

2018

DDACTS STUDY

Data-Driven Approaches to Crime & Traffic Safety

Study reflecting Schenectady's DDACTS implementation including enforcement efforts and outcomes





Data-Driven Approach to Crime & Traffic Safety

(City of Schenectady - DDACTS Study)
SPD Crime & Intelligence Unit



Report Description: City of Schenectady - DDACTS Study

Requested by: SPD Lt. Daryl Mallard – Supported by SPD Chief Clifford & SCTF Inspector Strange

Report Produced by: Mathew Douglas, Law Enforcement Analytical Director - SCTF

Date Issued: 8/24/2018

Objective: Evaluate DDACTS Implementation Outputs, Outcomes & Future Endeavors

What is DDACTS?

Data-Driven Approach to Crime and Traffic Safety, AKA DDACTS, is an Operational Model that uses the analysis of location-based crash, crime, calls for service and enforcement data to establish effective and efficient methods for deploying resources. DDACTS is a philosophy and should not to be confused with software and/or specific equipment.

Analyzing data collected by law enforcement offices enables the use of crime patterns, trends and visual mapping illustrations; in turn these resources identify specific areas within a jurisdiction that are known areas that historically contain a disproportionate rate of criminal activity and crashes compared to the rest of the jurisdiction. These areas are known as DDACTS zones.

- ▶ The more detail in the data collection process the greater level of detail and actionability in the analysis.

Once DDACTS zones are established the Law Enforcement component of DDACTS enforcement relies on the importance of high saturation of visible patrol and increased contacts via traffic stops and field interviews to deter and reduce targeted social harms. Targeted efforts will deter social harms, increase public awareness, increase in place-based intelligence and boost the number of “good” stops leading to contraband and/or arrests.

Law Enforcement is a significant component to DDACTS implementation; however, keeping in mind a fully implemented DDACTS approach is a holistic approach and requires resources that extend outside of law enforcement; such as city engineering and code enforcement as examples. Agencies that are most likely to achieve desired outcomes will include as many of the following 7 guiding principles into their DDACTS strategy:

- Identifying Partners & Stakeholders
- Data Collection (Clean, Accurate, Detailed)
- Data Analysis (Comprehensive)
- Strategic Operations (List of Enforcement Tactics within DDACTS Zones)
- Information Sharing & Outreach
- Monitor, Evaluate and Adjustments

Why DDACTS?

- ▶ Simply stated DDACTS will reduce crime and traffic crashes when fully implemented.
- ▶ DDACTS is a race neutral, gender neutral, ethnicity neutral, religion neutral and socio economic neutral unbiased evidence based data-driven approach.
- ▶ DDACTS is all about working smarter and not harder.
- ▶ Improves community relations when implemented accordingly (DDACTS enforcement is about the contacts and not citations).

- ▶ Crashes are a significant drain on agency resources and by identifying and resolving crash problems will “give back” man hours.
- ▶ Vehicle stops yield valuable intelligence; particularly in areas with high crime rates.
- ▶ Increasing demands and limited resources.
- ▶ DDACTS principles are embedded in the President’s Task Force on 21st Century Policing
- ▶ Lastly, DDACTS is simply good old fashion police work that is supported by data.

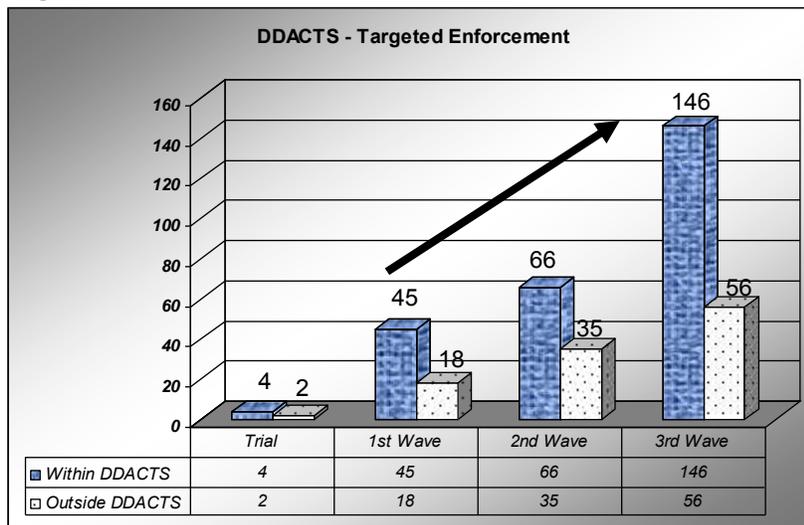
Schenectady’s DDACTS Story:

Schenectady attended a three day DDACTS workshop in April of 2012 that consisted of former Schenectady Chief Brian KilCullen, Traffic Lt. Todd Stickney, former Traffic Sgt. Pat Morris and Schenectady’s Law Enforcement Analyst Matthew Douglas. Post training SPD Analyst created a DDACTS Report after analyzing five years’ worth of crime and crash data. The analysis identified areas within the City that consisted of historically known locations with high levels of burglaries, robberies, thefts from motor vehicles and traffic crashes.

Schenectady’s DDACTS approach revealed success over the first 11 months of implementation. Reductions were noted for both crime and crashes in conjunction to an increase in police presence and contacts within identified DDACTS zones.

Schenectady’s DDACTS approach continued to evolve regarding the DDACTS Analytical Report through feedback received from Command Staff, Supervisors and Patrol in addition to a large scale DDACTS philosophy buy-in citywide. In late 2013 a second evaluation was completed to ensure DDACTS was in fact being implemented appropriately and in turn identify if we were showing success.

Figure 1.1



Prior to analyzing the outcomes DDACTS enforcement was mapped and trends were illustrated. Figure 1.1 shows Schenectady’s DDACTS contacts within DDACTS zones increasing over the first year of implementation. Field interview contacts were shown to be concentrated within DDACTS zones as well as a 19% increase in traffic stops. The 2013 evaluation showed another reduction consisting of a 10.2% decrease in DDACTS focus crimes and a 16.4% decrease in DDACTS traffic crashes.

In 2014, Schenectady’s DDACTS success was presented at the NYS Chief Conference by Chief Brian KilCullen and Law Enforcement Analyst Matthew Douglas where an award was received on behalf of Schenectady’s efforts.

As any good program Schenectady continued to evolve the DDACTS philosophy by including more focus on the 7 guiding principles; particularly information sharing, partners and stakeholders and further crash analysis. As Schenectady’s focus changed from property crimes to violent crime the data analyzed changed and DDACTS was proven to be a flexible model adapting to the focus of the department.

Schenectady’s DDACTS in 2018

Schenectady’s focus has shifted in the last few years from property crime towards violent crime, particularly shootings and homicides. Under Chief Clifford DDACTS evolved the accuracy of identifying areas

within the City that were more prone to gun violence through the adoption of Risk Terrain Modeling (RTM). Simply stated RTM indicated predictive analysis was most accurate in the prediction of where future gun violence would pursue when robberies, drug activity, confirmed shots fired and the location of bodegas were used within the identification analysis of DDACTS zones.

Figure 1.2

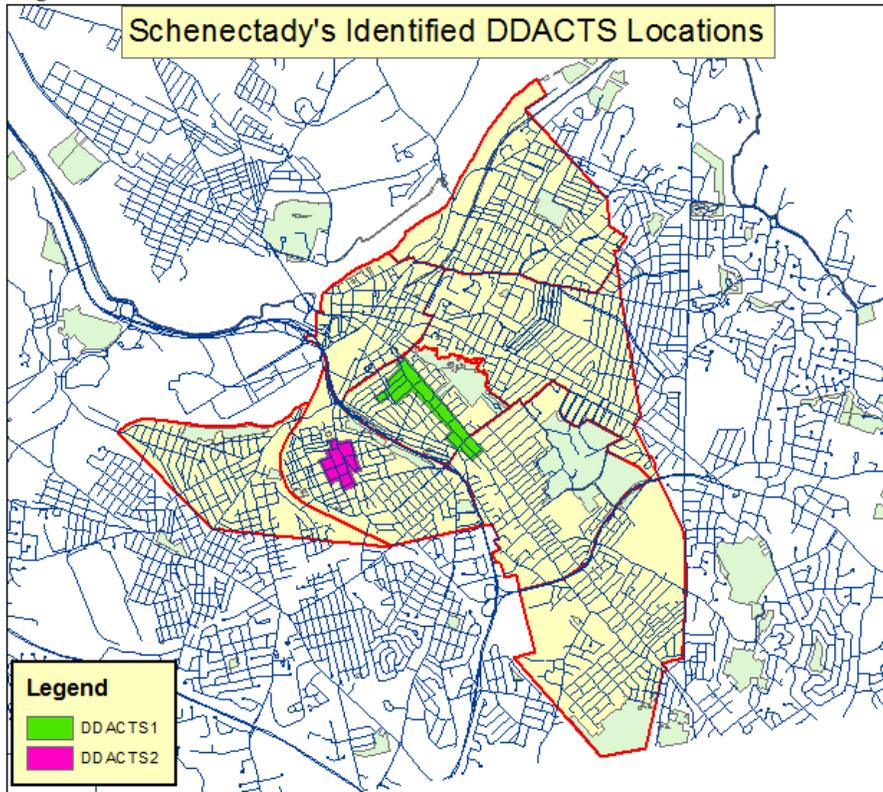


Figure 1.2 (left) showcases Schenectady's current DDACTS locations based on crime data previously mentioned in addition to crash data.

The DDACTS Areas include the Central part of Hamilton Hill and Mont Pleasant.

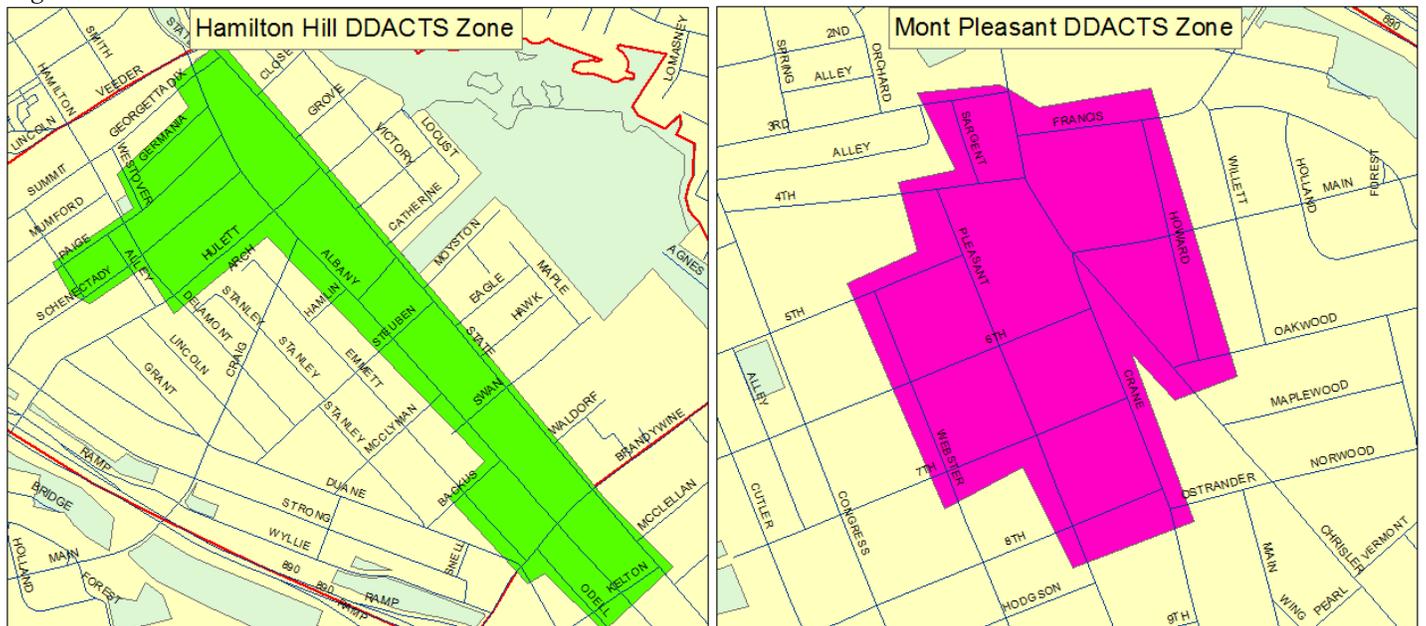
Hamilton Hill (DDACTS 1): This area includes Albany and State St from Georgetta Dix down to Furman in addition to Germania Ave, Schenectady St and Hulett St.

Mont Pleasant (DDACTS 2): This area includes the proximity in and around Crane and 6th Ave including Francis, Sargent, Howard, Webster and Pleasant.

Both of the DDACTS zones contribute to a disproportionate rate of violent crime, property crime and crashes compared to the rest of the city.

Figure 1.3 below highlights both of the two identified DDACTS zones.

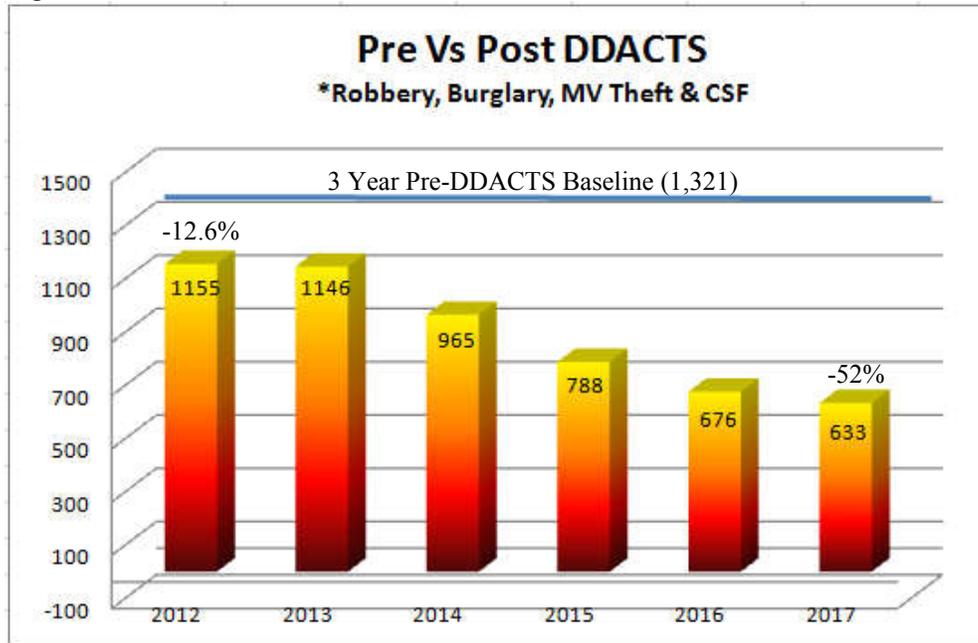
Figure 1.3



DDACTS has certainly supported law enforcement and community efforts to effectively and efficiently reallocate resources to have the greatest impact on reducing social harms. A Pre-DDACTS vs Post DDACTS

evaluation was conducted as one method to gauge the success of DDACTS and other evidenced based approaches implemented within Schenectady over the last five years. A 3 year Pre-DDACTS time period including 2009-2011 was compared to the launch of DDACTS in 2012 and to the years thereafter. Figure 1.4 reveals specific crimes that have been proven nationally to be impacted by DDACTS implementation when fully implemented; these crimes include Robberies, Burglaries, Motor Vehicle Thefts and Confirmed Shots Fired.

Figure 1.4



The findings illustrated in Figure 1.4 and 1.5 are significant. DDACTS focus crimes have continued to decline over the years and have shown a statistically significant reduction compared to a three year Pre-DDACTS time period both citywide and within DDACTS zones. A valid justification of crime reductions outside of the targeted zones is best described as diffusion of benefits where focused efforts have a residual impact on the rest of the jurisdiction. We cannot rule out however, nor should we, that other evidenced based and data-driven approaches contributed to the desirable outcome. A safe presumption is that activity levels will level off and success in regards to crime trends will be measured by holding that leveling off range. Continued DDACTS monitoring will be conducted over time to monitor crime and crash trends in addition changes in the DDACTS zones and enforcement activity.

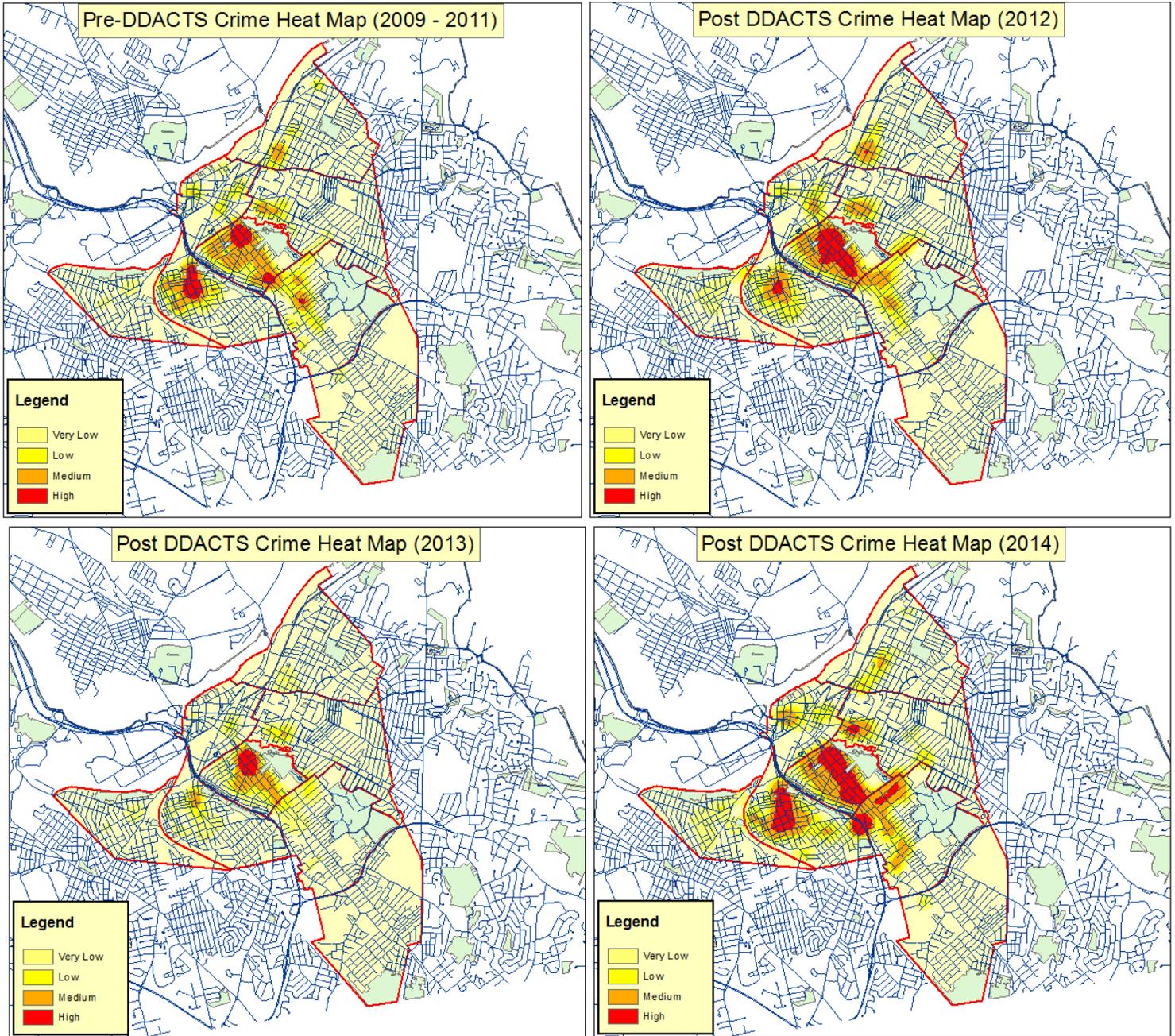
Figure 1.5 * DDACTS Zones & Outside DDACTS location compared by year to a 3 year pre-DDACTS time period(2009-2011)

DDACTS Zones: Pre DDACTS vs Post DDACTS						
Year	HH Focus Crimes	Percent Change	MP Focus Crimes	Percent Change	Outside DDACTS	Percent Change
2012	188	-3.1%	66	-25.8%	901	-13.2%
2013	204	+5.1%	52	-41.6%	891	-14.2%
2014	138	-28.9%	62	-30.3%	765	-26.3%
2015	124	-36.1%	43	-51.7%	621	-40.2%
2016	123	-37.6%	38	-57.3%	515	-50.4%
2017	101	-47.9%	35	-60.7%	497	-52.1%

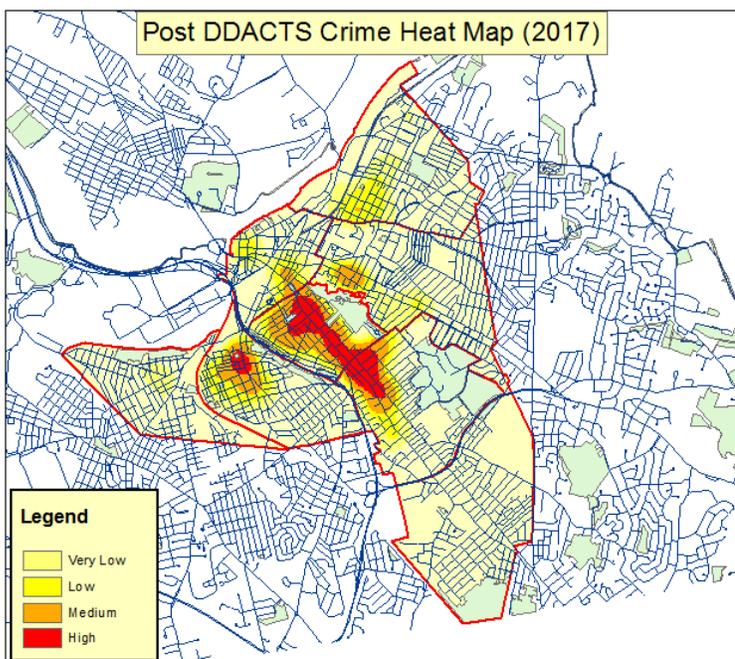
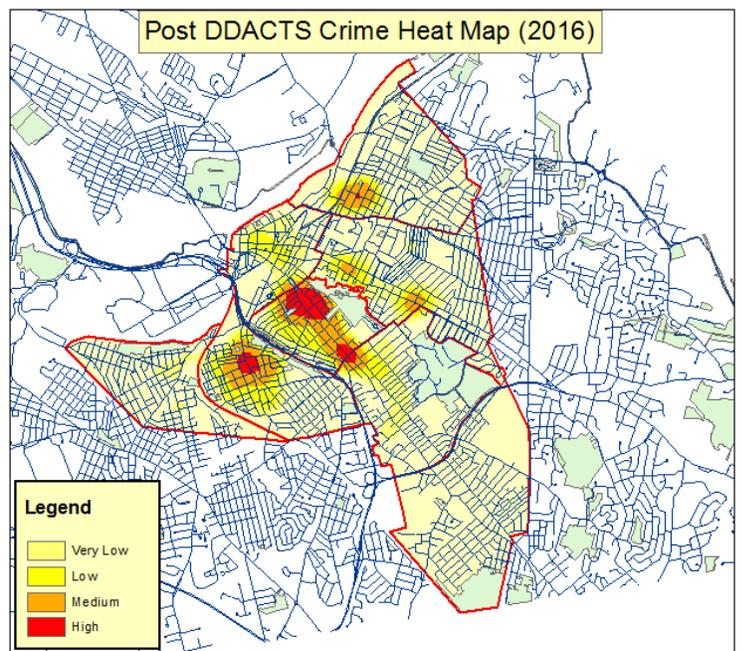
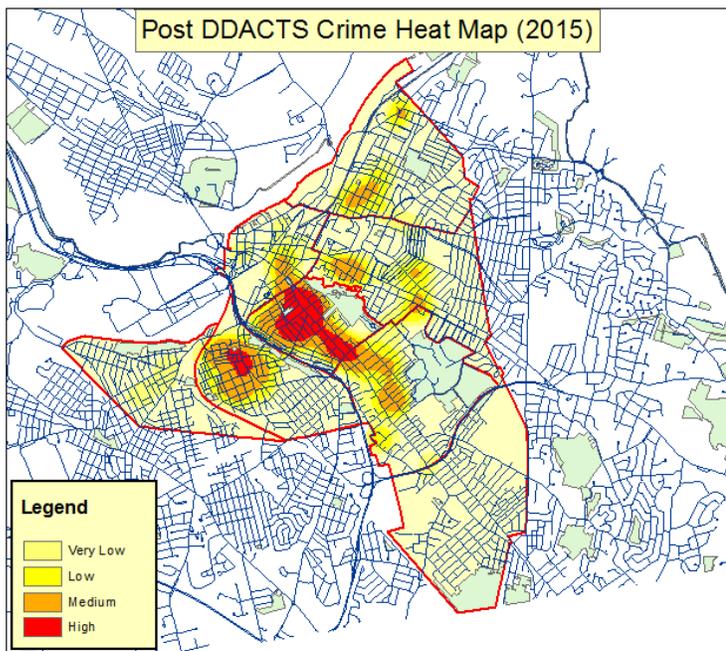
Now that success has been observed pertaining to focused crime rates additional analysis is required to determine if crime trends have been impacted geographically in the City.

- ▶ Are our DDACTS zones in Hamilton Hill and Mont Pleasant still contribute to a disproportionate rate of criminal activity compared to the rest of the City?
- ▶ Have the DDACTS areas moved?

Reviewing the maps on the following page reflects the areas within the city that contribute to a disproportionate amount of crime. The maps include a 3 year Pre-DDACTS crime map in addition to crime heat maps for each Post-DDACTS year (2012 – 2017). The maps were created in such a way to ensure the density locations were not skewed but accurately measured changes in the location of crime over the study time period.



Additional maps on following page



Heat Map Summary: We can visually identify that although social harms impacted by a Data-Driven Approach has shown to be successful our DDACTS zones including Albany and State St in the Hamilton Hill neighborhood and the area surrounding Crane and 6th Ave remain areas within the city that contain a disproportionate rate of crime.

The seven heat maps referencing nine years' worth of focus crimes (2009-2017) indicate that our identified DDACTS zones continue to be the area of a focus requiring a multi-faceted approach. The findings do not indicate failure as our outcomes have been favorable but rather we need to continue our focus within these areas as they are the result of a long term problem that requires a long term holistic approach.

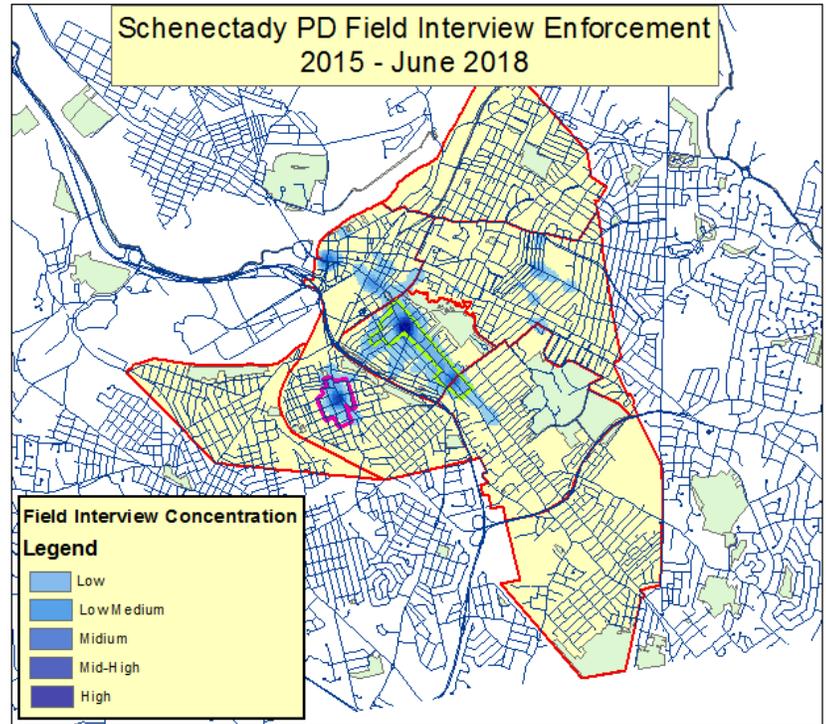
DDACTS Enforcement Analysis & Findings:

Schenectady Lt. Daryl Mallard's request to review enforcement efforts within our identified DDACTS zones will be an added component to this DDACTS study. DDACTS is proven to work both nationally and here in the City of Schenectady. To ensure DDACTS is fully implemented we need to quantifiably measure the saturation of patrol within our DDACTS zones, contacts via field interviews and traffic stops and a method to measure involvement of partners and stakeholder's including but not limited to Parole, Probation, State Police, Code Enforcement, City Planning, City Engineering, Schenectady County Task Force, District Attorney's Office and elected officials. The dosage of high visibility of officers and resources from our partners is difficult to measure, however, the data sets and analytical capabilities to measure our enforcement outputs to include contacts via traffic stops and field interview contacts exists.

A multi-year compilation of enforcement data has been collected, analyzed and mapped in an effort to pinpoint enforcement concentration efforts within the city of Schenectady. Ideally, under any DDACTS model, resources are expected to align with areas identified as having historically disproportionate high rates of crimes and

crashes. Figure 1.6 provides a visual aid on all field interviews completed by Schenectady’s Police Department officers during the last three and a half years (2015 – June of 2018). The heat map indicates, through field interview location data, that field interview enforcement efforts are concentrated in Schenectady’s high crime and crash locations. The DDACTS areas are noted by a lime green and violet border within the Hamilton Hill and Mont Pleasant neighborhoods. This finding further supports Schenectady’s DDACTS enforcement implementation efforts pertaining to location based field interview contacts.

Figure 1.6



Exploring the frequency of field interview contacts over a multi-year time period will only be of benefit to assessing Schenectady’s DDACTS implementation. Not only do we need to review geographically where FI’s have been located but we also need to take into consideration the frequency of FI enforcement within the DDACTS zones.

It is important to note that fluctuation staffing levels and/or platoon non-DDACTS related targeted details are not reflective in the field interview by platoon analysis.

Figure 1.7

Time Period	1st Platoon (FI Enforcement)				
	HH DDACTS	MP DDACTS	Total Inside DDACTS	Outside DDACTS	% Target Enforcement
2015	225	54	279	377	42.5%
2016	283	45	328	430	43.3%
2017	202	60	262	337	43.7%
2018 (Jan-June)	121	29	150	170	46.9%
Total	831	188	1019	1314	43.7%

Figure 1.8

Time Period	2nd Platoon (FI Enforcement)				
	HH DDACTS	MP DDACTS	Total Inside DDACTS	Outside DDACTS	% Target Enforcement
2015	133	60	193	376	33.9%
2016	109	40	149	257	36.7%
2017	90	63	153	263	36.8%
2018 (Jan-June)	27	7	34	46	42.5%
Total	359	170	529	942	35.9%

Figure 1.9

Time Period	3rd Platoon (FI Enforcement)				
	HH DDACTS	MP DDACTS	Total Inside DDACTS	Outside DDACTS	% Target Enforcement
2015	371	111	482	617	43.8%
2016	372	113	485	500	49.2%
2017	296	136	432	646	40.1%
2018 (Jan-June)	122	26	148	178	45.4%
Total	1161	386	1547	1941	44.4%

Analyzing the FI’s over the last three and a half years (2015 – June 2018) provides a further synopsis of overall FI trends. The charts below (Figure 1.7, 1.8 & 1.9) reveal the raw numbers of completed field interview contact cards over the last 3 ½ years separated by year, shift, DDACTS zones, Outside DDACTS zones and includes the percentage of FI’s that contribute to overall targeted placed based enforcement.

1st Platoon (Midnight – 8:00am) FI reporting appears to be on a path to match or exceed a high of 328 conducted FI’s within the DDACTS zones in 2016. Based on the geographical data one can conclude 1st Platoon focuses their FI resources within the DDACTS zones as DDACTS FI’s contribute to 46.9% of

all FI enforcement in 2018. Reviewing 1st Platoon tally of all DDACTS FI’s over the last three years indicates a range of 262 to 328 FI’s completed within the DDACTS zone per year. 2018 FI reporting is on pace to exceed prior marks. 1st Platoon raw numbers are depicted in Figure 1.7.

2nd Platoon (8:00am – 4:00pm) FI reporting is relatively low in frequency ranging citywide anywhere from 257 to 376 with an average of 35.9% of those FI's considered as targeted DDACTS enforcement. FI's on 2nd platoon have remained rather consistent in 2016 and 2017 which is a reduction from 2015; however, with 46 FI's reporting during the first half of 2018 indicates 2018 is likely to have fewer completed FI's than the prior three years. 2nd Platoon raw numbers are depicted in Figure 1.8.

3rd Platoon (4:00pm – Midnight) FI reporting is observed as having a high percentage of overall conducted field interviews (44.4%) within the identified DDACTS zones. 2018 FI's within this shift are currently higher than prior years regarding the concentration of FI targeted enforcement. Reviewing 1st Platoon tally of all DDACTS FI's over the last three years indicates a range of 432 to 482 FI's completed within the DDACTS zone per year. 3rd Platoon FI reporting in 2018 is falling below prior bench marks with currently 148 completed during the first 6 months of this year. In comparison to all shifts 3rd Platoon contributes to half (49.9%) of all FI's completed within DDACTS zones and 46.2% of FI's outside of Schenectady's DDACTS zones. 3rd Platoon raw numbers are depicted in Figure 1.9.

Field Interview Summary: 1st, 2nd and 3rd Platoon are reallocating their concentrated FI enforcement within the identified high crime and crash locations. On average, over the last three and a half years, 41.3% of all citywide FI's have been completed within DDACTS zones. Considering the small size of Schenectady's DDACTS areas a 41.3% FI concentration is noteworthy supporting a DDACTS philosophy. Command Staff and Supervisor encouragement that heightens field interview targeted enforcement will only benefit crime and crash reduction efforts via a deterrent effect and gathered valuable intelligence.

The city of Schenectady has been fortunate to have recently developed a Schenectady County Task Force (SCTF). The Task Force is aimed to reduce and eliminate street level violent crime. SCTF will be a force multiplier to local law enforcement agencies within the County. The SCTF is structured under a proactive regime that includes targeted place based details and prolific violent offenders. Highly trained SCTF Officers conduct field interviews that supplement Schenectady Police Departments DDACTS efforts. Figure 2.0 illustrates the SCTF as a force multiplier in FI enforcement, in particular within Schenectady's Hamilton Hill DDACTS zone.

As shown we have the capacity to analyze field interview activity, however, equally as important Schenectady has the capability to analyze traffic enforcement (Traffic Stops). The importance in traffic stops is to increase high visibility within high crime and crash locations, increase the potential of

Figure 2.0

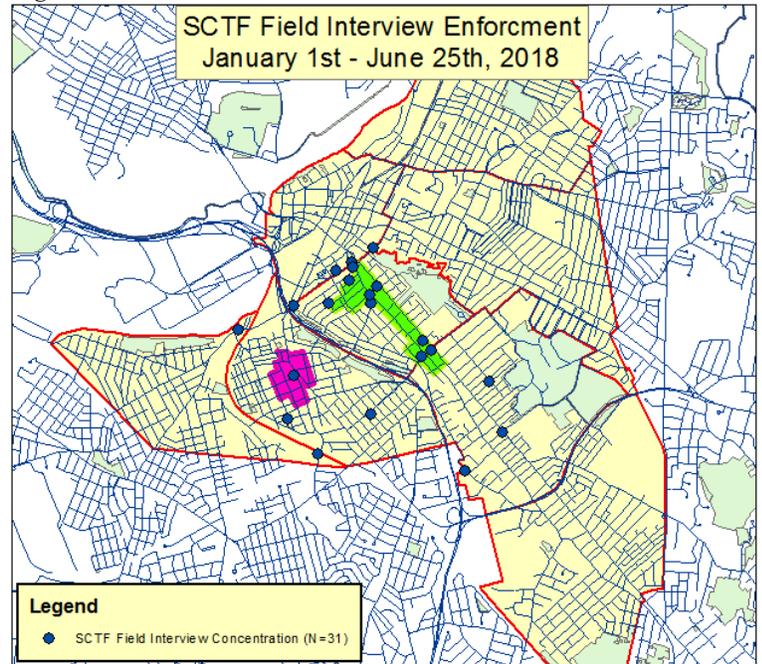
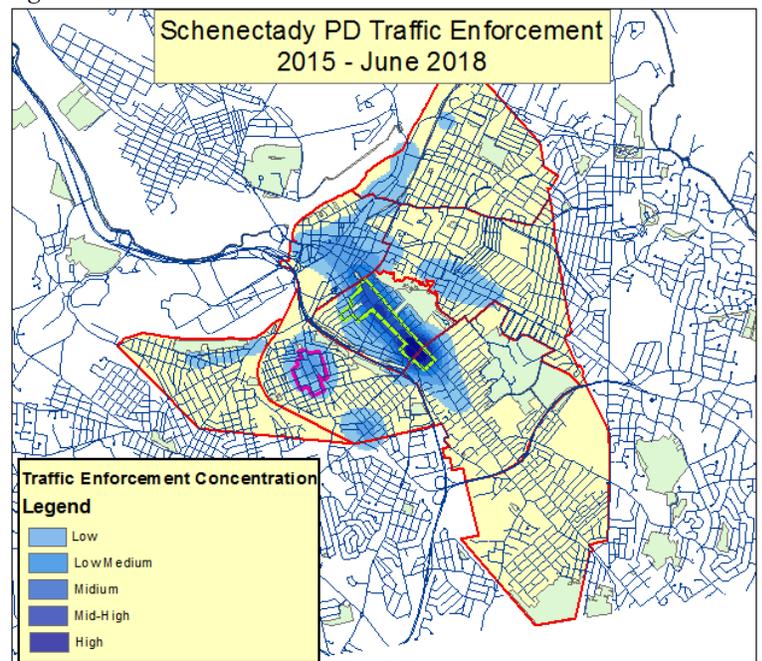


Figure 2.1



“good stops” where contraband will be recovered, wanted suspects will be located, parolee and/or probationer violations are identified and also used as an opportunity to increase police legitimacy by sharing a message with the community that enforcement efforts are in place to keep the neighborhood safe. Analyzing Schenectady’s traffic stops over a three and a half time period reveals traffic enforcement largely is concentrated within Schenectady’s DDACTS zone. The traffic enforcement assessment is precisely the outputs expected of a working DDACTS approach; reallocating resources in locations that will have the greatest impact on crime and

traffic. Field interview and traffic enforcement efforts indicate Schenectady is deploying their resources in an effective and efficient manner based on a data-driven approach.

Figure 2.2

Time Period	1st Platoon (Traffic Enforcement)				
	HH DDACTS	MP DDACTS	Total Inside DDACTS	Outside DDACTS	% Targeted Enforcement
2015	591	125	716	1285	35.80%
2016	395	68	463	1234	27.30%
2017	356	61	417	1045	28.50%
2018 (Jan-June)	336	42	378	657	36.50%
Total	1678	296	1974	4221	31.90%

Figure 2.3

Time Period	2nd Platoon (Traffic Enforcement)				
	HH DDACTS	MP DDACTS	Total Inside DDACTS	Outside DDACTS	% Targeted Enforcement
2015	694	88	782	2283	25.50%
2016	607	80	687	2540	21.30%
2017	319	99	418	2018	17.20%
2018 (Jan-June)	132	49	181	1078	14.40%
Total	1752	316	2068	7919	20.70%

Similar to the previous breakdown of field interviews by platoon an analysis regarding traffic enforcement by platoon is illustrated in Figure 2.2, 2.3 and 2.4.

Figure 2.4

Time Period	3rd Platoon (Traffic Enforcement)				
	HH DDACTS	MP DDACTS	Total Inside DDACTS	Outside DDACTS	% Targeted Enforcement
2015	1234	130	1364	2631	34.10%
2016	1244	139	1383	2605	34.70%
2017	828	304	1132	2229	33.70%
2018 (Jan-June)	631	155	786	1216	39.20%
Total	3937	728	4665	8681	34.90%

Targeted traffic enforcement across the board (all platoons) has shown to decline over the years when comparing 2015, 2016 and 2017 calendar years. The one exception is DDACTS traffic enforcement during 3rd

Platoon from 2015 to 2016 as a slight increase is noted; however, 2017 3rd platoon traffic enforcement reduces significantly during 2017. Although the analysis of targeted traffic enforcement signifies a reduction in traffic stops over the last 3 full years, the overall 2018 traffic enforcement within DDACTS zones has shown to increase significantly and is on pace to exceed prior years. This is specifically true for 3rd platoon where there have been 786 recorded DDACTS traffic stops during the first half of 2018. If 3rd platoon maintains traffic enforcement at their current trend they will be on pace to have a 21% increase in DDACTS traffic stops compared to a 3 year average. 1st and 3rd platoon roughly spend 1/3 of their traffic enforcement within the high crime and crash locations (DDACTS zones). 2nd Platoon is averaging 1/5 of their traffic enforcement within DDACTS zones and concentration levels have declined during 2nd Platoon. Concentration levels have increased during 1st and 3rd Platoon shifts.

Arrest Analysis and Findings:

To further review the impact of DDACTS enforcement the analysis of arrest trends will be of value. Eight years of arrest data was collected and analyzed to illustrate arrest activity pre and post DDACTS implementation. Figure 2.5 and 2.6 include an eight year trend of citywide arrest charges. Figure 2.5 includes all arrest charges whereas figure 2.6 includes crimes most likely to be impacted by DDACTS enforcement; murder, robbery, motor vehicle theft and burglary). The charts reveal a downward trend in arrest charges during the time period of study. Figure 2.5 shows an approximate 30% reduction in arrest charges in 2017 compared to pre-DDACTS implementation. During the same time period a 37% reduction is noted with crimes most likely impacted with a DDACTS approach. Important to note that focus crime arrest charges went up the first year of DDACTS implementation and thereafter have declined over the years.

Figure 2.5

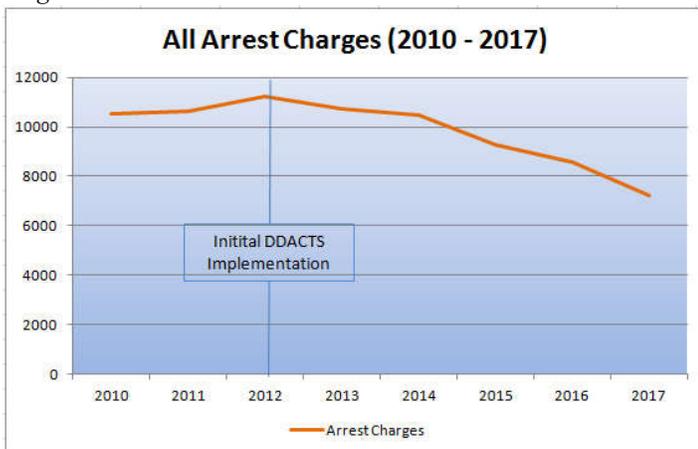
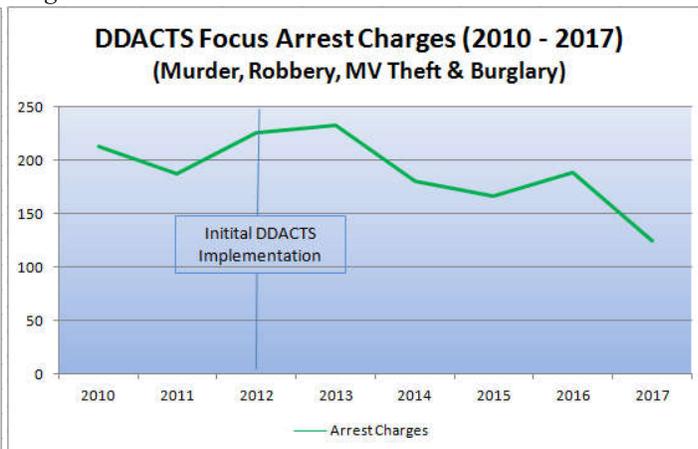


Figure 2.6



Summary:

The analysis within this DDACTS study has determined street level crimes, most impacted by DDACTS enforcement, has significantly reduced during post DDACTS years; baring a positive desired outcome. Mapping capabilities and analysis continues to support specific areas within Hamilton Hill and Mont Pleasant neighborhoods as a DDACTS location based effort due to the clustering of crime and crashes. Enforcement analysis indicates resources regarding field interview contacts and traffic stops are largely concentrated within the two identified DDACTS zones, however, there is room for a greater frequency of completed FI's.

Elected and appointed officials including the Mayor, Sheriff, Commissioner and Chiefs' of Police along with established partnerships to include Parole, Probation, Schenectady County Task Force, Code Enforcement, Capital Regional Crime Analysis Center, DCJS, State Police, ATF, City Engineering and City Planning to name a few have promoted and are an integral component to the evolution and success of Hot Spot Policing, AKA DDACTS – Data-Driven Approaches to crime & Traffic Safety.

DDACTS Continues to Evolve:

DDACTS is not a static approach and as a jurisdiction grows due to expansion, technological advances and/or political changes the vast components that makeup a jurisdictions DDACTS model will also need to grow to ensure resources continually are utilized effectively and efficiently. Schenectady's DDACTS model is not exempt from the mentioned rule and a few areas for improvement/advances due to mentioned changes are listed below.

Rezoning of Schenectady Patrol Zones: A comprehensive rezoning proposal from eight to five zones using data and geographical boundaries is currently being adopted. The rezoning approach is stemming from the philosophies of New York City Commission Bratton as is shown to increase community relations and response times. Newly developed NCO's (Neighborhood Community Officers) will increase relations and in turn have the ability to strengthen local business and community leader relations within DDACTS zones.

Development of a Schenectady County Task Force: Schenectady County's newly established Task Force as of early 2018 is a proactive unit designed to reduce and eliminate street level violent crime. The adoption of DDACTS principles, particularly regarding contacts within DDACTS areas, will be a force multiplier under DDACTS implementation.

DDACTS Monitoring & Evaluation Efforts: The Schenectady Police Department has expanded the Crime Analysis Unit from one full-time Crime Analyst Supervisor and one full-time Assistant Crime Analyst to two full-time Assistant Crime Analysts, one full-time Crime Analyst, one full-time National Guard Counterdrug Analyst and one full-time Law Enforcement Analyst Director who oversees the

Crime Analysis Unit and works directly with the Schenectady County Task Force. Additional resources will allow regular DDACTS monitoring and DDACTS evaluations similar to the one completed at this time. Regular monitoring and evaluations will assist in the identification of necessary adjustments when appropriate.

CPTED Implementation: Crime Prevention through Environmental Design is a nationally recognized crime prevention approach that addresses the underlying environmental causes of crime to include improved line of sight, surveillance, target hardening and maintenance. The expansion of the Schenectady Analysis Unit will enable necessary analysis to support targeting problem locations such as bodegas that prevent a clear line of site within the established due to blocked windows. Partnerships with the Schenectady County Task Force, Schenectady Police Department, Law Department and Code Enforcement will work to apply CPTED principles to eliminate opportunities for offenders and increase the likelihood of apprehension.

Schenectady has established a multi-faceted strategy based on proven evidence based approaches to reduce crime and improve the overall quality of life of residents and those interested in frequenting the many experiences the City has to offer. The significant decrease in focus crimes is an accomplishment, however, it's important to realize that although continued reductions will be the ultimate goal success may also be defined by maintaining our current reductions levels from pre-DDACTS time periods. There will always be crime no matter where you are in the world but the objective is to predict, deter and or apprehend habitual offenders to the point that only random crime exists. In final closing, Schenectady's observed reduction in street level crime is only one quantitative factor that showcases success but other qualitative factors such as the strengthening of partnerships, improved police legitimacy practices and actionable use of data to direct decision making processes are equally as important to note and consider as success.