Findings

- CT Motor Vehicle Thefts (MVT) largely mirror the national trend

- **The Spoke and Wheel Trend:** as motor vehicle thefts have declined in major urban areas like Bridgeport, Hartford and New Haven, they have increased in surrounding suburban communities

- **Waterbury as an outlier:** Waterbury is the only department of the top five communities with motor vehicle thefts that has seen a significant 10 year increase

- **Age Distribution of Arrestees:** The age distribution of those arrested has remained fairly consistent over the last 20 years

US vs. CT Rate

- CT Motor Vehicle Thefts (MVT) largely mirror the national trend
  - o Over the last 10 years, MVTs are down 19% nationally and 17% in CT
  - o MVTs are down 43% over the last 20 years in CT
  - o Over the last three years there has been an increase in MVTs both in CT and nationally

US vs. CT 10 yr. Rate

| Year	U.S. Rate		CT Rate	
	Number	Percent Change	Number	Percent Change
2008	959,059	-12.9%	8,823	-11.0%
2009	795,652	-17.0%	7,424	-15.9%
2010	739,565	-7.0%	6,656	-10.3%
2011	716,508	-3.1%	6,620	-0.5%
2012	723,186	0.9%	6,441	-2.7%
2013	700,288	-3.2%	6,215	-3.5%
2014	686,803	-1.9%	6,100	-1.9%
2015	713,063	3.8%	6,427	5.4%
2016	767,290	7.6%	7,105	10.6%
2017	773,139	0.8%	7,310	2.9%
2008 to 2017	**↓185,920**	**-19.4%**	**↓1,513**	**-17.2%**

Motor Vehicle Theft Rate
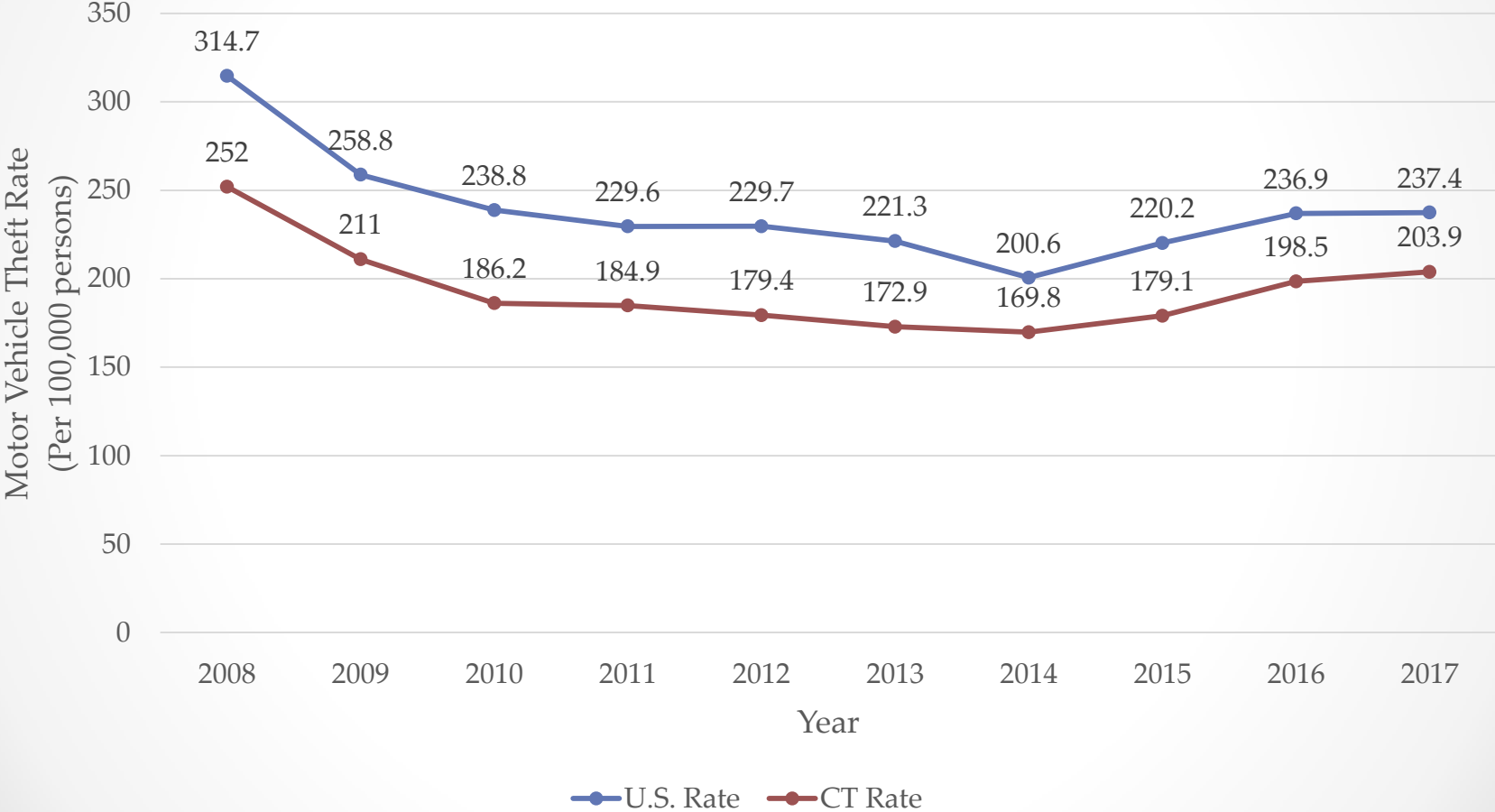
Spoke and Wheel Trend

- Bridgeport, New Haven and Hartford are a smaller share of motor vehicle thefts over the last 10 years
  - o In 2008 they accounted for 43% of MVT, but only 28% in 2017
- The top 10 communities that have historically contributed the largest share of the MVTs are contributing less
  - o In 2008 they accounted for 68% of MVT and 60% in 2017
- Over the last 10 years, MVTs have declined in urban areas and grew in suburban areas

Bridgeport, Hartford and New Haven Distribution of Total Thefts
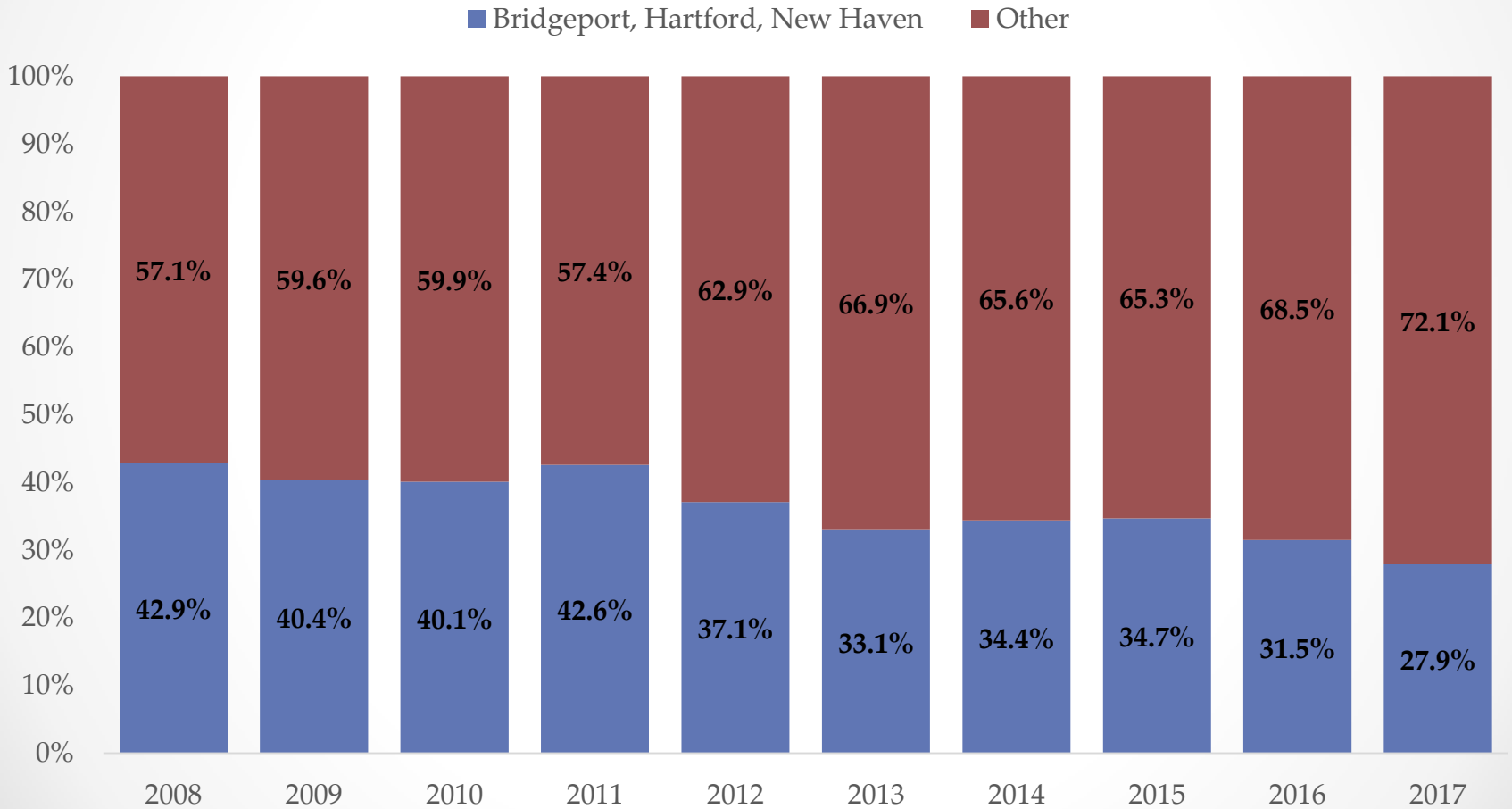
Top 10 Departments Distribution of Thefts

Top 10 Departments Distribution of MVT (10 Yr. Average)	
1. Bridgeport	6. Stamford
2. Hartford	7. West Haven
3. New Haven	8. East Hartford
4. New Britain	9. Meriden
5. Waterbury	10. Norwalk

Top 10 Departments Distribution of Total Thefts
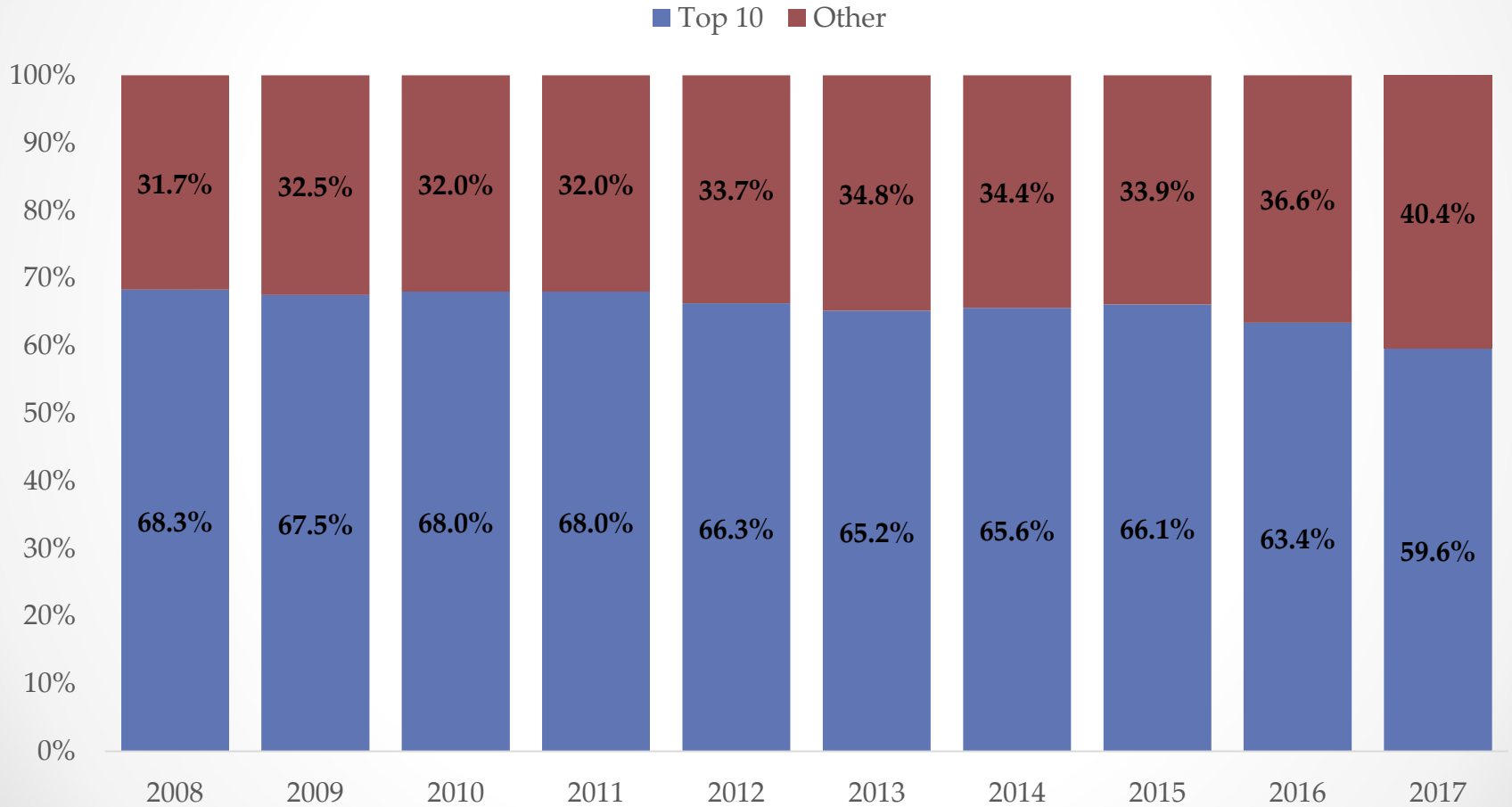
Spoke and Wheel Trend

Change in MVT by Town Population Size

Population	# of Dept.	2008 Thefts	2017 Thefts	% Change
Less than 25,000	51	665	803	+20.8%
25,000 to 50,000	23	1,004	1,074	+7.0%
50,000 to 100,000	14	2,291	1,926	-15.9%
Over 100,000	5	4,431	3,123	-29.5%
Total	93	8,391	6,926	-17.5%

*Numbers only include data from municipal police departments
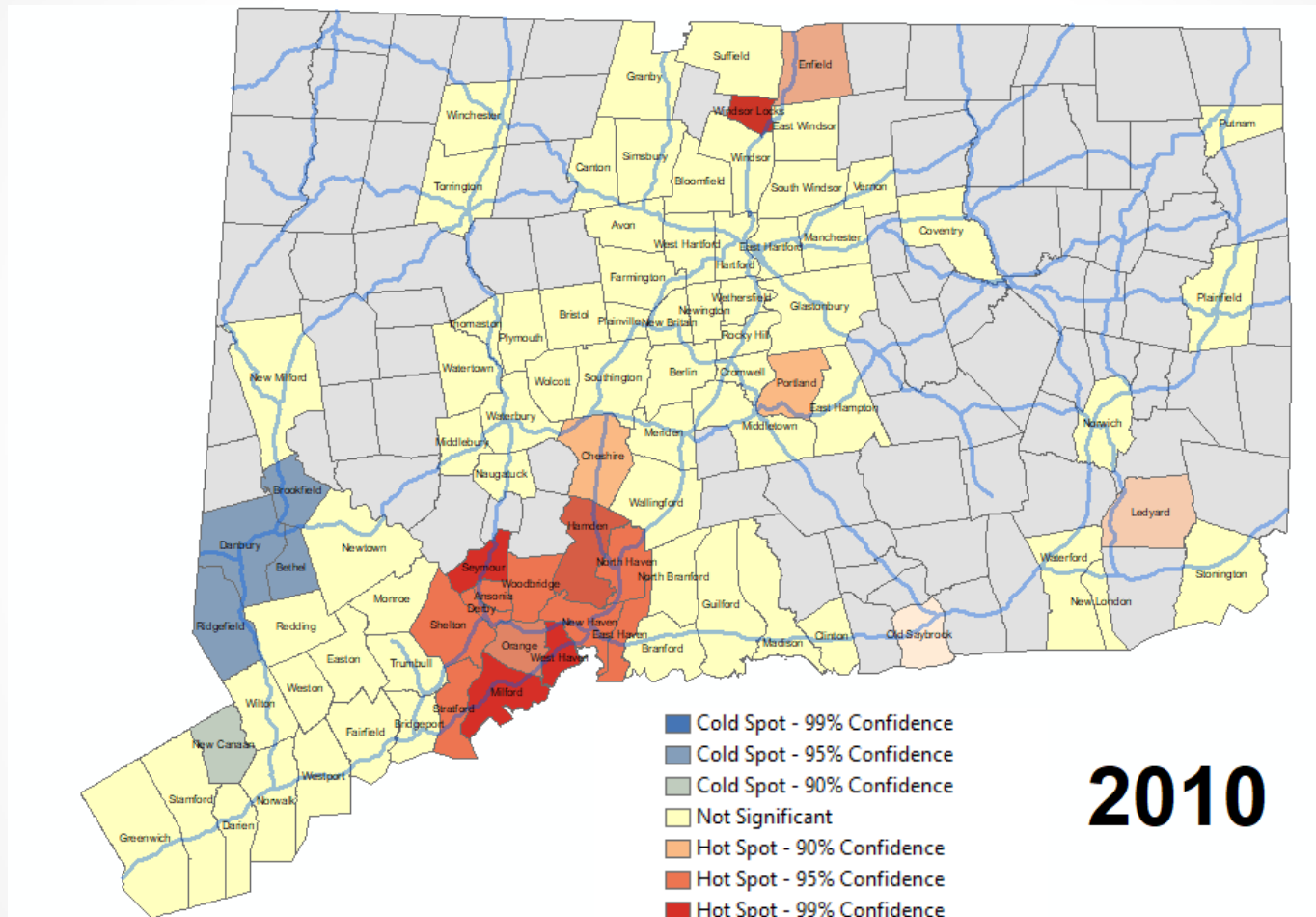
Spoke and Wheel Trend

- Statistically significant changes in rates of stolen motor vehicles occurred primarily along the 1-91 corridor

- Towns that experienced a significant increase in rates of stolen motor vehicles were significantly more likely to have higher median incomes and fall along the I-84 and I-91 corridors relative to towns that did not experience a significant increase

- Rates of motor vehicle theft were previously higher surrounding New Haven, but hot spot mapping shows a significant increase in suburban towns in central Connecticut

Source: Barao, Lisa. "Preliminary Exploration of Statewide Occurrences of Stolen Motor Vehicle and Thefts from Motor Vehicles." Jan. 2019
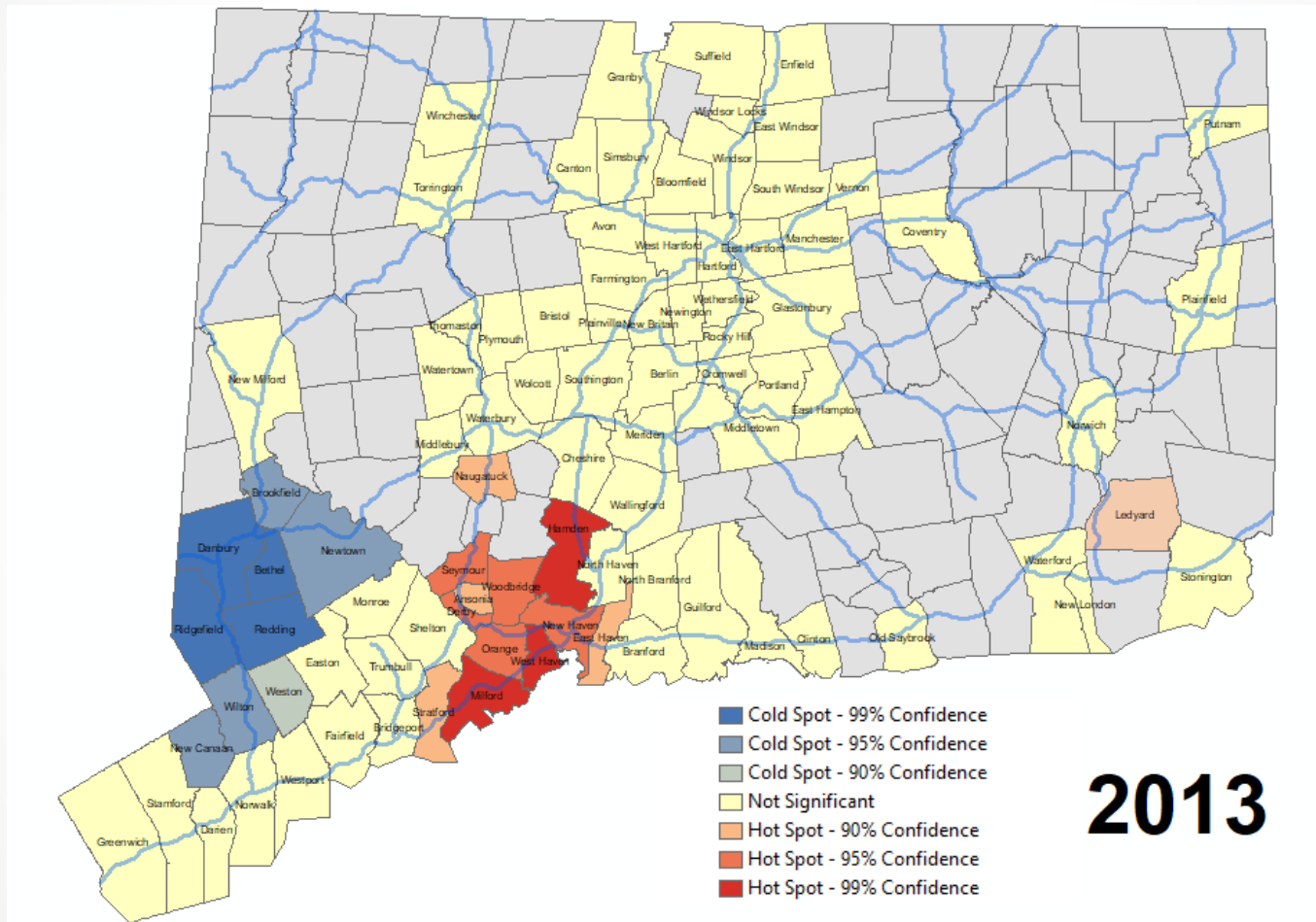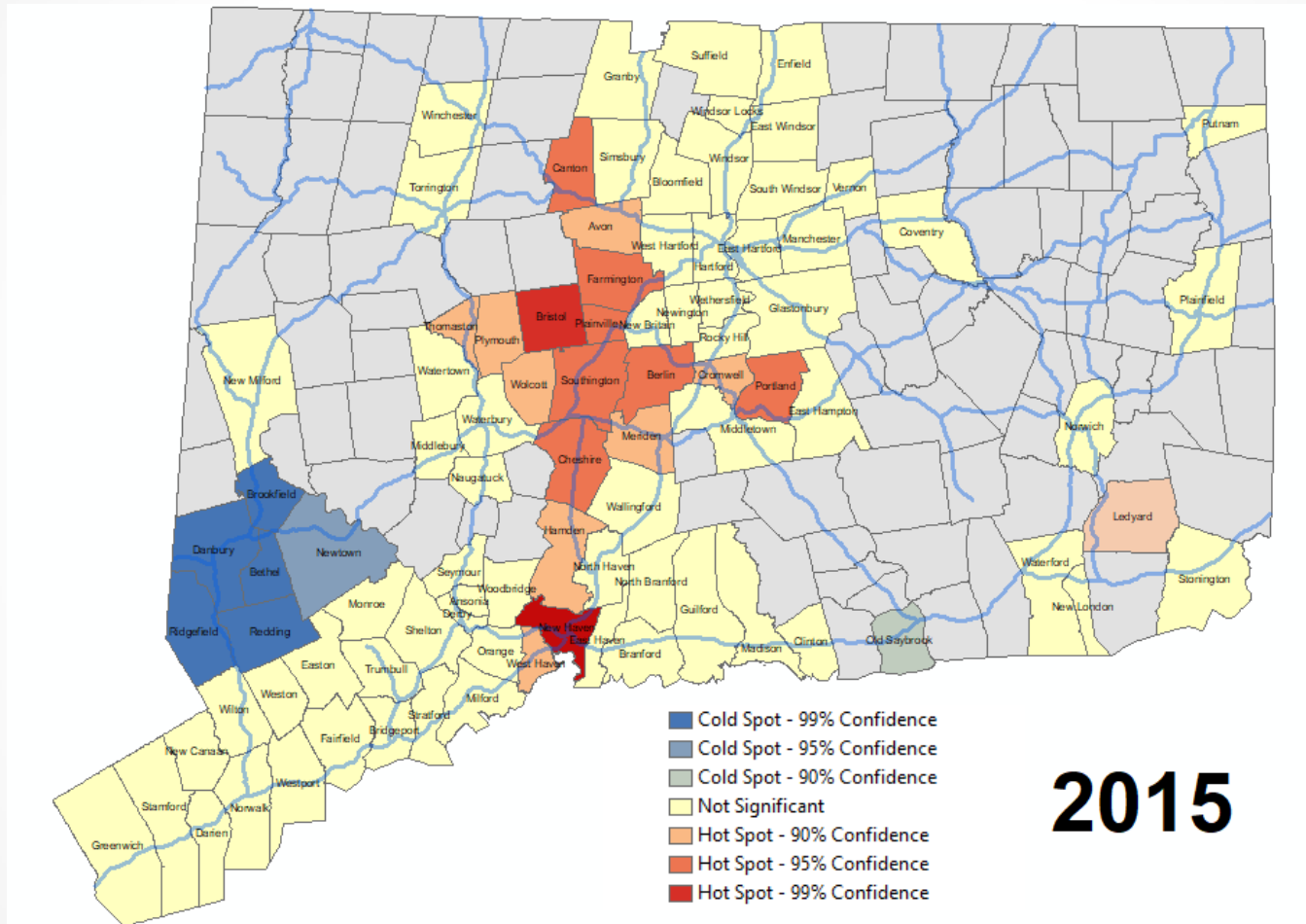
Hot Spot Concentration Maps
Changes in Rates of Stolen Motor Vehicles

Source: Barao, Lisa. "Preliminary Exploration of Statewide Occurrences of Stolen Motor Vehicle and Thefts from Motor Vehicles." Jan. 2019

Hot Spot Concentration Maps
Changes in Rates of Stolen Motor Vehicles

Source: Barao, Lisa. "Preliminary Exploration of Statewide Occurrences of Stolen Motor Vehicle and Thefts from Motor Vehicles." Jan. 2019
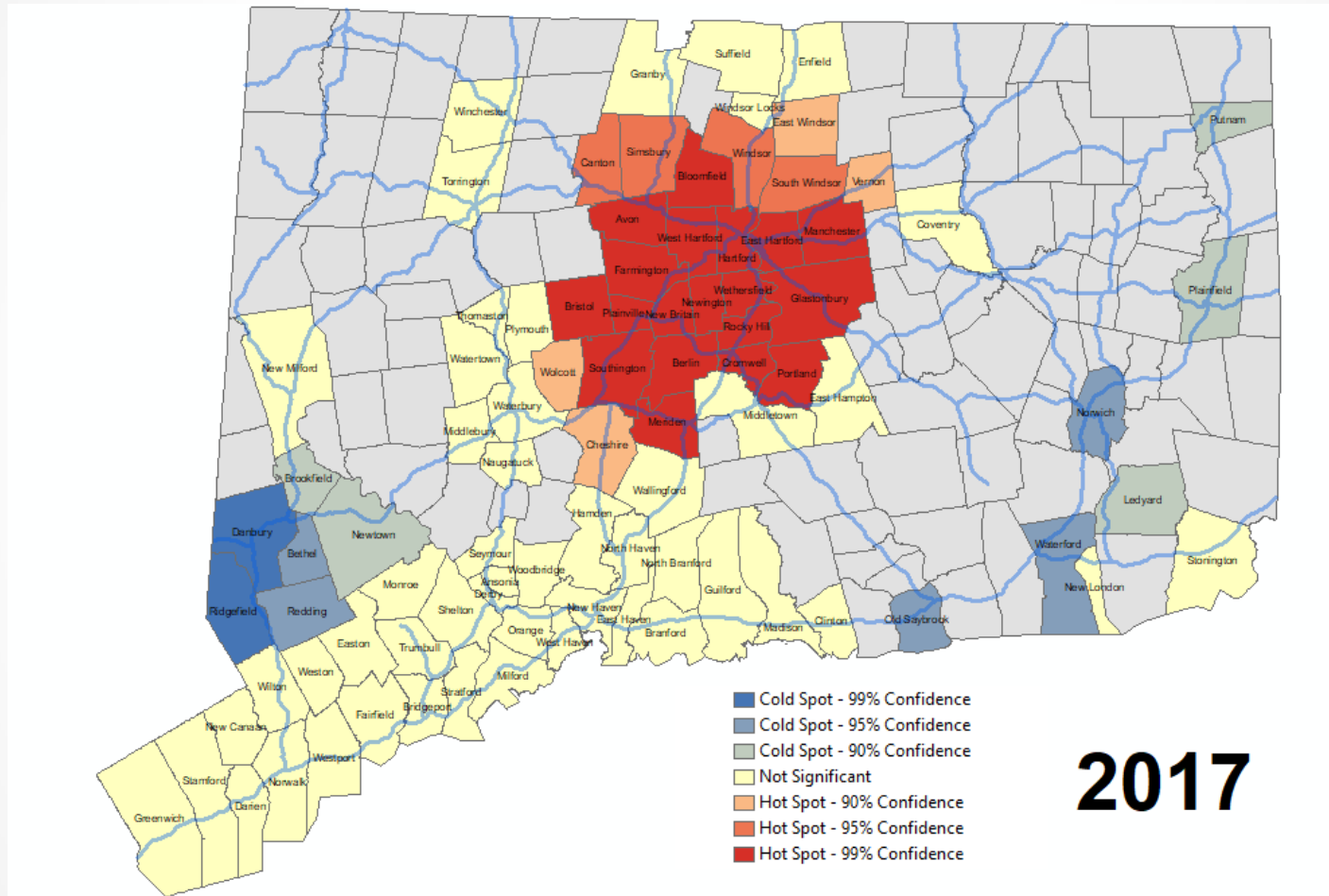
Hot Spot Concentration Maps
Changes in Rates of Stolen Motor Vehicles

Source: Barao, Lisa. "Preliminary Exploration of Statewide Occurrences of Stolen Motor Vehicle and Thefts from Motor Vehicles." Jan. 2019

Hot Spot Concentration Maps
## Changes in Rates of Stolen Motor Vehicles

Source: Barao, Lisa. "Preliminary Exploration of Statewide Occurrences of Stolen Motor Vehicle and Thefts from Motor Vehicles." Jan. 2019

Waterbury as an Outlier

- Of the top five departments with the most motor vehicle thefts over the last 10 years, Waterbury is the only department that has seen a significant 10 year increase
  - MVT **<u>increased</u>** 91% from 2008 to 2017
    - Bridgeport: 37% decrease
    - Hartford: 49% decrease
    - New Britain: 38% decrease
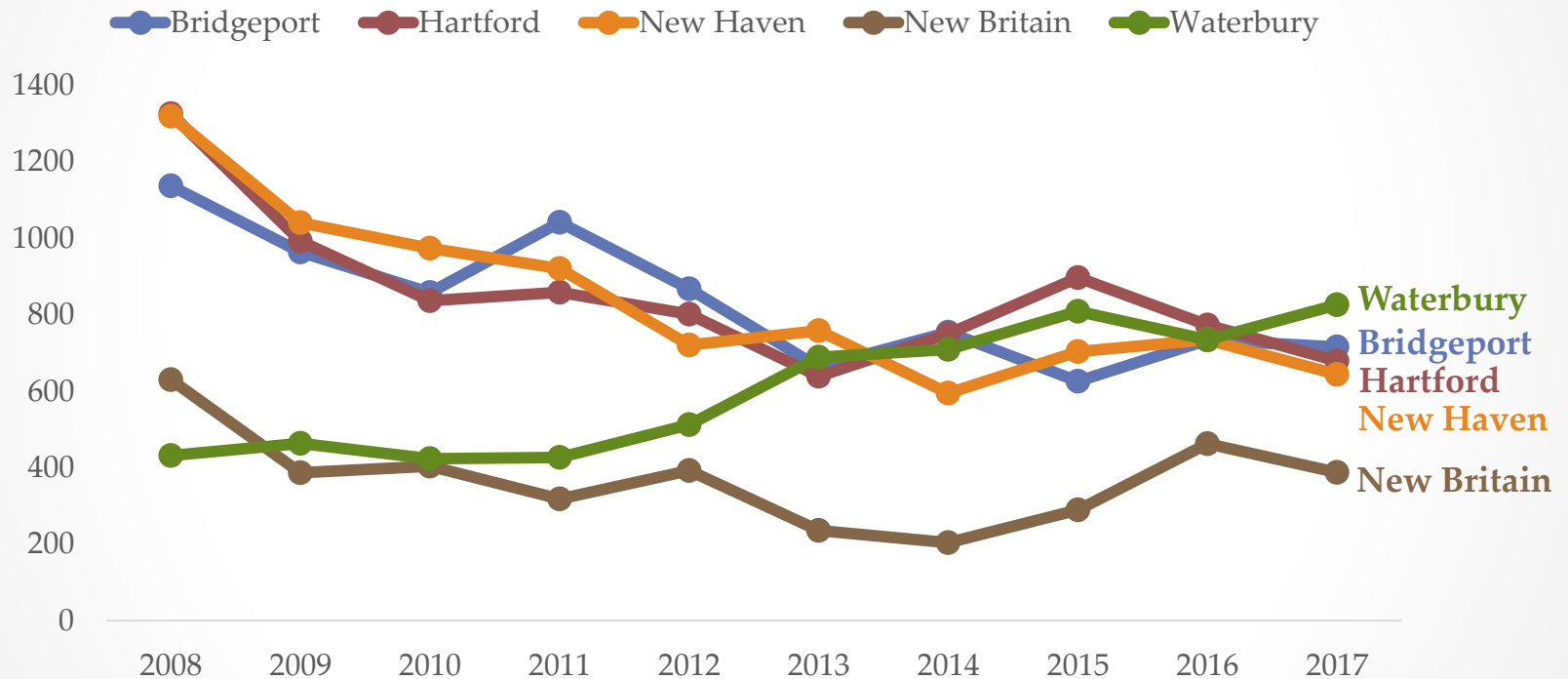   - New Haven: 51% decrease

Between 2008 and 2017, Waterbury's MVTs increased 91 percent

Waterbury MVT (2008 to 2017)
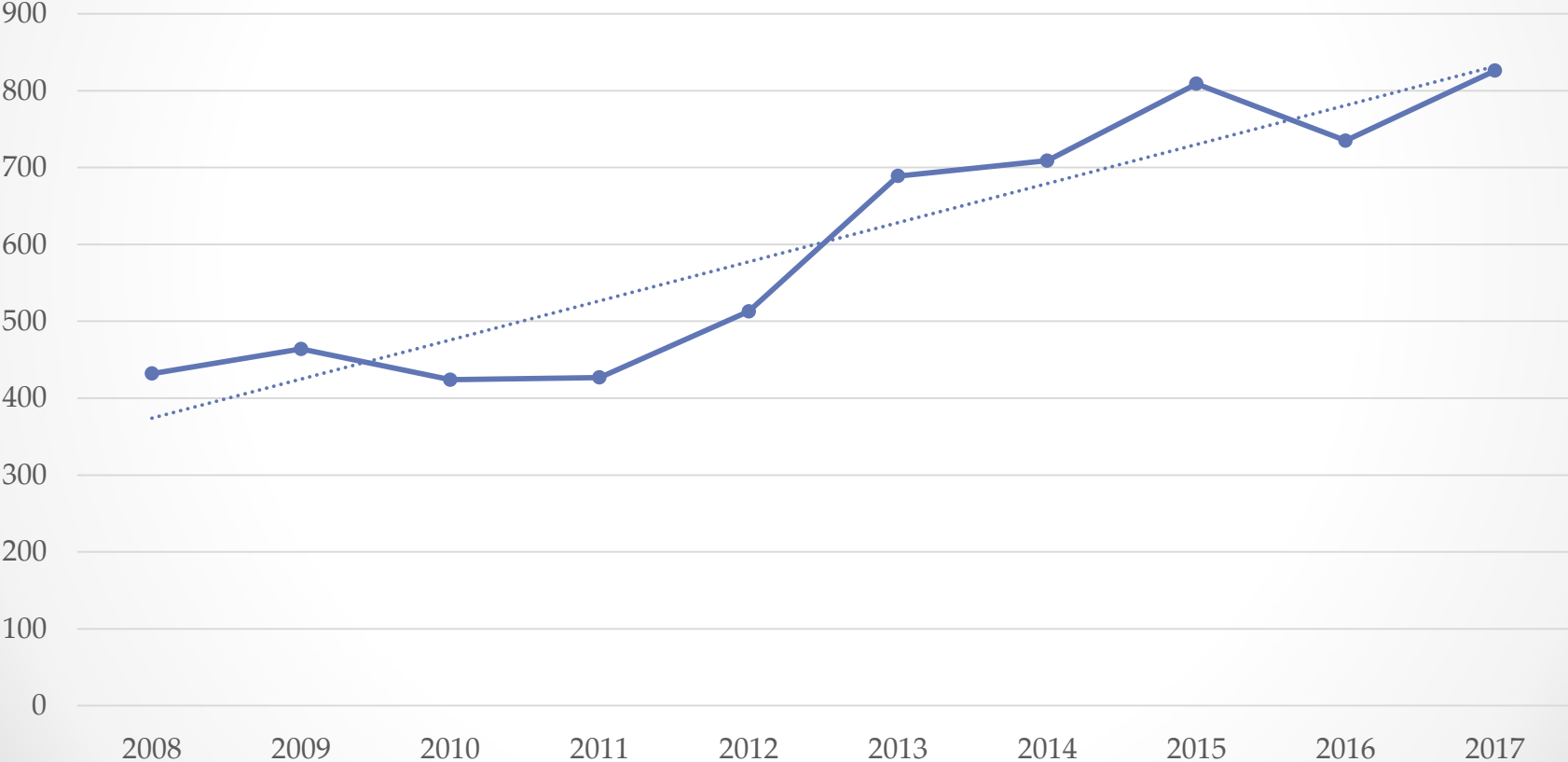
# Waterbury went from having the least to the most MVTs among the top five cities.

Top Five Departments w/ MVT

Legend: Bridgeport — Hartford — New Haven — New Britain — Waterbury

Age Distribution of Arrestees

- The age distribution of those arrested has remained fairly consistent over the last 20 years (Caution: arrest rates are small each year)
  - In 2008, 46% of those arrested were under 19 compared to 49% in 2017
  - In 2008, 63% of those arrested were under 24 compared to 63% in 2017
    - The under 24 population has consistently made up between 61% and 63% of all those arrested

Age Distribution of Arrestees
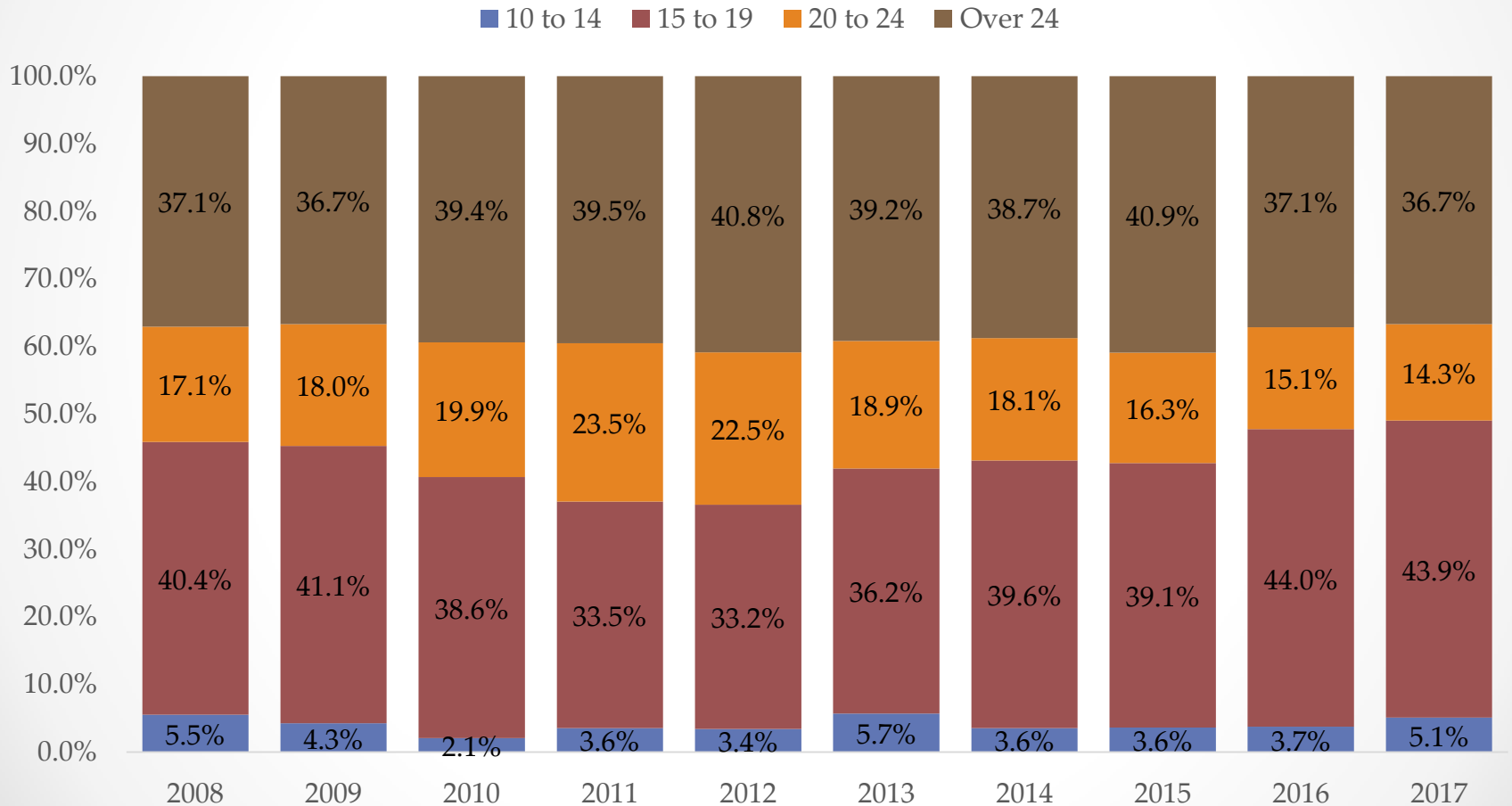
Next Steps

- Regional influences appear to impact motor vehicle theft rates. Therefore, regional solutions will have the greatest impact.

- Additional data is needed to better assess the regional factors contributing to the increase in MVT's.
  - Additional information should be collected from Waterbury and suburban communities in central Connecticut.

- A coordinated educational campaign about motor vehicle theft prevention should target communities most impacted by thefts.
  - Additional technological or environmental modifications should be considered on a community by community basis (i.e. more street lights, cameras, etc.)

Preliminary Exploration of Statewide Occurrences of Stolen Motor Vehicle and Thefts from Motor Vehicles

The following are preliminary analyses and should be interpreted cautiously. The data utilized included incident statistics from the Uniform Crime Reporting (UCR) and National Incident-Based Reporting System (NIBRS) data published and made public by both the FBI and the State of Connecticut. For analysis, all stolen motor vehicle and theft from motor vehicle occurrences were converted to rates per 100,000 population.

CHANGES IN JUVENILE JUSTICE LEGISLATION

Since the first year of full implementation for Connecticut's 2007 Raise the Age Legislation was 2013, this year was used as the cutoff at which to assess possible overall changes in rates of stolen motor vehicles and thefts from motor vehicles as a result in changes to juvenile justice legislation. An independent samples t-test showed no statistically significant change in the rate of these occurrences statewide when comparing 2008-2012 and 2013-2017. Preliminary Autoregressive Integrated Moving Average (ARIMA) models and an examination of data breaks did not reveal any immediately evident notable changes that might suggest an effect from policy change in the overall rates over a ten-year period from 2008-2017.

Because major closings in juvenile facilities occurred primarily in 2018, data from this past year would be necessary to assess associated increases, but this data is not yet publicly available.

Summary:
- Analysis finds no statistically significant increase in rates of thefts from motor vehicles or stolen motor vehicles associated with the implementation of Raise the Age legislation.
- Unable to assess influence of the closing of juvenile facilities using current publicly accessible data.

THEFTS FROM MOTOR VEHICLES

Individual assessments of changes occurring in 92 Connecticut towns covered by municipal police departments with regularly published UCR/NIBRS data did indicate that several municipalities have experienced significant changes in the past three years (2015-2017) compared to the three years prior (2012-2014).

Significant Three-Year Increase in Thefts From Motor Vehicles	
Cheshire	New Canaan
Cromwell	Newington
Darien	North Haven
Farmington	Stamford
Glastonbury	Trumbull
Manchester	

Significant Three-Year Decrease in Thefts From Motor Vehicles	
Bristol	Plainfield
East Windsor	Stonington
Groton Town	Willimantic
Madison	Wolcott

To further explore these patterns, median income by town was used as a quick, but incomplete, proxy for concentrated wealth. Towns were assigned dummy variables for whether they fell along the I-84, I-91, or I-95 corridors as designated by direct entrance/exit access and/or close route connections. Regression analyses of changes in rates of thefts of motor vehicles and stolen motor vehicles took into account both increases and decreases in rates for each town. Additional regressions were also used to examine reasons for experiencing an increase, but these models only assess the factors that influence whether an increase occurs.

A regression analysis of the average annual change in rate of thefts from motor vehicles from 2015-2017 shows that towns with a higher median income and falling along the I-84 or I-91 corridor are statistically significantly more likely to have experienced an increase in thefts from motor vehicles. Towns falling along the I-95 corridor were not significantly more likely to have experienced an increase.

Three Year Change in Rate of Thefts from Motor Vehicles ($n=92$)				
	Coefficient	SE	t	p
Median Income	0.000	0.002	2.40	0.019 **
I-84 Corridor	33.258	14.806	2.25	0.027 **
I-91 Corridor	32.602	14.386	2.27	0.026 **
I-95 Corridor	4.068	14.436	0.28	0.779
Constant	-34.975	18.002	-1.94	0.055

$*p<.10 **p<.05 ***p<.01$

A dummy variable (yes/no) was created to indicate whether a town had experienced a statistically significant increase over the past 3 years (2015-2017) compared to the previous 3 years (2012-2014). Logistic regressions indicated towns with higher median incomes and falling along the I-91 corridor were significantly more likely to have experienced an increase.

Statewide maps were created to visualize the change in rates over time. To provide an example of how patterns have shifted, the following show rates of thefts from motor vehicles in color gradations with darker shading indicating higher rates of occurrence.

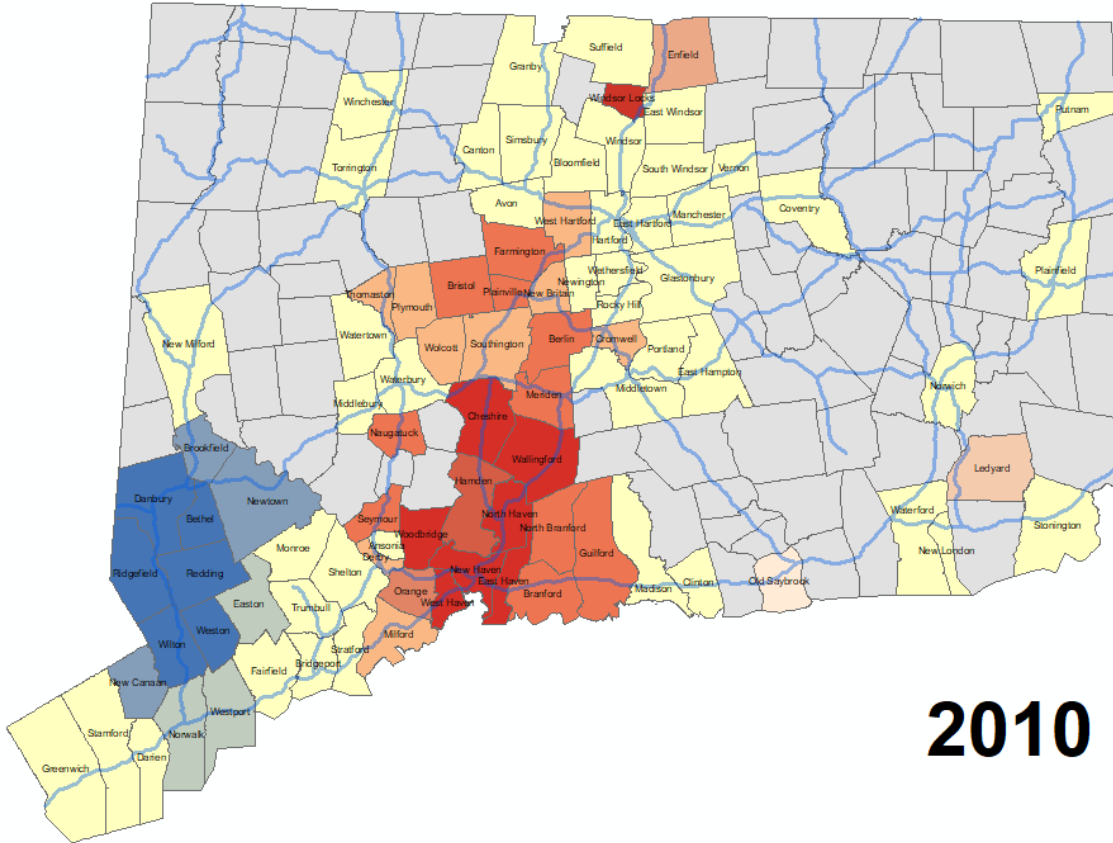**2010**

2013
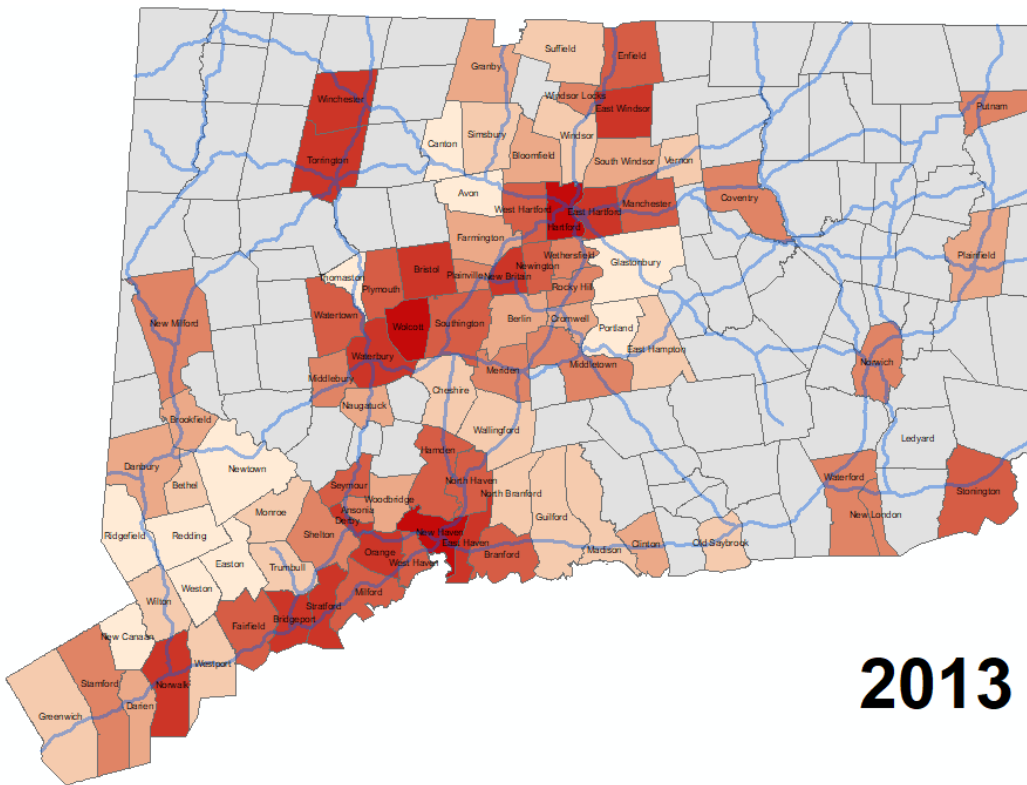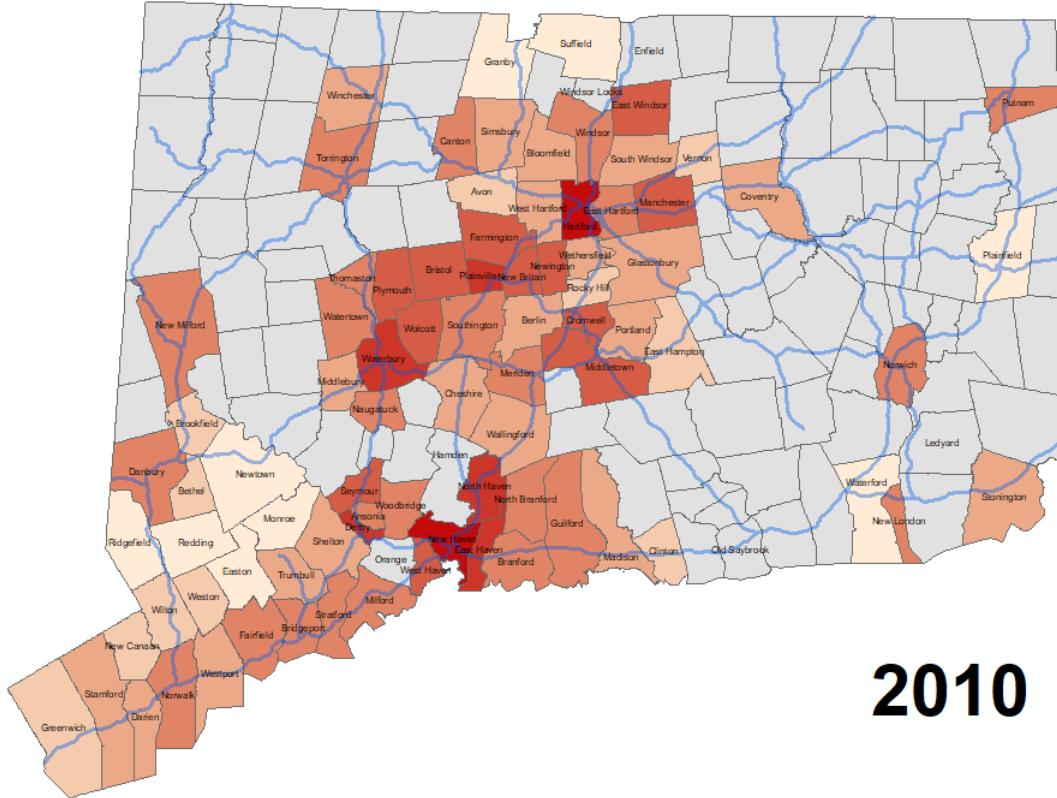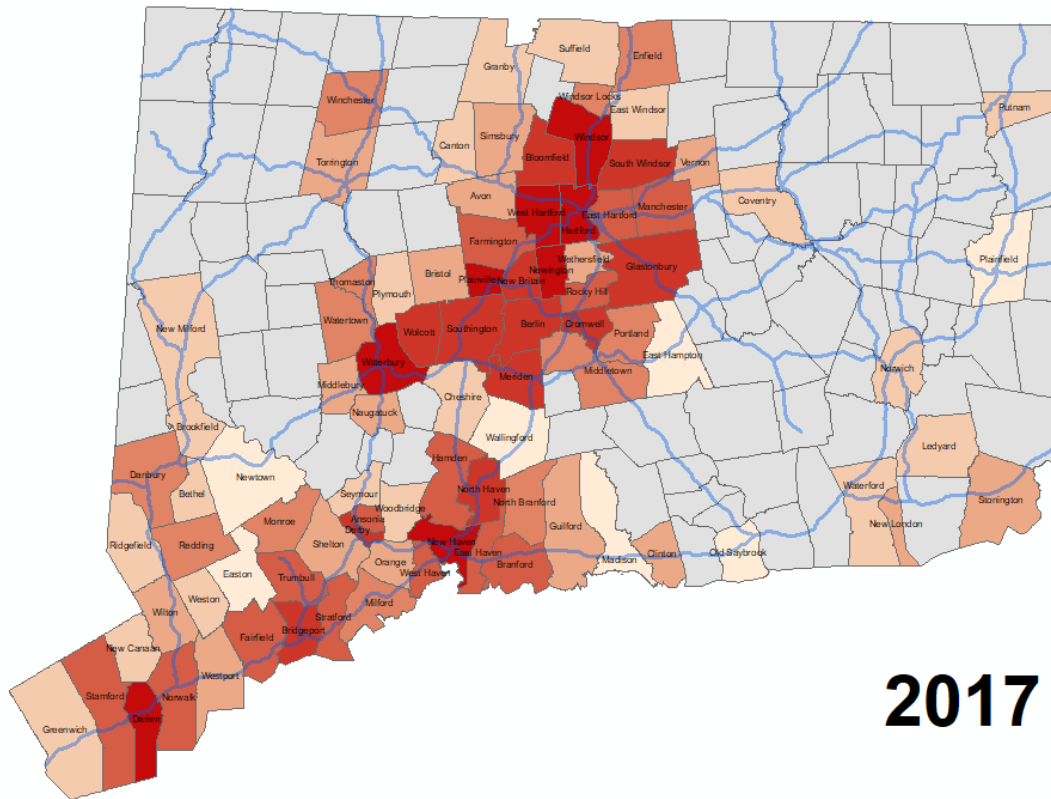
2017

These changes appear to show a gradual shift from heavy concentrations in immediate urban areas (i.e. Hartford and New Haven) to an outspreading to surrounding suburbs, especially in the Hartford region in 2017.

Hot Spot concentration maps show similar patterns more clearly and also emphasize a shift from the highest rate occurrences appearing primarily in areas west of I-91 and surrounding New Haven to hot spots clustering toward towns outlying Hartford in 2017. For these maps, the following key applies:
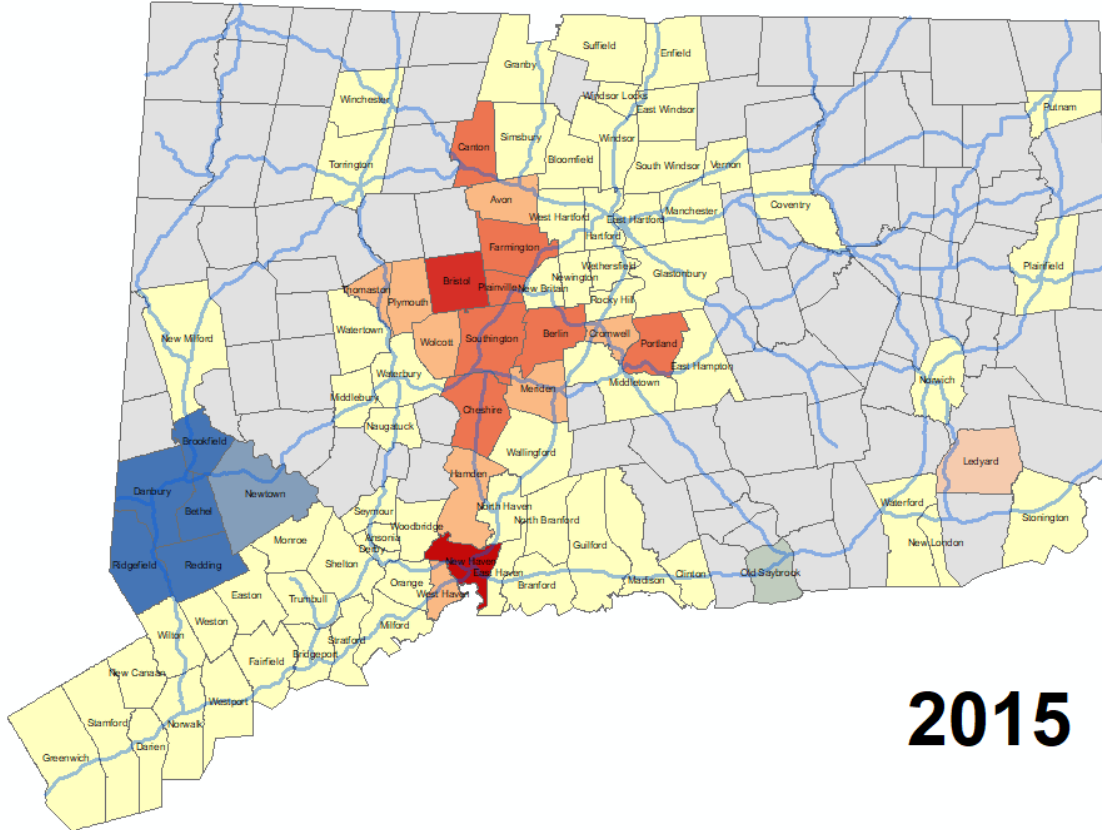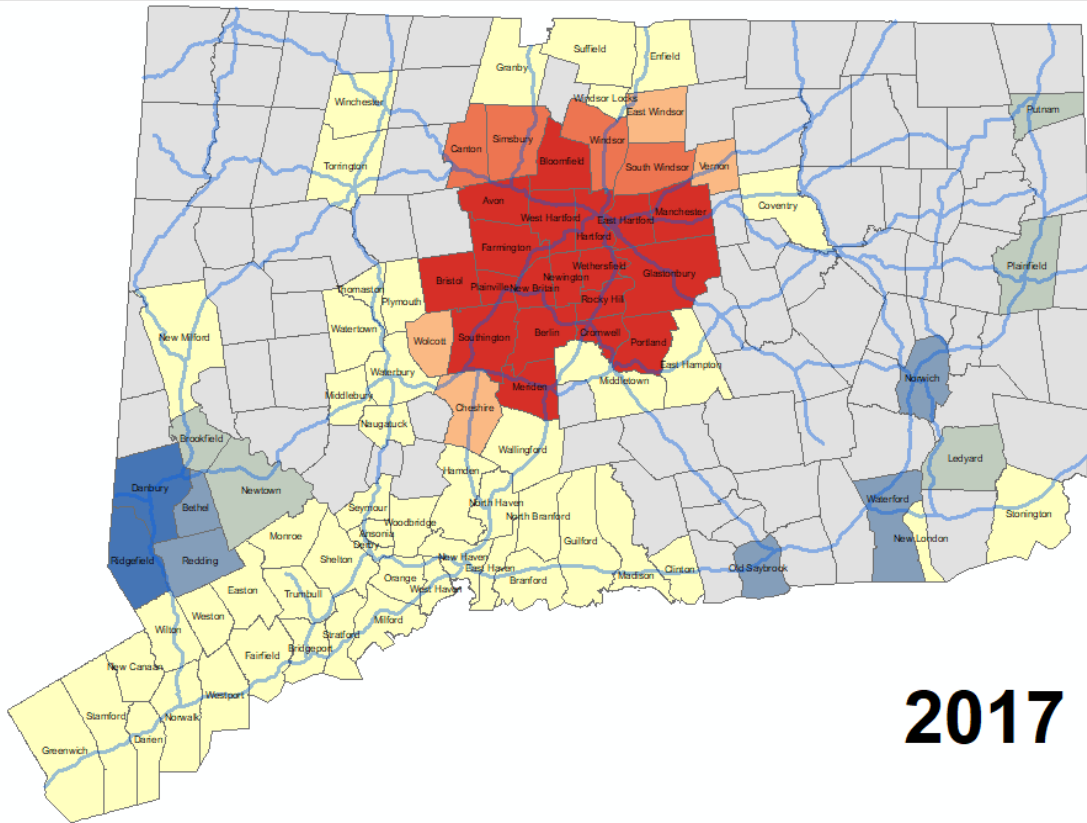
2010
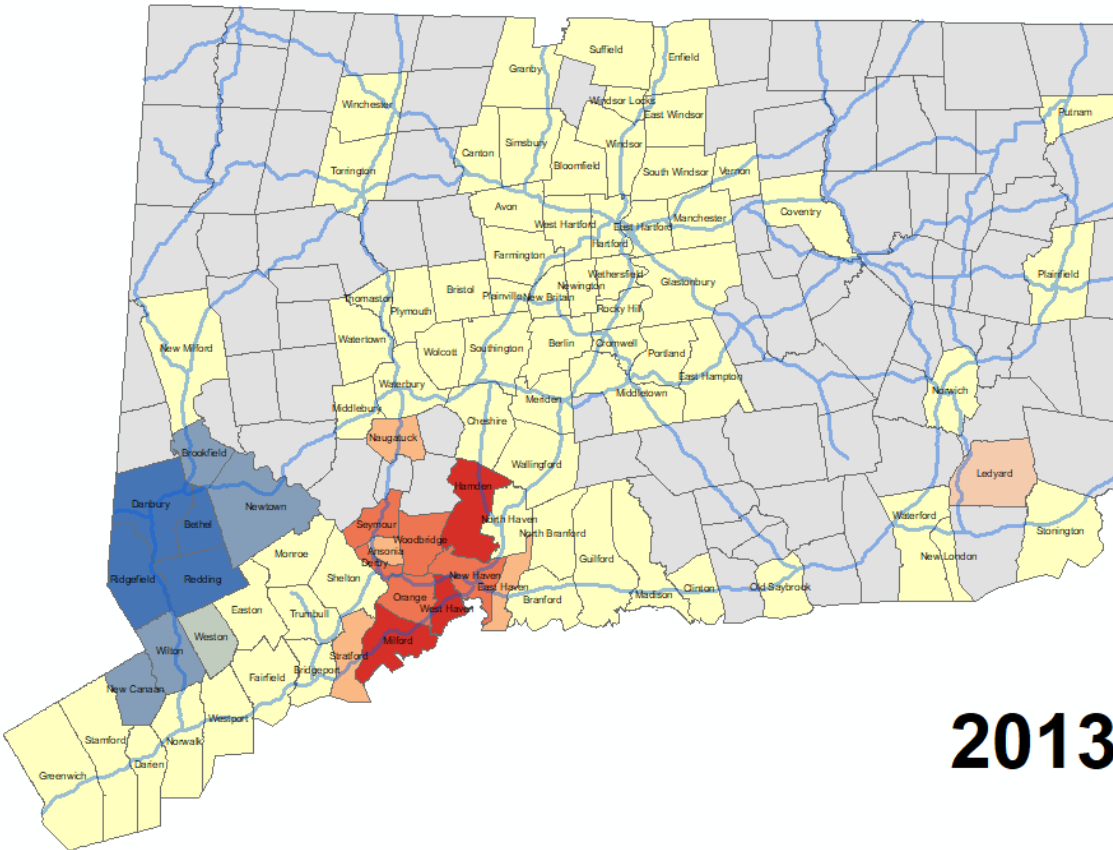
2013

2015

2017

Summary:

- Rates of motor vehicle thefts were significantly more likely to increase in towns with higher median incomes and falling along the I-84 and I-91 corridor.
- Towns that experienced a significant increase in rates of thefts from motor vehicles in the past three years were significantly more likely to have higher median incomes and fall along the I-91 corridor relative to those that did not experience an increase.
- Map visualization suggests that rates of thefts from motor vehicles were previously higher west of I-91 and surrounding New Haven but shows recent significant increases in suburban towns in central Connecticut.

STOLEN MOTOR VEHICLES

Several towns also experienced statistically significant changes in rates of stolen motor vehicles over the past three years. Because stolen motor vehicles are relatively rare occurrences in most towns, statistically significant increases listed here should be interpreted with caution as small changes may have powerful effects.

Significant Three-Year Increase in Stolen Motor Vehicles	
Berlin	Simsbury
Brookfield	Southington
Cromwell	Suffield
Darien	Vernon
Glastonbury	Waterbury
Greenwich	Waterford
Newtown	Wilton
North Haven	Windsor
Norwalk	Windsor Locks
Rocky Hill	Wolcott

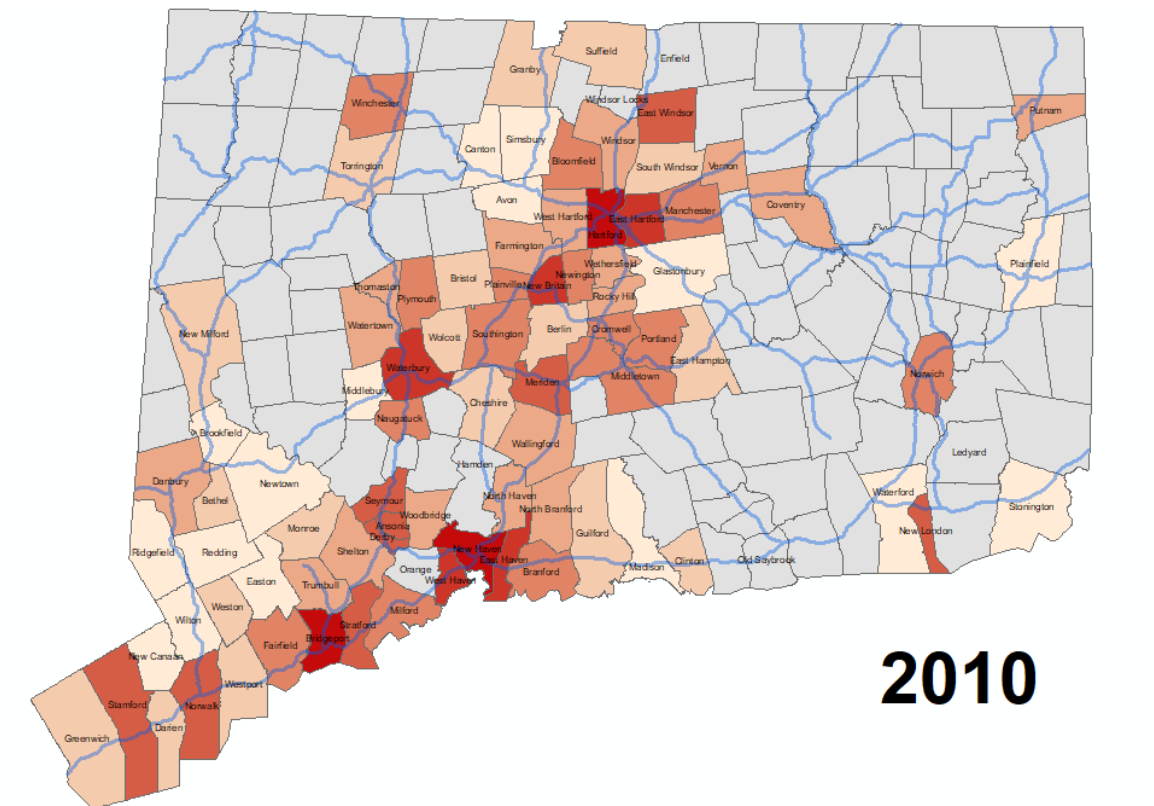| Significant Three-Year Decrease in Stolen Motor Vehicles |
| --- |
| Groton Town |
| West Haven |
| Willimantic |

A regression analysis of the average annual change in rate of stolen motor vehicles from 2015-2017 shows that towns falling along the I-91 corridor were significantly more likely to experience an increase. Median income was insignificant as was proximity to I-84 and I-95.

| Three Year Change in Rate of Stolen Motor Vehicles ($n = 92$)				
	Coefficient	SE	t	p
Median Income	0.000	0.000	1.18	0.243
I-84 Corridor	-1.365	4.356	-0.31	0.755
I-91 Corridor	7.954	4.232	1.88	0.064 *
I-95 Corridor	4.543	4.247	1.07	0.288
Constant	5.711	5.296	1.08	0.284

*$p < .10$ **$p < .05$ ***$p < .01$

A dummy variable (yes/no) was created to indicate whether a town had experienced a statistically significant increase over the past 3 years (2015-2017) compared to the previous 3 years (2012-2014). Results from a logistic regression indicated that towns with higher median incomes and falling along the I-84 and I-91 corridor were significantly more likely to have experienced an increase in the rate of stolen motor vehicles.

Maps were also created to visualize changes in **rates of stolen motor vehicles**. The first set once again show rates of stolen motor vehicles in color gradations with darker shading indicating higher rates of occurrence.
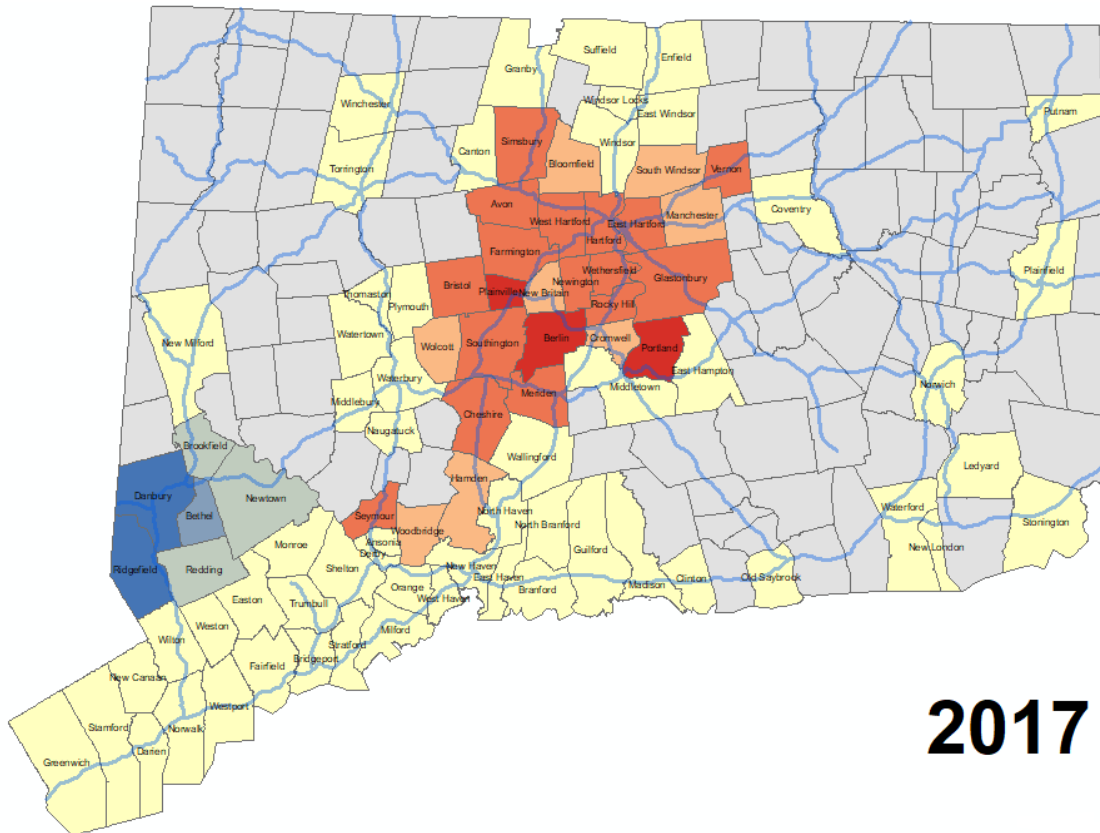
2013
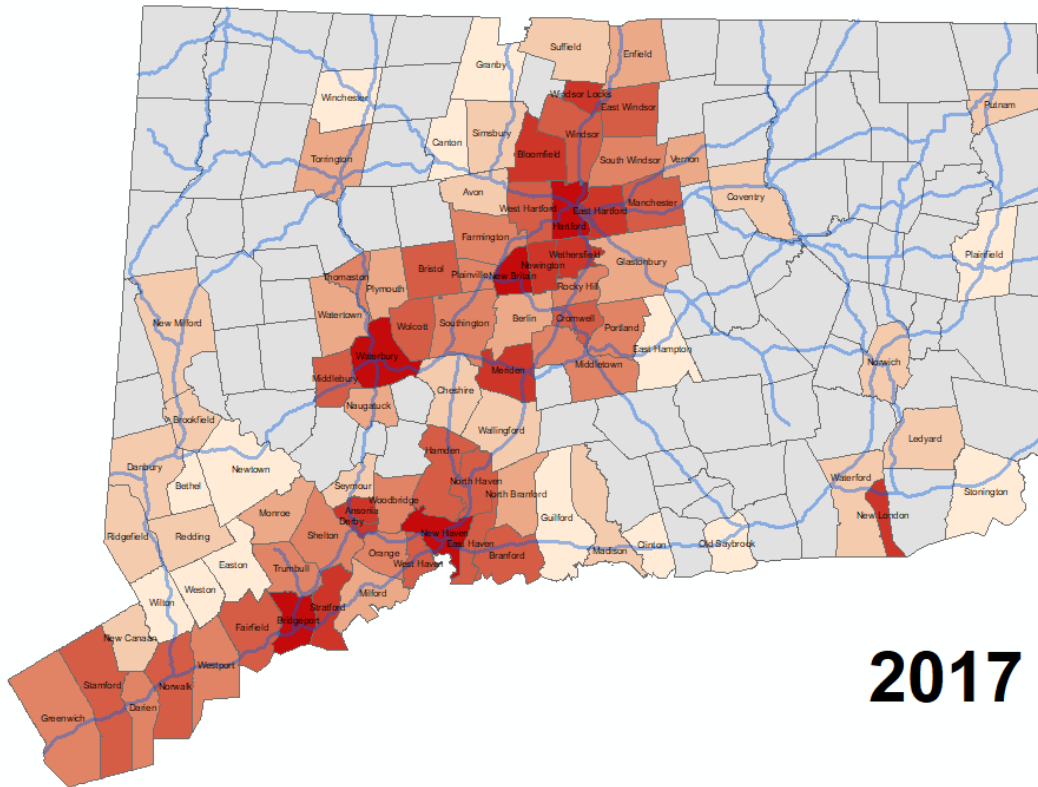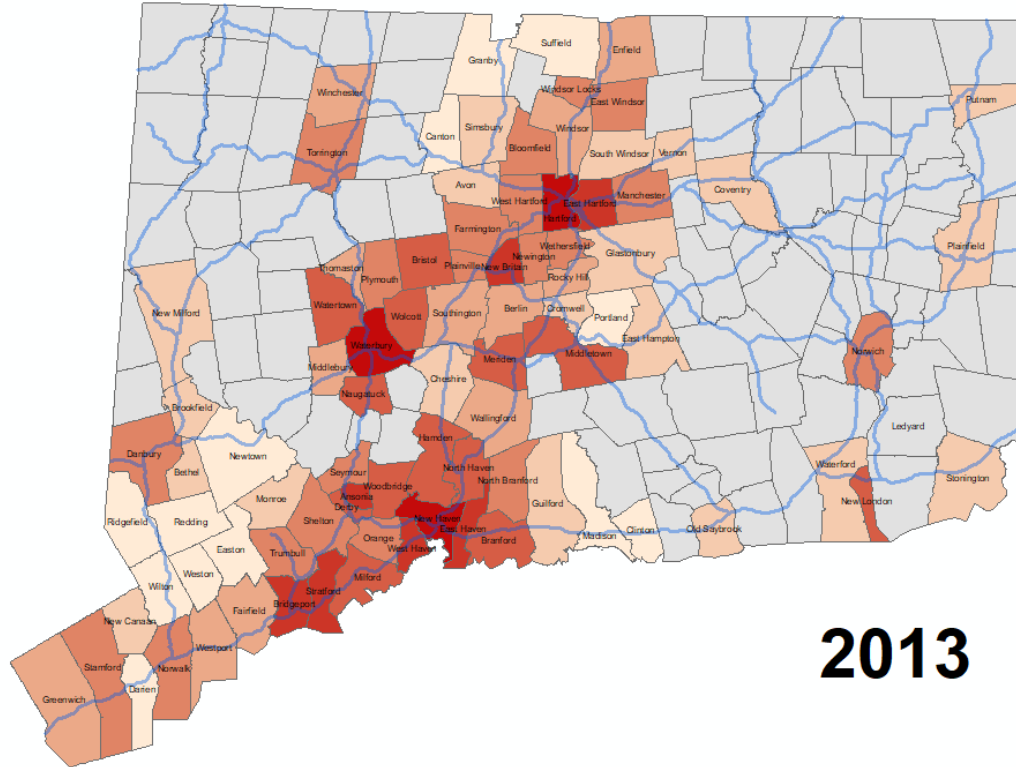
2017

Additional hot spot concentration maps of rates of stolen motor vehicles again show a similar shift as with thefts from motor vehicles.

2010

2013
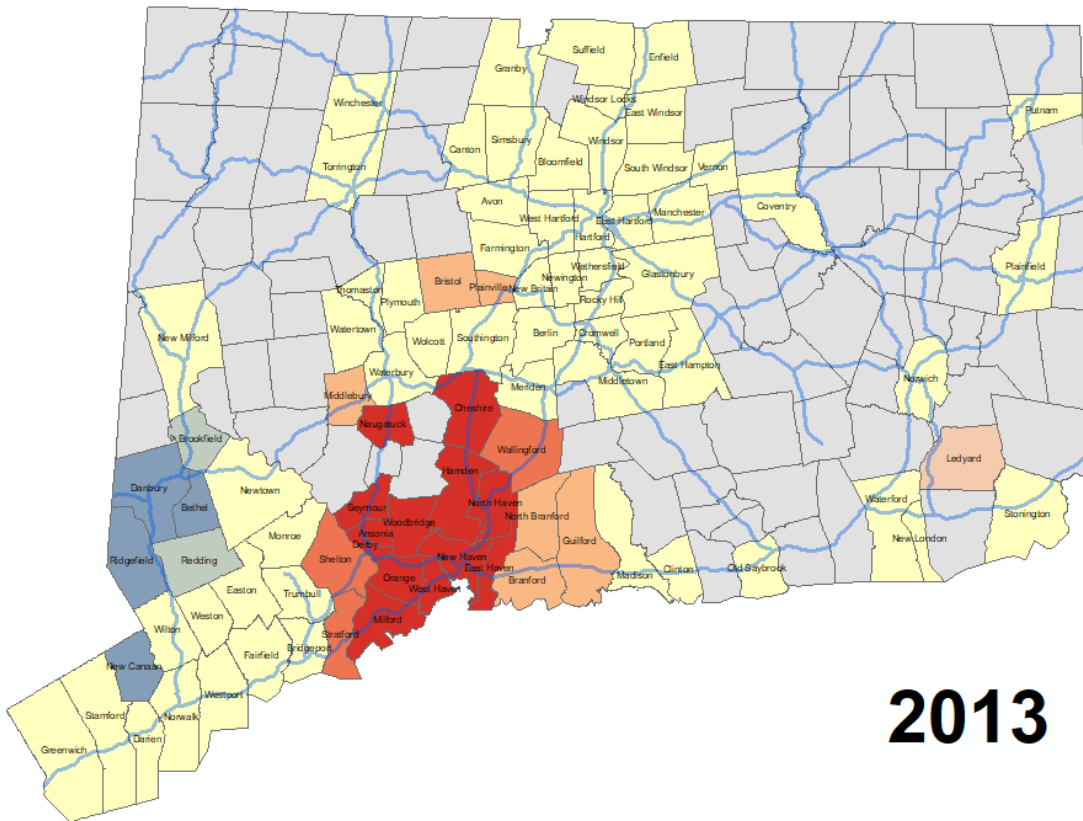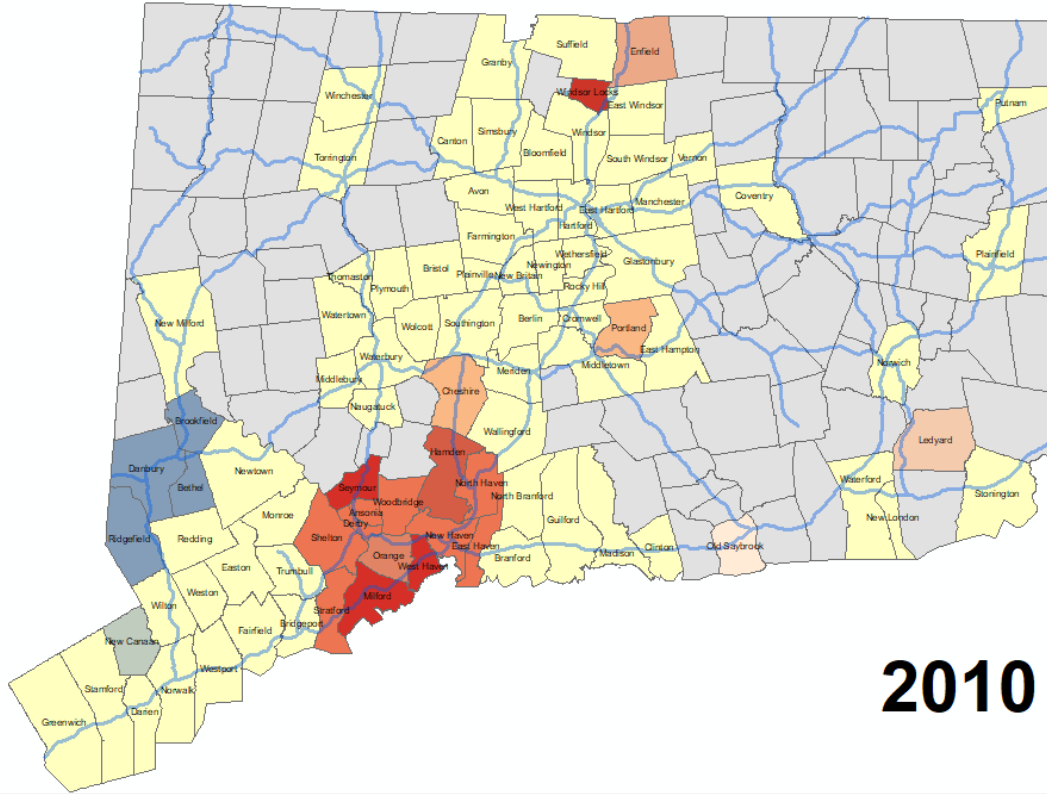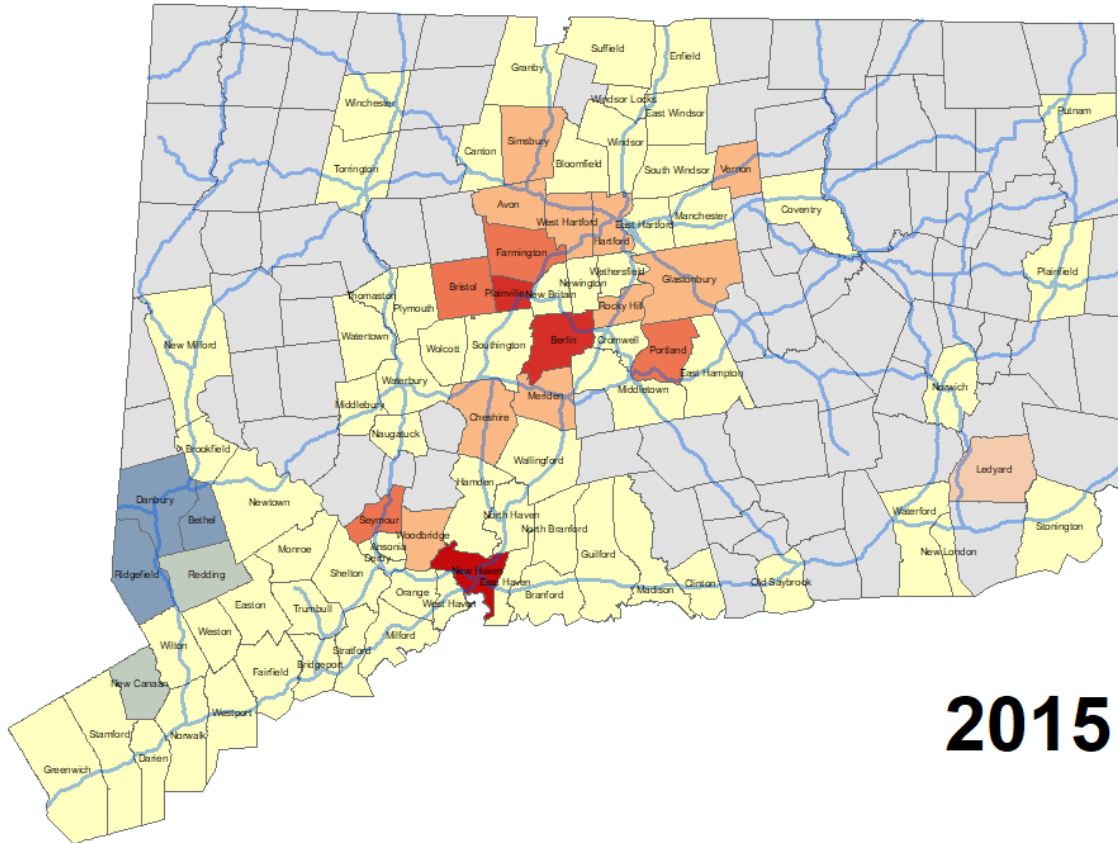
2015

2017

Summary:

- Several towns experienced a statistically significant increase in stolen motor vehicles, but these increases should be interpreted cautiously since they were relatively rare occurrences.
- Statistically significant changes in rates of stolen motor vehicles occurred primarily along the I-91 corridor.
- Towns that experienced a significant increase in rates of stolen motor vehicles were significantly more likely to have higher median incomes and fall along the I-84 and I-91 corridors relative to towns that did not experience a significant increase.
- Similar to patterns of thefts from motor vehicles, rates of stolen motor vehicles were previously higher surrounding New Haven but map visualizations show recent significant increases in suburban towns in central Connecticut.

CONCLUDING NOTES

These analyses and conclusions should again be interpreted cautiously as they are preliminary. Of course, since substantial increases in rates of thefts from motor vehicles and stolen motor vehicles seem to have been experienced in wealthier suburban areas in central Connecticut primarily in 2017, we'll need to await data from 2018 to see if these patterns persist. Since statewide rates appear largely stable according to the data from the included 92 towns, this may reflect a movement in patterns of these incidents and changes to underlying criminal motivations or offender characteristics. For example, these changes may be occurring due to changes in criminal networks, the availability of targets, or a shift away from residential burglaries due to the expansion of home security technology. Understanding the underlying influences responsible for any changes would require more comprehensive research.

Please feel free to direct additional questions to:

Lisa Barao, Ph.D.
Postdoctoral Research Associate
Center on Crime and Community Resilience
School of Criminology & Criminal Justice
Northeastern University
360 Huntington Avenue
Boston, MA 02115
l.barao@neu.edu