Case Study
Tempe, Arizona, Police Department

Introduction

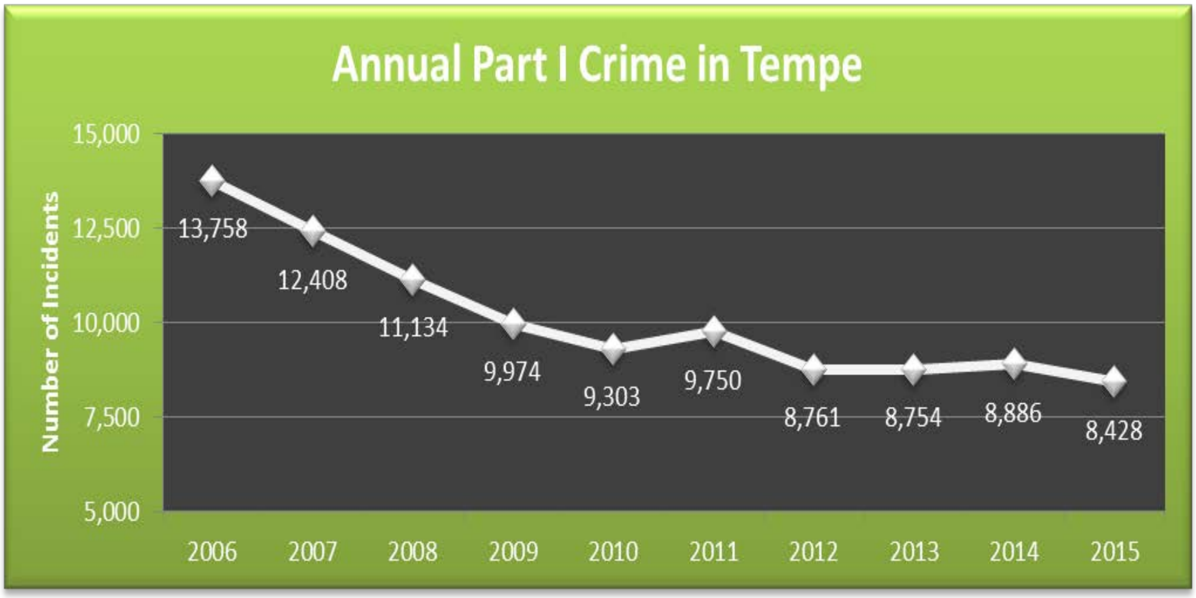
The Tempe, Arizona, Police Department (TPD) applied for the BJA/IIR Crime Analysis Capability Project Grant (aka Crime Analysis Capacity Building Grant) with the intent to build on its 25 years of crime analysis experience. Over the years, TPD has adopted community policing, problem-oriented policing (www.popcenter.org), evidence-based policing (Sherman, 1995), intelligence-led policing (Ratcliffe, 2017), and stratified policing (Santos and Santos, 2015) into its day-to-day approach to fighting crime and addressing community disorder.

In an attempt to synthesize these similar models of policing, TPD applied for and received a Nationwide Crime Analysis Capacity Project Award to improve its capacity, share lessons learned, and offer its expertise to other departments across the United States and around the world. Following key components of intelligence-led policing, TPD partnered with several subject-matter experts (SMEs) to improve its crime analysis capacity in three critical areas:

1. Improve capacity to identify and track prolific offenders.
2. Develop a set of crime analysis metrics (CAmetrics) to regularly evaluate crime statistics and predictive analytics as part of its crime suppression meetings (CSMs) and its actionable decision-making process (CompStat-like).
3. Improve capacity for geospatial and temporal analysis (i.e., Enterprise GIS) and develop location-based dashboards as related to the goals above, allowing TPD to monitor criminal/call-for-service events and target hot spots on a recurring 28-day cycle.

Agency Background

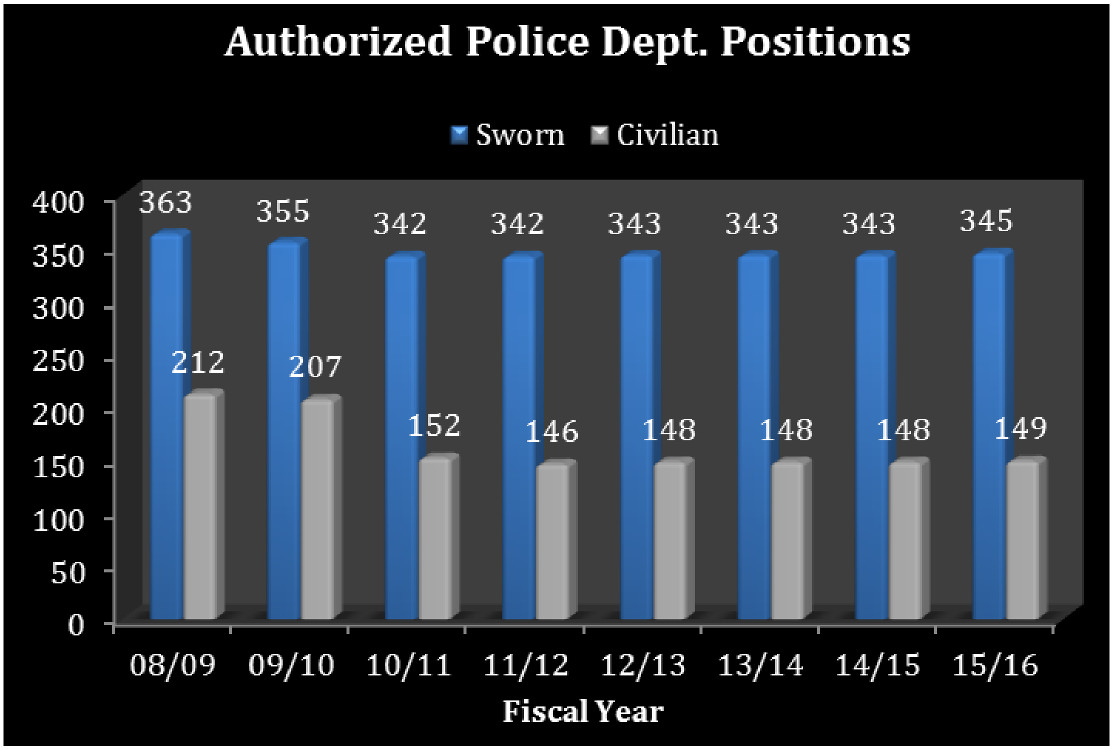
The city of Tempe is located centrally within Maricopa County, Arizona, the fourth most populous county in the United States. The city has a population of more than 175,000 residents and experiences a daytime population increase to almost 245,000. In addition, the city is home to Arizona State University (ASU), the largest public university in the country. Tempe’s crime rate is higher than that of its neighboring cities, and with the sweeping daily population increase and the presence of ASU, TPD experiences unique challenges when addressing crime and quality-of-life issues. As a university town, Tempe experiences unique issues with a youthful population, loud parties, underage drinking, shoplifting, sexual assaults, fights, various larceny-theft issues, traffic, and college sporting events. In spite of these pressing issues, the city of Tempe has been successful at driving down and maintaining a relatively low crime rate.



The Uniform Crime Index (UCR) rate per 100,000 for the entire United States was 2,961.6 in 2014.[1] The 2015 crime rate for Arizona was 3,374.8 crimes per 100,000 population based on an estimated population of 6,758,251. Tempe experienced a higher UCR Index crime rate of 4,899.9 per 100,000 by comparison, as a result of special events and a 40 percent increase in daytime population.

	Violent Crime				Property Crime				
Year	*Homicide*	*Rape*	*Robbery*	*Aggravated Assault*	*Burglary*	*Larceny*	*Motor Vehicle Theft*	*Arson*	**Total**
2014	5	103	193	498	1,177	6,406	461	43	**8,886**
2015	7	101	182	430	1,108	6,175	359	66	**8,428**
% change	40%	-2%	-6%	-14%	-6%	-4%	-22%	53%	**-5.2%**

[1] Most recent data available from the FBI.



TPD's F/Y 15/16 operating budget was $81.7 million, of which 79 percent was allotted to personnel services. The department's budget currently has an authorized strength of 494 employees, comprising 70 percent sworn personnel and 30 percent civilians. These personnel numbers remained relatively stable after the City's budget reduction process, which took place during the nation's economic downturn.

Crime Analysis

TPD has an extensive tradition of building crime analysis capacity that began officially in 1989. TPD was the first department in Arizona to hire a full-time crime analyst, and over the past 27 years—since 1990—has continued to build its capacity to conduct tactical, strategic, and administrative crime analysis. In 2007, TPD created two crime analysis centers as outlined below.

The Crime and Intelligence Center (CIC) is made up of two tactical analysts, four investigative assistants, and one working supervisor. This unit focuses specifically on crime series, intelligence gathering, investigative support, and the targeting of serious offenders within the community. In addition, these analysts work with local and federal partners such as the FBI, DEA, ATF, HIDTA, EPIC, U.S. Secret Service, U.S. postal investigators, and local and state fusion centers. The Strategic Planning, Analysis and Research Center (SPARC) is made up of two strategic analysts and one working supervisor. SPARC focuses on strategic assessments, crime and operational statistics, deployment modeling, applied research, and the department's commitment to keep Tempe residents aware of crime and safety issues within its jurisdiction. SPARC currently produces the department's annual report, facilitates the yearly strategic planning process, and analyzes citizen-generated calls for service to develop and publish an efficient patrol schedule. In addition to these efforts, SPARC reviews UCR statistics to inform the public about crime and delivers crime statistics to Arizona State University and other universities and colleges that conduct business in Tempe to meet Clery Act federal reporting requirements.

TPD has incorporated ATAC, ATAC-RAIDS, Raids Online, and ATAC Workstation as the primary analytical tools for its analysts. TPD shares data with neighboring jurisdictions through ATAC-RAIDS and COPLINK and uses Raids Online to release crime maps and statistics to the public. Versadex Records Management System is used to collect and store calls for service, street-check, crime, arrest, and case management data utilizing various ODBC connections. Data is pulled directly from Versadex to feed other operational systems including, but not limited to, Corona Solutions (Discover and Deploy), ATAC products, and TPD's internal statistical application (SPSS). Versadex data and ArcGIS are used to perform spatial analyses of crime, call-for-service, and arrest data. Shapefiles are recreated many times and utilize geographic data that was antiquated at best. The City of Tempe currently has an Enterprise License Agreement with ESRI, which allows it to install as many copies of ArcGIS and relevant extensions as needed to realize its geospatial and temporal crime analysis goals. The Crime Analysis Capacity Building Grant has been applied to improving TPD's spatial analysis capability.

Tempe Logic Model: Crime Analysis Capacity Building Grant

Shown below is the logic model outlining the resources, activities, and outputs, as well as the short, intermediate, and long-term outcomes, of the grant project.

Resources	Activities	Outputs	Short-Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
$300,000 cash; Full police RMS (Versadex); 26 years of crime analysis agency experience; robust local and international Crime Analysis Association; Arizona State University GIS department; experienced city IT/GIS department staff; crime data; arrest data; knowledge of project and agency personnel; research on what is effective for offender-focused strategies; academic experience in criminology, public administration, GIS, and policing.	Build prolific offender database	Reports on top offenders, maps related to activity space	Generate top offender lists for various types of intervention	Use activity space analysis to resolve crime patterns; interrupt repeat offender activity	Reduce crime in hot spots; reduce crime committed by repeat offenders; more rapid intervention in crime patterns; improve efficiency and effectiveness of police operations; conduct pre-/post-assessments; and improve clearance rates
	Develop a protocol to identify repeat victims and target hotspots (prototype scenarios)	Reports on repeat victims and produce profiles of hot spots	Produce analytical reports that support targeted interventions for people and places	Create protocols for action plans for patrol and other operational units	
	Create a set of crime analysis metrics using 28-day crime cycles and effectiveness benchmarks	Develop a catalog of innovative measures for crime reduction and police performance	Develop the models and formulas for these measures; provide a list of potential metrics and performance measures for professional review	Produce better measures of social harm, crime stats by demographics, police activity, improved comparative measures, and measures of change	
	Build a CA-server, an enterprise GIS server, and several dashboards/location-based applications for delivery of above information	SQL server data warehouse, GIS SDE spatial server, and client interface that fully serve the other activities of the project	Stand up the hardware and software	Integrate data connections and data entry into crime analysis processes and products	
	Develop the Crime Analysis Toolkit	Provide a mechanism to offer applications, processes, procedures, and policies for enhancing crime analysis	Collect protocols, data dictionaries, database structures, checklists, and step-by-step procedures for achieving activities 1–4 above	Create and disseminate the toolkit	

Scope of the Project

TPD has an extensive history in obtaining grants and serving as a demonstration site for police improvement. Many analysts and supervisors have served on the boards of the International Association of Crime Analysts (IACA), the Arizona Association of Crime Analysts (AACA), and the International Association of Law Enforcement Planners (IALEP). As a mid-sized agency with a history grounded in community and problem-oriented policing and a strong commitment to ILP, the department is confident that agencies of all sizes will gain knowledge on capacity building from its experience.

Crime Analysis Implementation Plan

TPD's primary purpose over the next few years is to create an effect similar to "Money Ball" and sabermetrics, which it calls CAmetrics. In the same fashion that Billy Beane changed Major League Baseball, TPD hopes to change the essence of police work. CAmetrics is the concept and practice of collecting and monitoring innovative statistics that measure criminality, victimology, police performance, and community demographics, all of which build predictive capability. At the core of this initiative is the collection of calls for service and criminal event data related to offenders, victims and locations—the primary elements of the Crime Triangle.

Known Offender Database and Portfolio System

SMEs identified the crucial characteristics of serious repeat offenders and used current best practices in weighting data elements to prioritize which offenders are prolific. This database contains offender characteristics, modus operandi elements, and the activity space of prolific offenders (including, but not limited to, registered sex offenders, probationers, parolees, and Arizona Department of Corrections releases). Analysts will eventually use this system to collect information about offenders' crime(s) of choice, their preferred criminal methods of operation, and elements of their crime patterns, as well as the activity space in which they live, work, and play. This prolific offender portfolio system also will be used to overlay known crime patterns and offender activity space to identify investigative leads within crime hot spots.

Crime Analysis and Police Performance Measures Recommendations

This segment of the project called for TPD to create a set of performance measures similar to sabermetrics that allowed the department to more accurately measure community crime and call-for-service activity, changing neighborhood demographics, and departmental productivity indicators. The development of a CAmetrics system is threefold. Step one required SMEs to establish appropriate and innovative metrics. These metrics go beyond traditional police measures such as crime rates, response times, and clearance rates, to include new measures of crime and police performance. Such measures included crime rates at the census-block level, neighborhood-level demographics, and gang activity. These metrics will be used to measure the effectiveness of patrol and investigative efforts and to refine future initiatives. TPD hopes to provide measures that help normalize police-related activity and create comparative measures over time. Other measures of police satisfaction, use of force, proactive police contacts, traffic stops, demographics, and fear of crime are examples of data elements that will be included in the catalog.

The second step is to establish a protocol for tracking the metrics on a 28-day cycle. A dimension of this step includes tracking by occurred date rather than reported date (also an element of UCR). Incorporating these changes resolves statistical anomalies found in tracking month to month and eliminates problems associated with delayed reporting. The metrics tracking system (i.e., catalog) will include each of the metrics designed in step one. A critical part of this step is to collect three to five years of data so that a historical perspective may be visualized. Comparing the 13 28-day cycles over three to five years illustrates variation in crime and its seasonality, key elements of predictive analytics.

The third step of the metrics system is to incorporate location-based dashboards. These dashboards will include the measures developed in step one, allowing officers and managers to monitor these measures over time and place. They will include the production of crime and call-for-service hot spots to help direct officers to high-incident locations and provide prolific offender and repeat victimization data relevant to their locations (pulled from the respective offender and victim databases as they go into production).

Enterprise Crime Analysis Server (CA-Server)

An Enterprise GIS crime analysis server was created to store each of the data elements incorporated above and to utilize geospatial data and dashboards. The CA-server hosts a database that tracks key pieces of information about prolific offenders, repeat victims, criminal events, and calls for service. It stores data on which calls turn into crime reports, which reports turn into ongoing investigations versus early case closures, which investigations turn into arrests, which arrests are forwarded for prosecution, and which cases are filed for court or plea-bargained. Understanding the relationship between different phases of the process is a significant element of study. Process mapping and outcomes can be stored in the system so the CAmetrics can be reviewed and continuously improved.

The CA-server hosts historical data used to create operational dashboards, performance metrics (i.e., rates and ratios discussed above), and location-based offender and victim profiles. The CA-server allows TPD to display geographic and temporal hotspots, offender and victim activity spaces, and comparative statistics. Patrol and investigative supervisors and managers can use the dashboards to deliver crime-reduction strategies and monitor neighborhood level results. Ultimately, TPD will determine whether implemented strategies were effective in the target areas. The dashboards allow the department to measure the short-term effects of its efforts, while the 28-day crime cycles allow TPD to measure long-term effects within hot spots and across the city. Using the dashboards to monitor CAmetrics provides ongoing performance measures at the department, police zone/district, and squad levels.

Finally, the CA-server helps track temporal/spatial hot spots to enhance TPD officers' ability to be in the right place at the right time, looking for the most prolific offenders and most likely criminal events. Using the CA-server, TPD hopes to develop a protocol for predictive policing and measuring successes. TPD continues to fund ongoing software and maintenance costs associated with the software, ESRI's Enterprise GIS, and the dashboard solution. Much of this cost is already included in the City's operating budget.

Successes and Challenges

A number of success and challenges resulted from this project. The achievements include the following:

1. Developing a protocol to extract data from the Versadex Records Management System. TPD is now able to pull data that includes calls for service, street checks (i.e., field cards), general offense reports, and arrest bookings. TPD also was able to create SSIS packets to pull the data on regular intervals.
2. Pulling all of TPD's property tables and related information from separate property tables (i.e., articles, alcohol, bicycles, boats, drugs, firearms, jewelry, motors, securities, and vehicles) into a single property table so TPD can query property from a single query.
3. Creating spatial data in SDE layers relatively real time so TPD can map crime, calls for service, arrest, and street checks directly from the crime analysis data warehouse.
4. Creating a prolific offender database by calculating their weighted score helps TPD prioritize serious offenders and export their known activity space for crime series spatial correlation (forthcoming). This offender database will be the protocol for creating the repeat-victim score in the future.
5. Electronically connecting Tableau to TPD's SQL server so the department can create several workbooks and dashboards to assess historical trends. Tableau allows TPD to seamlessly look at temporal data, including the creation of 28-day crime cycles used for CSMs (CompStat-like meetings), and to effortlessly export crime, CFS, street-check, and arrest data from data visualizations (i.e., directly from graphs, charts, and tables) and send them to ArcGIS for spatial analysis. TPD is in the process of collecting five years of data for predictive analytics and statistically significant increases or decreases in crime and CFS over time.
6. The greatest gain came as part of this automation: reducing the time needed to respond to statistical requests from 4 to 6 hours to under 2 hours, many responses now requiring only 15 to 20 minutes. The automation has streamlined TPD's data analysis process.
7. As TPD works on adhering to the results of the President's Task Force on 21st Century Policing, particularly the Pillars—building trust and legitimacy, technology and social media, and community policing and crime reduction—work on the crime analysis metrics is proving both challenging and resourceful. While the department has developed only a handful of measures to assess crime, fear, officer performance, spatial distribution of crime, and calls so far, and has just begun to deliver public-facing dashboards or open data portals regarding police activity, it is hoped that these measures will be put to the test and used to assess efficiency and effectiveness, as well as to keep the public informed. By sharing them with the greater crime analysis community via the CAMetrics Catalog and the toolkit, TPD hopes that other analysts will refine and add metrics to this set of robust measures. It is hoped that this catalog will be published and accessible from the BJA Crime Analysis On-Demand website and on the IACA website to reach as many departments and analysts as possible.

This project provided several challenges, some of which were internal organizational changes that occurred in the midst of the implementation. SPARC's supervisor was promoted to City Hall, and both SPARC analysts took employment outside the unit during this project. One lesson learned was how to deal with such adversity— to hire and train new staff while introducing new systems. On one level, it was easier, since the new analysts were fresh and open to change. On the contrary, the new analysts were not as familiar with TPD datasets and protocols as their predecessors, so the department faced a learning curve as time progressed. Another challenge was working with the City's IT staff members, who were new to Tableau and Tableau server. This application became the backbone for TPD's dashboards, and, at times, experienced delays as IT staff members upgraded the software and installed virtual servers. The big lesson learned here was collaboration and taking it steady as it goes. The final challenge was the realization that this was a hefty, robust project; implementing all of the features was going to be impossible as a result of the above issues. What came out of the efforts included the development of an infrastructure that utilized open applications such as ArcGIS, Tableau, SQL server, and Microsoft Office to leverage a systemic approach on which TPD can continue to grow its capacity.

Conclusions and Implications for Policing

In the end, this was an extremely bold endeavor. Getting the appropriate SMEs and selecting COTS solutions provided TPD with tried-and-true applications, best practices, and the ability to synthesize datasets and leverage analytic experience. It is TPD's hope that other agencies and analysts from across the country will not only learn from this department's experience but take advantage of the tools and techniques incorporated into the toolkit.

References

Ratcliffe, Jerry (2017). *Intelligence-Led Policing*. Portland, Oregon: Willan Publishing.

Santos R. G. and Santos, R. B. (2015). Evidence-based policing, "What works," and Stratified policing, "How to make it work." *Translational Criminology*, 8, 20–22.

Sherman, L. (1995). *Evidence-Based Policing*. Washington, DC: Police Foundation.

17.101 Crime Analysis Unit

Intel & Technology		
	Crime Analysis Unit	General Order 17.101
Issue Date: 10-01-1988	Review Date: 02-11-2013	Revision Date: 03-01-2013

A. Purpose

The function of crime analysis is to **support decision making through short-term, long-term and regional data analysis. Crime Analysts** develop, organize and disseminate information **to support law enforcement responses to in-progress criminal activity, develop leads, effectively deploy resources to suppress crime, and forecast future resource needs based on historical** trends.

B. Definitions

1. **COPLINK - A regional data repository for participating agency records management system data.**

2. **Intelligence - The product of systematic gathering, evaluation and synthesis of raw data on individuals and organization involved in illegal, and usually conspiratorial, activities (e.g., narcotics trafficking, prostitution rings, organized crime, gangs, terrorism, etc.). Information analyzed to determine its meaning and relevance.**

C. Responsibilities

1. Crime Analysis, which is comprised of **the Strategic Planning Analysis and Research Center (SPARC), the Criminal Intelligence Center (**CIC**), and a detective assigned to the East Valley Gang and Criminal Information (EVGCI) Fusion Center,** reports to the OMBR **Administrator**.

2. **Assigned** analysts are responsible for the collection, collation, analysis and dissemination of crime analysis information in the following areas:

   a. Strategic - Concerned with the long-range problems and projections of long-term changes in crime and includes the preparation of crime statistic summaries, resource acquisition and allocation studies, and location specific assessments over time.

   b. Administrative - Focuses on the provision of economic, geographic or social information for police administrative purposes and includes surveys and specialty administration research projects.

c. Tactical - Provides information used to assist operational personnel (patrol and investigative officers) in identifying specific and immediate crime trends, patterns, series, sprees and hot spots in addition to providing investigative leads and clearing cases; analysis includes associating criminal activity by method of the crime, time, date, location, suspect, vehicle and other types of information.

d. **Intelligence - Information is compiled, analyzed and/or disseminated in an effort to anticipate, prevent or monitor criminal activity.**

3. Collection - The collection of data comes from **sources such as the Police Information Network (PIN),** traffic reports or other suitable media. The timeliness of the data is based on the need and use of the reports requiring the data collected.

a. **PIN - Information that may be obtained from PIN includes:**

1) Offense information

a) Geographic factors - **Zone** of occurrence, location and reporting district.

b) Temporal (time) information.

c) Victim, witness and investigative lead information.

d) Location.

e) Property information.

f) Suspect/arrest Information.

2) Computer Aided Dispatch (CAD) **information**

a) Source of the call (i.e., citizen-generated or on-view activity).

b) Type of call.

c) Date and time of the call.

d) Location of the call.

e) Primary Unit responding.

f) Disposition of the call.

b. **COPLINK - Information that may be obtained from COPLINK includes:**

1) **Geographic factors.**

2) **Temporal (time) information.**

3) **Victim, witness and investigative lead information.**

4) **Location.**

5) **Property information.**

6) **Suspect/arrest information.**

4. Collation - The data used in crime analysis is generally entered into statistical programs, spreadsheet or filing programs based on end use and practicality.

5. Analysis - Analysis will be made from a logical, statistically accurate review of the collated data.

a. The data and its intended use will dictate the level of statistical interpretation available.

b. Common tools for analysis include, but are not limited to:

1) Descriptive **statistics**.

2) **Regression analysis**.

3) **Standard deviation.**

4) Analysis of variance (ANOVA).

5) **Geospatial analysis.**

6) **Link, flow and telephone toll analysis.**

7) **Forecasting.**

c. Crime Analysis will use various software programs to manipulate and analyze data. This includes, **but is not limited to**:

1) SPSS (Statistical Package for the Social Sciences)

2) ATAC (Automated Tactical Analysis of Crime)

3) **ARCGIS (Arcview Geographical Information System)**

4) **COPLINK**

5) Access

6) Excel

7) **PowerPoint**

D. Products

1. **Predictive forecasts establishing time and locations for future criminal activity.**

2. **Linkages of like crimes to promote the clearance of cases.**

3. **Allocation, deployment and scheduling studies.**

4. **Federally mandated uniform crime reports.**

E. Dissemination

1. Crime Analysis will disseminate products through a variety of methods, including:

   a. Paper copy.

   b. Electronic mail.

   c. Fax.

   d. Presentation.

   e. Web Page (Internet/Intranet).

2. All products that include sensitive information will be provided to

internal users only and will be clearly marked *Law Enforcement Use Only.*

3. Examples of Crime Analysis Bulletins:

    a. The Uniform Crime Report (UCR) - Produced monthly to illustrate the type and geographic distribution of crime occurrences. The UCR is organized by crime type and location. It contains the following fields of information:

        1) Location of occurrence, including **zone** and specific address.

        2) Type of occurrence (e.g., burglary, robbery, etc.).

    b. Tactical Crime Bulletins - Produced on an as needed basis (at least monthly). The Tactical Crime Bulletins identify crime trends through, but are not limited to the following:

        1) Modus Operandi.

        2) Crime type.

        3) Physical evidence/property.

        4) Suspect description.

        5) Vehicle description.

        6) Geographic factors.

        7) Temporal factors.

        8) Victim descriptors.

        9) Problem oriented or community policing strategies.

4. Other crime analysis reports and distribution areas:

    a. **Strategic Plan - Department wide.**

    b. Annual Report - Department wide.

5. Information will normally be distributed to Assistant Chiefs/**Director** and Commanders/Bureau Managers, who will in turn be responsible for the dissemination of the information within their work areas.

- Additional reports may be generated on an as needed basis for special projects and will be distributed to the requesting party.

6. Dissemination of crime analysis information to sources outside the Department will be made in the interest of enhancing public awareness and generating community support.

    a. Most generic crime analysis information can be obtained by the community from the Tempe City Government Web site.

    b. Information regarding operational needs of the Department (e.g., known offenders, MO information, suspects and investigative leads) shall be carefully controlled in the distribution to outside sources.

        - Distribution may be made to other criminal justice agencies and components of the criminal justice system.

7. The effectiveness and use of crime analysis information will be documented by the work areas receiving the information.

F. Feedback

1. Crime Analysis **workgroups** will be responsible for acquiring pertinent feedback from end-users in regard to crime analysis products.

2. The feedback **may** be collected through:

    a. Requests for critique and suggestions from both internal and external users.

    b. Focus group interviews with all levels of police employees.

Tempe, AZ Police Department: Logic Model 2017

Resources	Activities	Outputs	Short-Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
$300,000 cash; Full Police RMS (Versadex); 26 years of Crime Analysis Agency Experience; Robust local and International Crime Analysis Association; Arizona State Unversity GIS Department; Experienced City IT/GIS Department Staff; Crime data; arrest data; knowledge of project and agency personnel; research on what is effective for offender-focused strategies; Academic Experience in Criminology, Public Adminstration; GIS and Policing.	Build Prolific Offender Database	Reports on top offenders, maps related to Activity Space	Generate top offender lists for various types of intervention	Use activity space analysis to resolve crime patterns; Interupt repeat offender activity	Reducing crime in hot spots; reduce crime commited by repeat offenders; more rapid intervention in crime patterns; improve efficiency and effectiveness of police operations; conduct pre-post assessments; and Improve our clearance rates
	Develop a protocol to identify repeat victims and target hotspots (prototype scenarios)	Reports on repeat victims and produce profiles of hotspots	Produce anlytical reports that support targeted interventions for people and places	Create protocols for action plans for patrol and other operational units	
	Create a set of Crime Analysis metrics – using 28 Day Crime Cycles and Effectiveness Benchmarks	Develop a catalog of innovative measures for crime reduction and police performance	Develop the models and formulas for these measures; provide a list of potential metrics and performance measures for professional review	Produce: better measures of social harm, crime stats by demographics, police activity, improved comparative measures, and measures of change	
	Build a CA-Server, Enterprise GIS Server and several Dashboards/Location-based Applications for delivery of above information	SQL Server data warehouse, GIS SDE spatial server, and client interface that fully serve the other activities of the project	Stand up the hardware and software.	Integrate data connections and data entry into crime analysis processes and products	
	Develop the Crime Analysis Toolkit	Provide a mechanism to offer applications, processes, procedures and policies for enhancing crime analysis	Collect protocols, data dictionaries, database structures, checklists, step-by-step procedures for achieving activities 1-4 above	Create and disseminate the toolkit	

City of Tempe - Crime Trend Report

Crime Every 28 Days

AVG / +1 SD	CITYWIDE CRIMETYPE	OCCYR	JAN1 - JAN28	JAN28 - FEB25	FEB26 - MAR25	MAR26 - APR22	APR23 - MAY20	MAY21 - JUN17	JUN18 - JUL15	JUL16 - AUG12	AUG13 - SEP9	SEP10 - OCT7	OCT8 - NOV4	NOV5 - DEC2	DEC3 - DEC30	YTD	YTD-AVG +/-	PACE
0.6	MURDER	2013	0	0	1	0	1	1	0	1	0	0	0	0	1	5		5
		2014	0	0	1	0	1	0	1	0	2	0	1	1	1	8	6.3	8
1.2		2015	0	0	1	1	1	1	0	0	0	0	2	0	0	6		6
	Manslaughter - Homicide	2016	1	1	1	0	1	0	1	2	2	0	1	0	0	10	3.7	10.0
7.5	RAPE	2013	5	5	8	6	4	4	3	5	6	7	5	5	4	67		67
		2014	10	9	6	5	6	5	4	5	9	10	12	6	2	89	84.3	89
10.7		2015	8	9	7	8	9	7	6	8	7	12	7	5	4	97		97
		2016	11	7	10	14	6	15	6	11	16	15	10	9	8	138	53.7	138.0
15.6	ROBBERY	2013	16	14	15	16	24	19	17	8	13	16	21	21	24	247		224
		2014	11	9	10	13	9	20	22	11	7	15	12	7	16	162	198.9	162
20.7		2015	18	5	10	15	17	11	23	7	14	25	12	10	21	188		188
	Armed Robbery - Strong Armed Robbery	2016	18	14	17	13	21	18	21	22	22	21	14	19	18	238	39.1	238.0
18.7	NON-DV AGG ASSAULT	2013	26	14	14	25	19	16	15	18	24	13	11	15	28	238		238
		2014	15	18	11	26	26	21	22	20	26	15	17	15	10	242	235.0	242
23.5		2015	12	14	23	24	16	20	10	16	21	21	18	13	17	225		225
		2016	15	17	26	20	23	20	28	21	17	21	19	20	21	268	33.0	268.0
10.9	DV AGG ASSAULT	2013	10	7	7	10	20	13	9	12	14	13	13	6	6	154		140
		2014	15	10	14	11	8	19	7	12	14	9	9	5	15	148	145.4	148
14.1		2015	9	8	11	11	12	9	15	11	9	8	13	10	8	134		134
	DV Agg Assault - Agg Assault Family Violence	2016	8	8	10	17	9	14	10	9	14	11	13	10	14	147	1.6	147.0
77.1	RES BURG-YARD	2013	86	89	88	116	98	92	82	93	74	76	66	73	106	1139		1139
		2014	106	80	71	68	67	77	77	66	55	68	72	80	72	959	1012.3	959
90.1		2015	60	73	82	70	87	56	73	63	85	83	76	68	63	939		939
	Res Burg - Res Burg from Yard	2016	76	71	76	71	96	71	94	77	75	67	68	52	80	974	-38.3	974.0
25.7	NON-RES BURG-YARD	2013	30	28	19	30	26	24	30	19	27	13	28	35	29	370		338
		2014	26	25	20	23	24	34	36	27	19	26	49	15	27	351	351.5	351
32.4		2015	32	12	30	22	15	28	25	24	17	23	37	39	29	333		333
	Non-Res Burg - Non-Res Burg from Yard	2016	26	23	19	22	23	28	30	23	16	27	22	25	30	314	-37.5	314.0
133.1	VEHICLE BURGLARY	2013	104	115	109	137	116	104	124	113	118	108	142	124	130	1544		1544
		2014	135	104	110	111	109	122	136	148	143	206	162	128	114	1728	1668.7	1728
155.4	Burg from Vehicle - Theft from Vehicle - Theft of License Plate - Theft of Vehicle parts	2015	132	161	173	145	139	108	98	113	140	128	116	136	145	1734		1734
		2016	189	161	163	153	130	131	143	115	153	135	146	152	145	1916	247.3	1916.0
107.2	SHOPLIFT	2013	95	91	93	103	69	75	63	64	73	93	93	99	96	1107		1107
		2014	95	98	105	108	106	82	114	116	145	130	108	130	135	1472	1343.3	1472
127.6		2015	115	91	130	107	122	88	103	94	91	120	153	136	101	1451		1451
		2016	135	119	121	126	118	128	108	118	130	124	82	117	117	1543	199.7	1543.0
47.7	THEFT OF BICYCLE	2013	38	64	45	39	59	55	31	47	60	71	73	64	56	702		702
		2014	72	40	50	61	52	32	41	25	40	65	58	52	51	639	630.3	639
59.4		2015	42	39	52	33	43	38	30	39	35	41	67	54	37	550		550
		2016	44	29	46	47	50	46	35	43	56	60	48	42	41	587	-43.3	587.0
36.0	MOTOR VEHICLE THEFT	2013	43	41	32	43	53	31	32	24	47	29	41	50	46	512		512
		2014	34	24	23	27	34	55	41	32	27	42	48	49	28	464	467.7	464
44.5		2015	23	26	21	35	41	20	26	34	37	43	43	37	41	427		427
	Motor Vehicle or Trailer Theft	2016	42	32	29	31	36	37	37	29	49	41	37	36	33	469	1.3	469.0

28 Day - Crime Cycle | YTD: RED means significantly above normal & # > YTD-AVG

Red values in the Crime Cycle Cells are significantly above normal.
Red under YTD shows how many incidents YTD are above average YTD.

01/04/2017 Report Ran
Citywide Crime by CC.xlsx

City of Tempe - Crime Trend Report

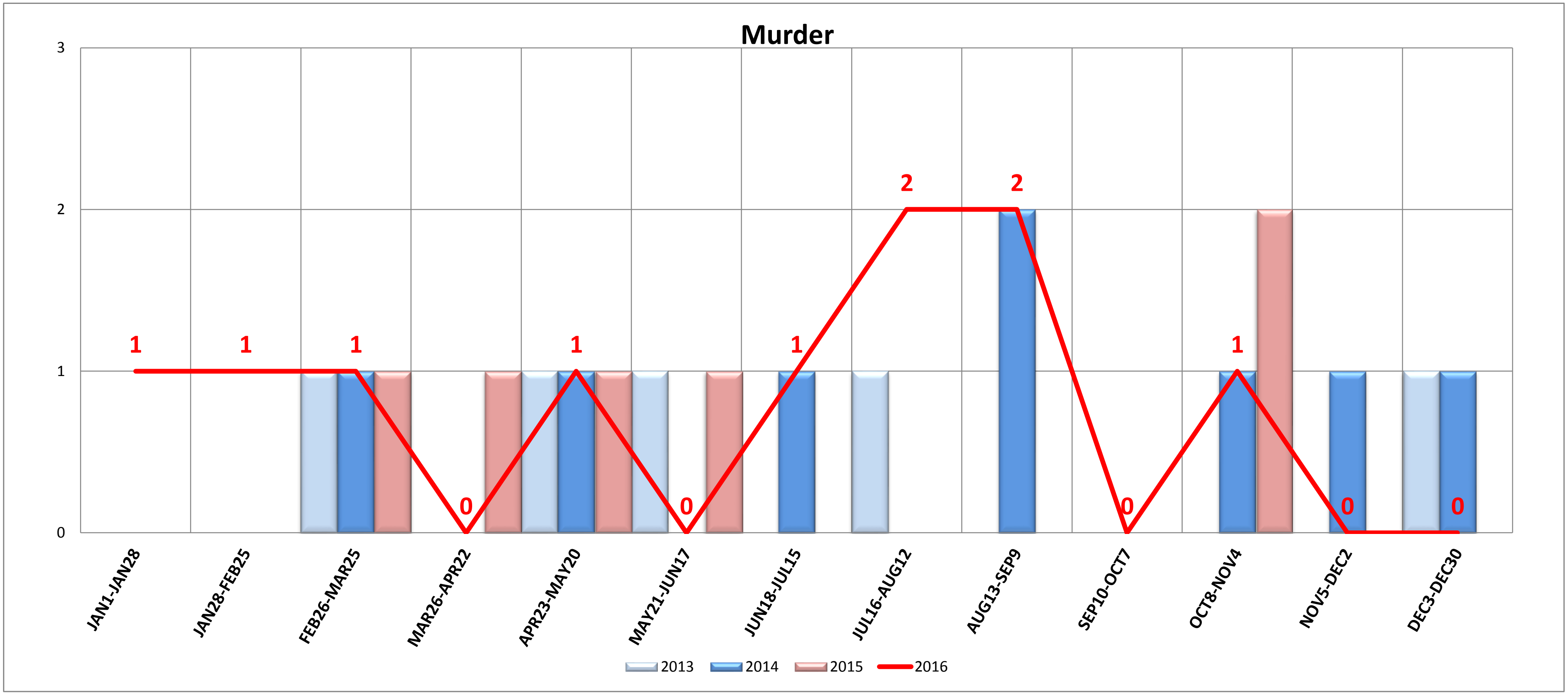
Crime Every 28 Days

AVG / +1 SD	CITYWIDE CRIMETYPE	OCCYR	JAN1 - JAN28	JAN28 - FEB25	FEB26 - MAR25	MAR26 - APR22	APR23 - MAY20	MAY21 - JUN17	JUN18 - JUL15	JUL16 - AUG12	AUG13 - SEP9	SEP10 - OCT7	OCT8 - NOV4	NOV5 - DEC2	DEC3 - DEC30	YTD	YTD-AVG +/-	PACE
3.3	ARSON	2013	2	5	3	2	2	1	6	1	4	1	2	2	5	36		36
		2014	2	1	3	7	7	3	0	3	3	3	1	3	2	38	46.0	38
5.6		2015	4	3	1	7	10	3	4	8	8	9	3	3	1	64		64
	Arson Mobile - Other Property - Structure	2016	1	4	2	2	2	5	7	3	2	3	2	1	0	34	-12.0	34.0
79.2	NON-DV ASSAULT	2013	83	83	64	71	88	67	88	53	73	83	89	69	63	974		974
		2014	61	89	70	88	85	76	80	68	77	87	90	61	69	1001	1009.7	1001
91.8		2015	64	69	79	84	86	81	71	77	83	125	93	83	59	1054		1054
		2016	79	80	99	88	94	76	76	75	83	95	99	86	58	1088	78.3	1088.0
78.5	DV ASSAULT	2013	59	64	82	86	78	89	58	68	84	72	85	68	69	962		962
		2014	86	85	93	87	88	110	78	80	92	84	86	54	80	1103	1018.0	1103
89.5		2015	79	74	71	85	64	81	77	75	84	74	79	78	68	989		989
	Family Violence	2016	85	81	80	85	86	83	98	52	95	70	78	68	69	1030	12.0	1030.0
146.5	CRIMINAL DAMAGE	2013	143	173	150	160	152	151	158	172	175	143	159	142	154	2032		2032
		2014	135	147	156	152	151	159	148	124	147	171	167	136	135	1928	1930.7	1928
161.2	Agg Criminal Damage - Criminal Damage - Criminal Damage Vehicle	2015	146	148	157	153	134	136	136	119	139	134	159	127	144	1832		1832
		2016	124	162	134	153	161	124	123	108	145	133	151	143	165	1826	-104.7	1826.0
51.6	TRESPASS	2013	46	57	61	53	48	51	55	51	51	35	57	49	54	668		668
		2014	56	52	38	56	51	31	38	46	54	51	45	43	55	616	661.0	616
59.9		2015	56	49	41	41	49	46	55	51	58	66	71	51	65	699		699
		2016	43	47	53	63	69	49	52	47	46	68	50	64	47	698	37.0	698.0
13.1	UNLAWFUL SEXUAL BEHAVIOR	2013	6	10	13	11	14	13	15	15	12	13	8	21	7	158		158
		2014	9	14	9	19	8	15	34	13	18	22	21	13	9	204	172.3	204
18.4	Indecent Exposure, Other Sex Offense, Pornography, Prostitution, Public Sex Indecency, Sex Abuse, Peeping Tom, Surrepticious Viewing	2015	11	12	15	12	9	12	13	17	19	18	5	9	3	155		155
		2016	15	18	9	12	20	19	10	6	11	17	11	7	7	162	-10.3	162.0
389.3	ACCIDENTS	2013	315	379	402	373	350	300	263	298	384	379	436	341	323	4543		4543
		2014	318	373	436	399	375	322	280	307	371	378	459	408	358	4784	4901.3	4784
450.1		2015	368	467	454	421	459	347	351	336	412	455	469	468	370	5377		5377
	Fatality - Hit and Run - Injury - No Injury	2016	427	456	471	452	430	330	323	383	483	489	501	460	337	5542	640.7	5542.0
90.5	DUI	2013	116	70	87	62	104	112	102	99	170	110	100	99	129	1360		1360
		2014	101	105	105	93	114	92	115	77	119	94	88	82	112	1297	1266.0	1297
112.3		2015	108	99	98	67	88	68	96	76	106	76	75	86	98	1141		1141
	Aggravated - Drugs - Liquor	2016	80	81	67	52	70	89	70	77	81	50	79	43	69	908	-358.0	908.0
4.7	AGGRAVATED ASSAULT-POLICE OFC (RMS)	2013	8	5	8	4	3	6	6	11	1	10	2	1	3	68		68
		2014	4	3		2	3	4	2	5	3	4	8	2	3	43	60.7	43
7.2		2015	3	7	4	3	7	8	6	6	10	5	4	3	5	71		71.0
		2016	2	6	5	2	5	1	9	5	4	7	4	5	5	60	-0.7	60.0

RED means significantly above normal & # > YTD-AVG

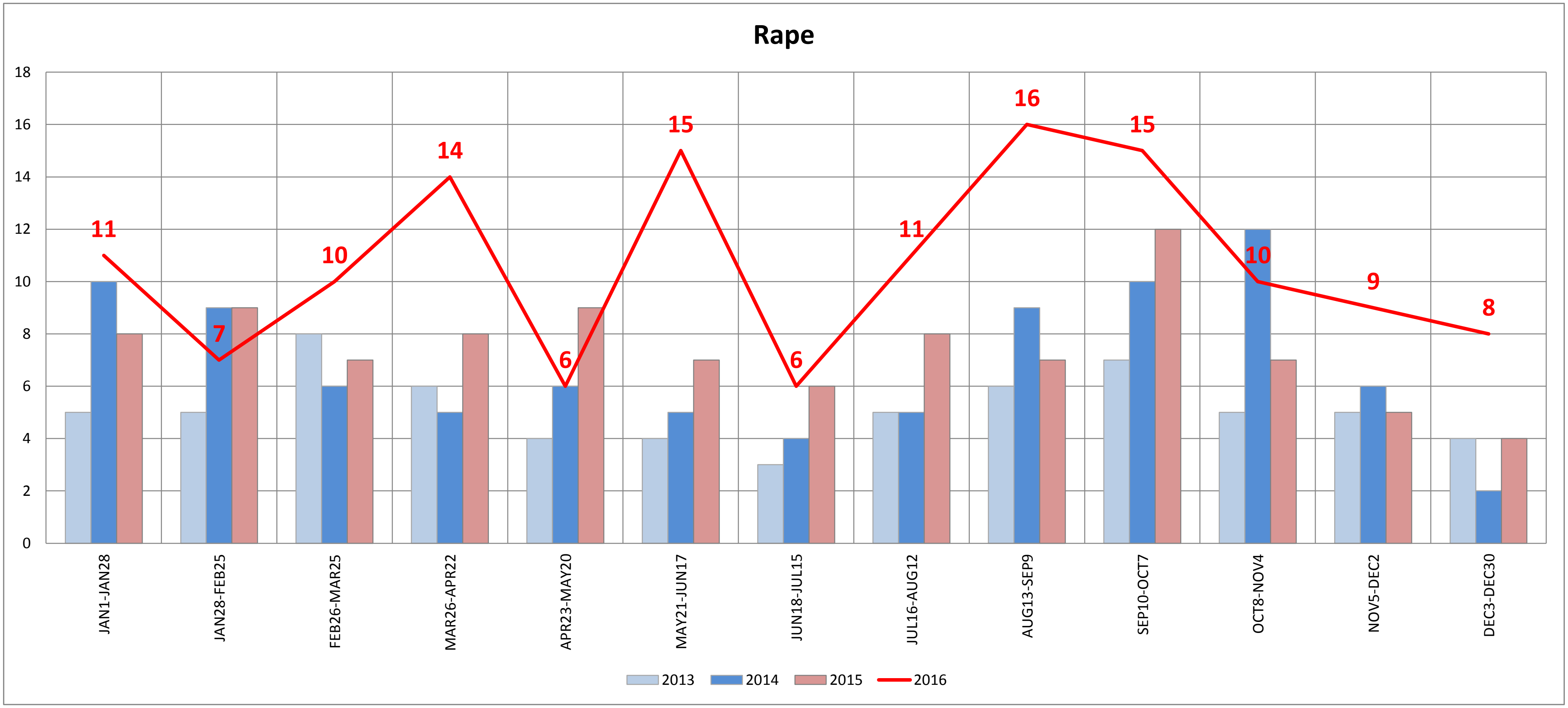
Red values in the Crime Cycle Cells are significantly above normal.
Red under YTD shows how many incidents YTD are above average YTD.

City of Tempe - Citywide
Murder Trends



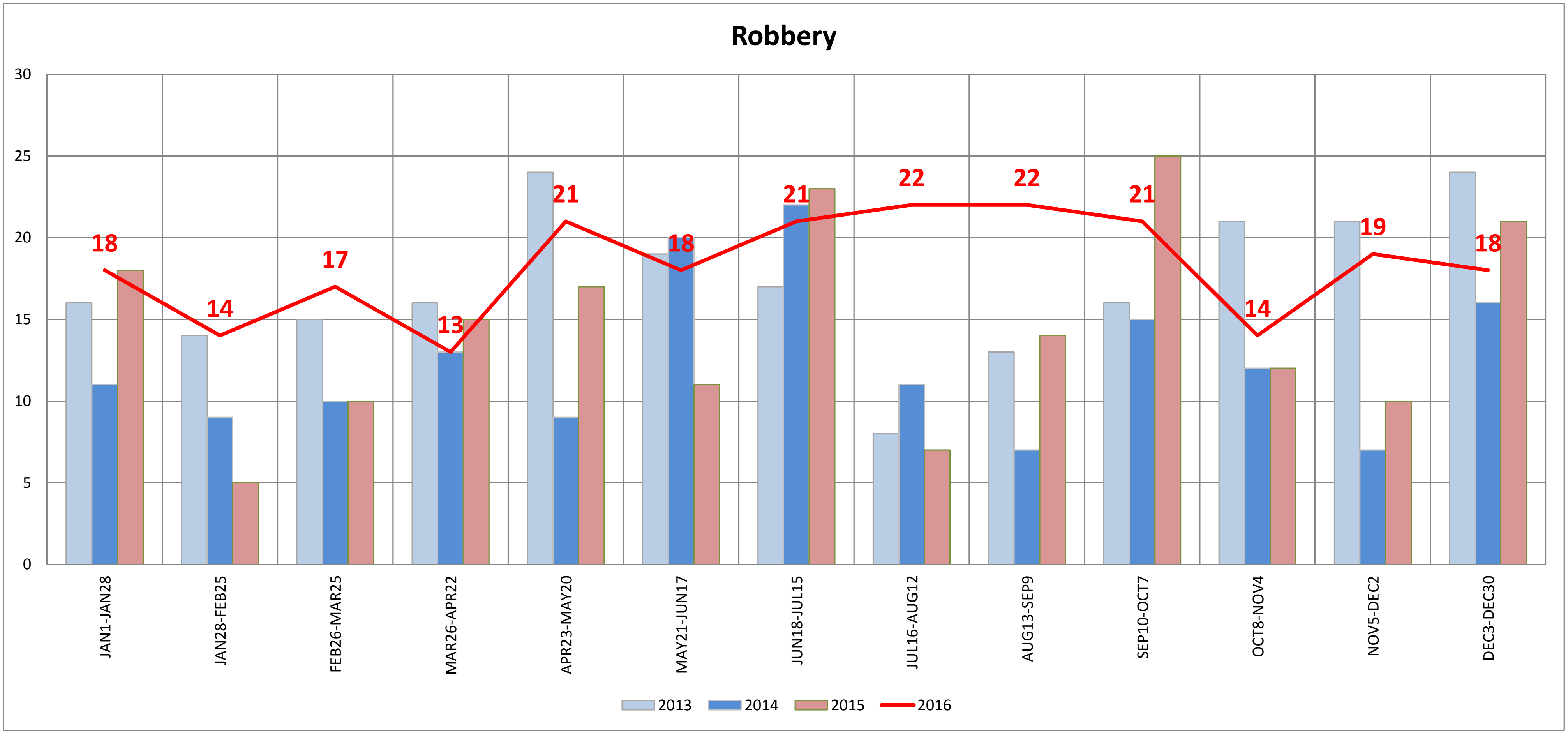
AVG	0.6	ACTION
+1 S.D.	1.2	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Rape Trends



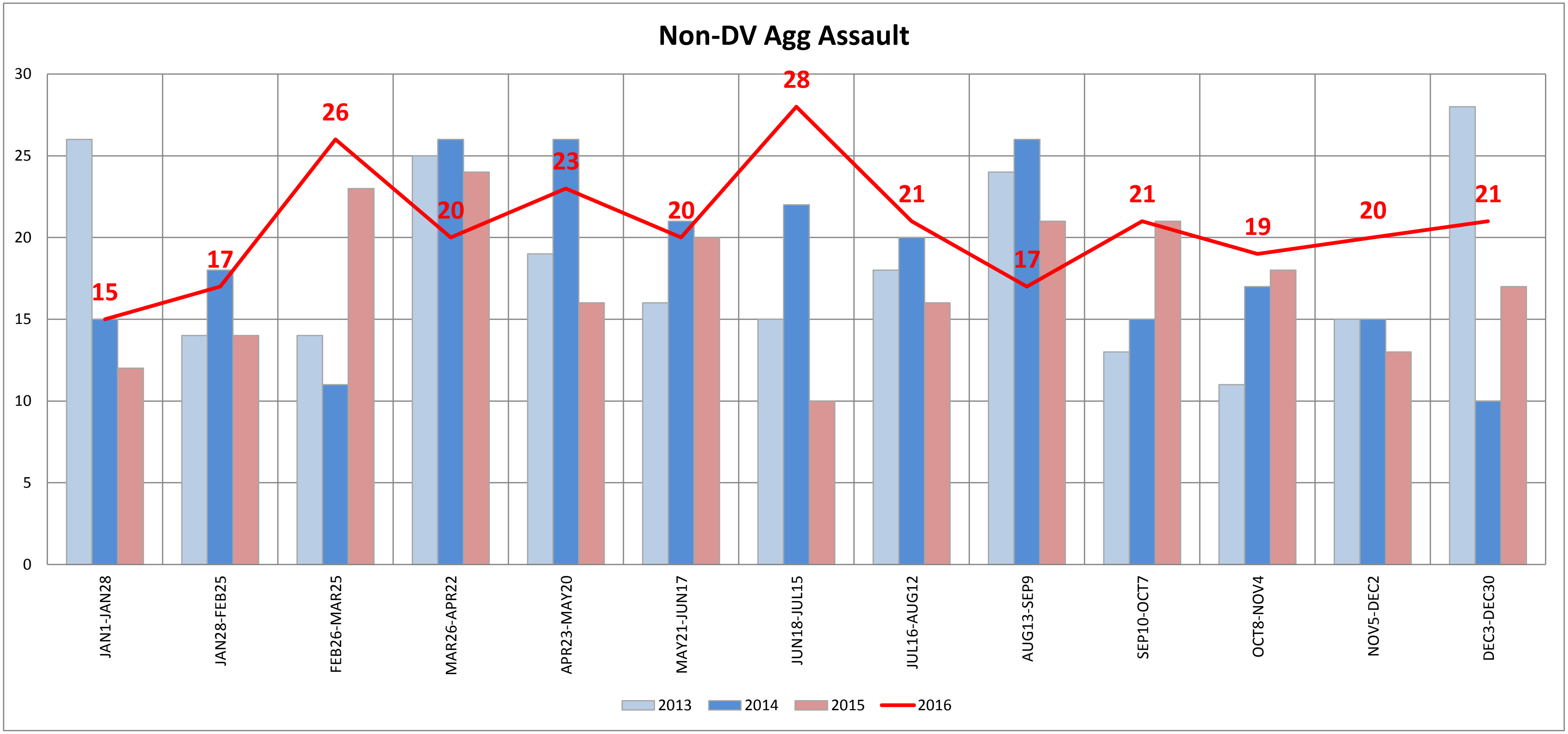
AVG	7.5	**ACTION**
+1 S.D.	10.7	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Robbery Trends



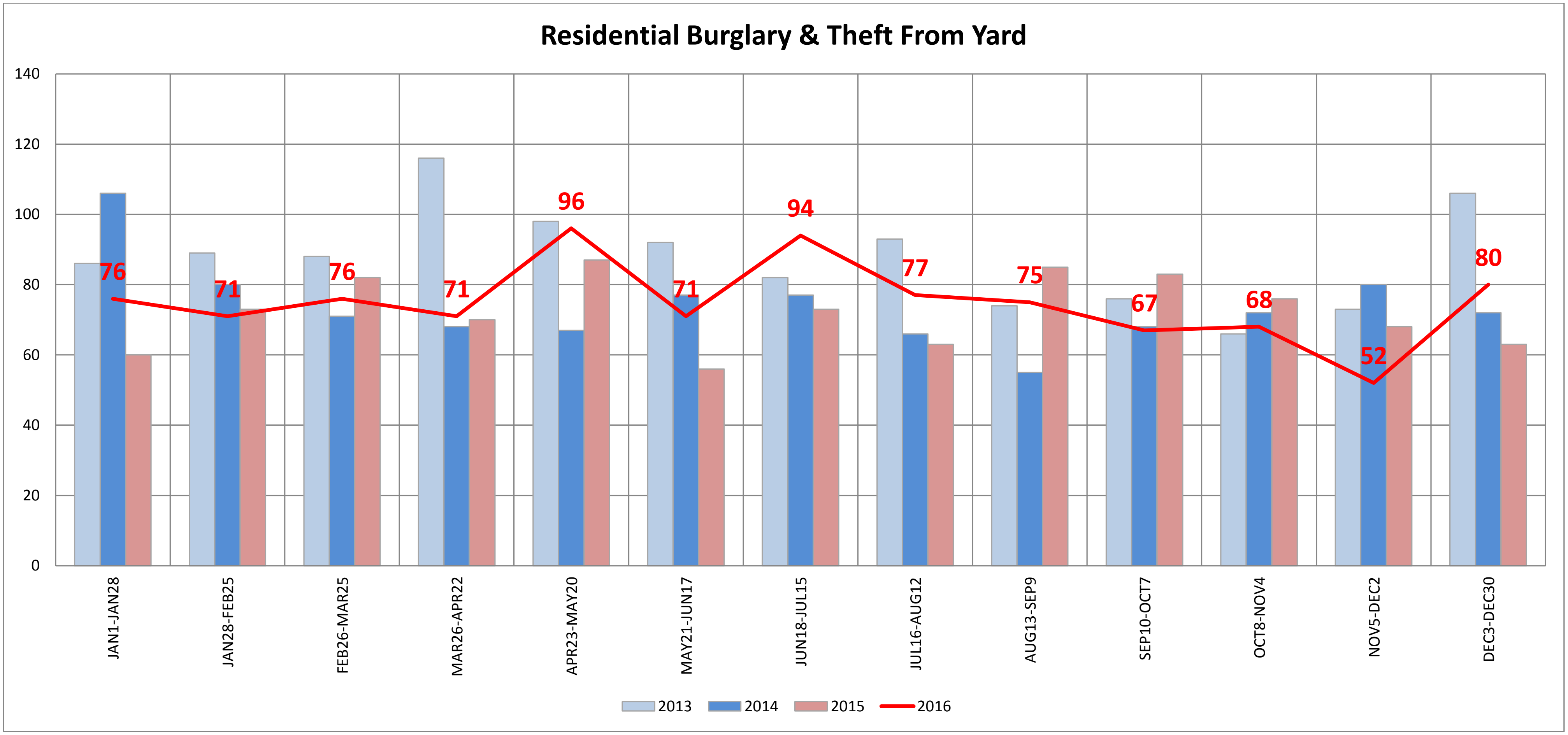
AVG	15.6	ACTION
+1 S.D.	20.7	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

CIty of Tempe - Citywide
Non-DV Aggravated Assault Trends



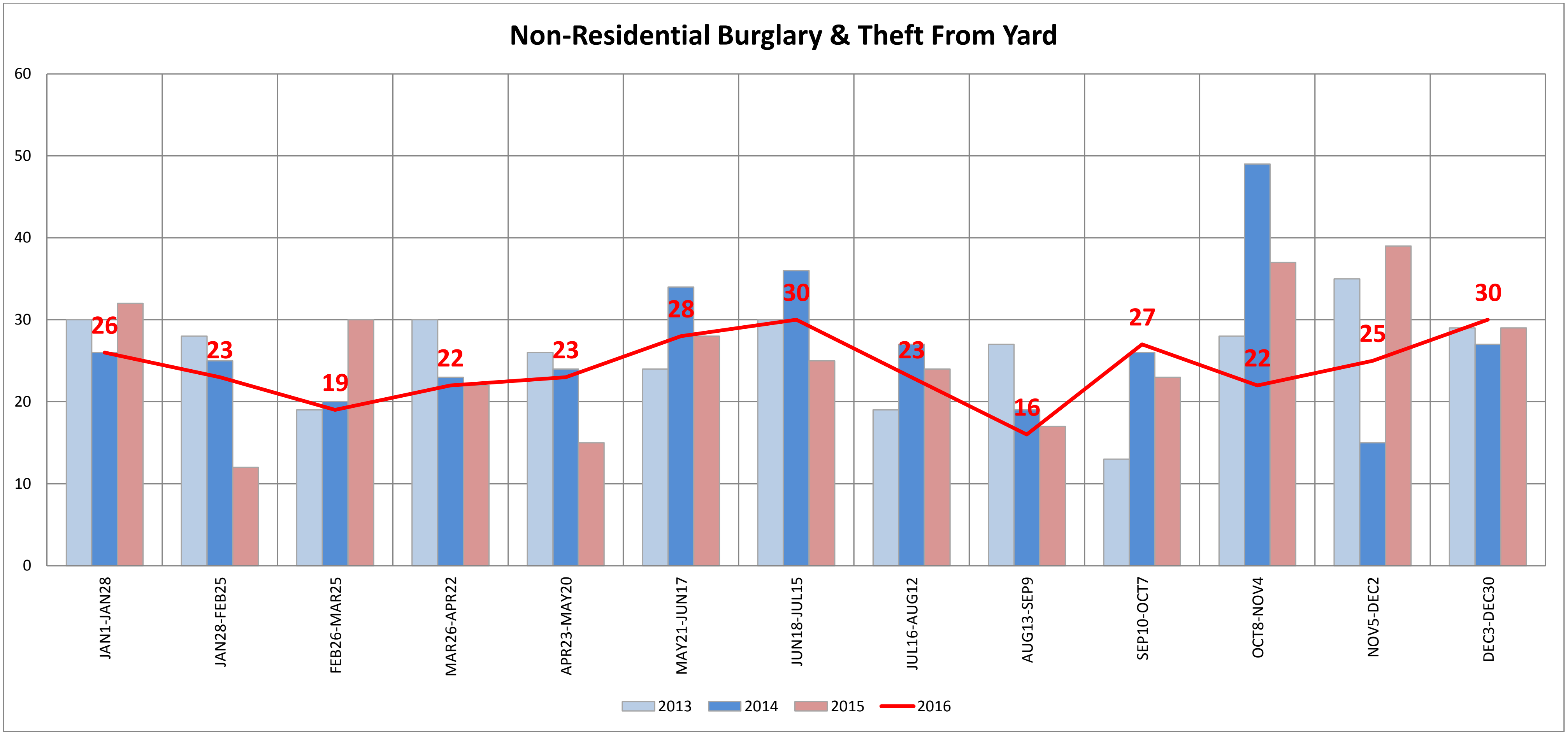
AVG	18.7	ACTION
+1 S.D.	23.5	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Residential Burglary and Theft From Yard Trends



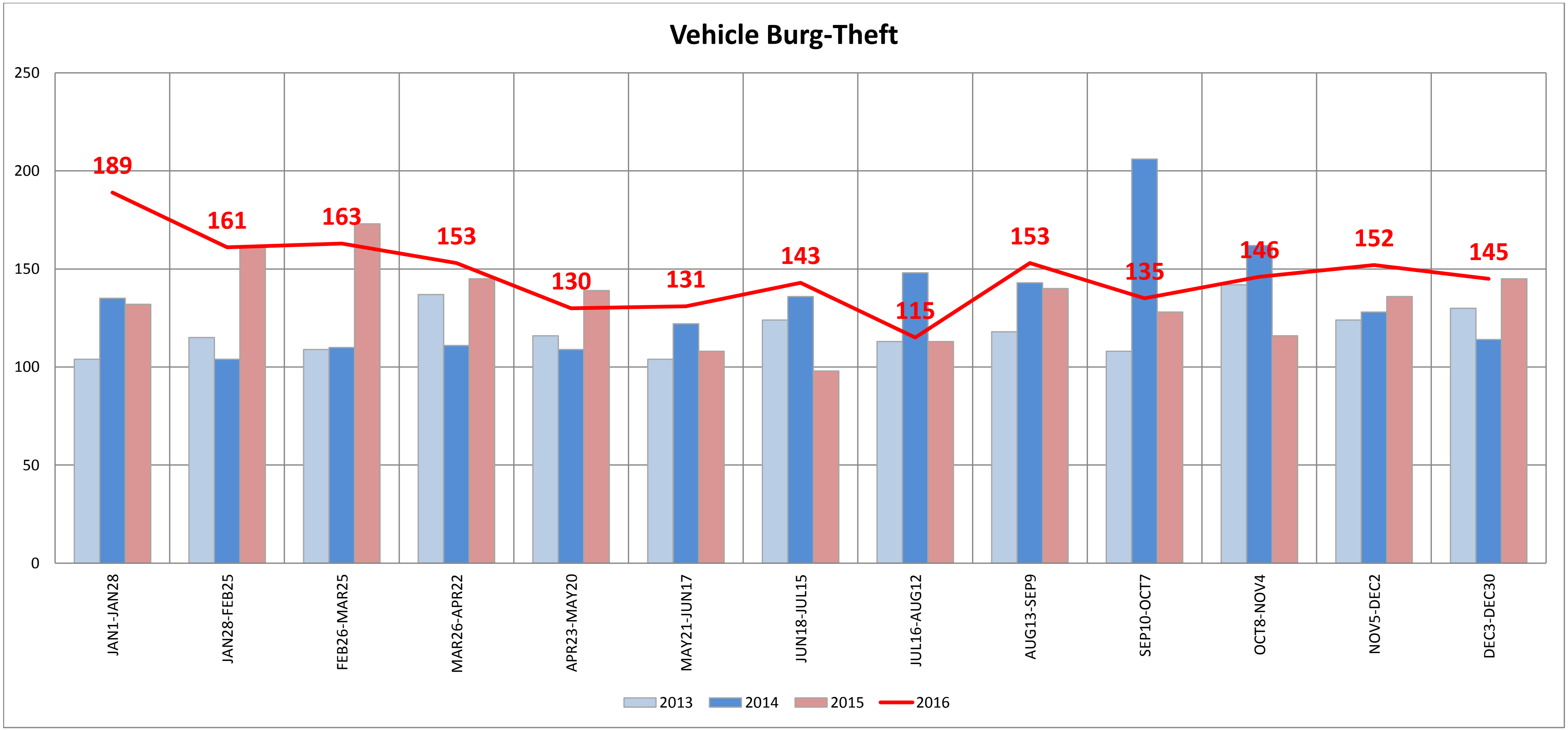
AVG	77.1	**ACTION**
+1 S.D.	90.1	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Non-Residential Burglary and Theft From Yard Trends



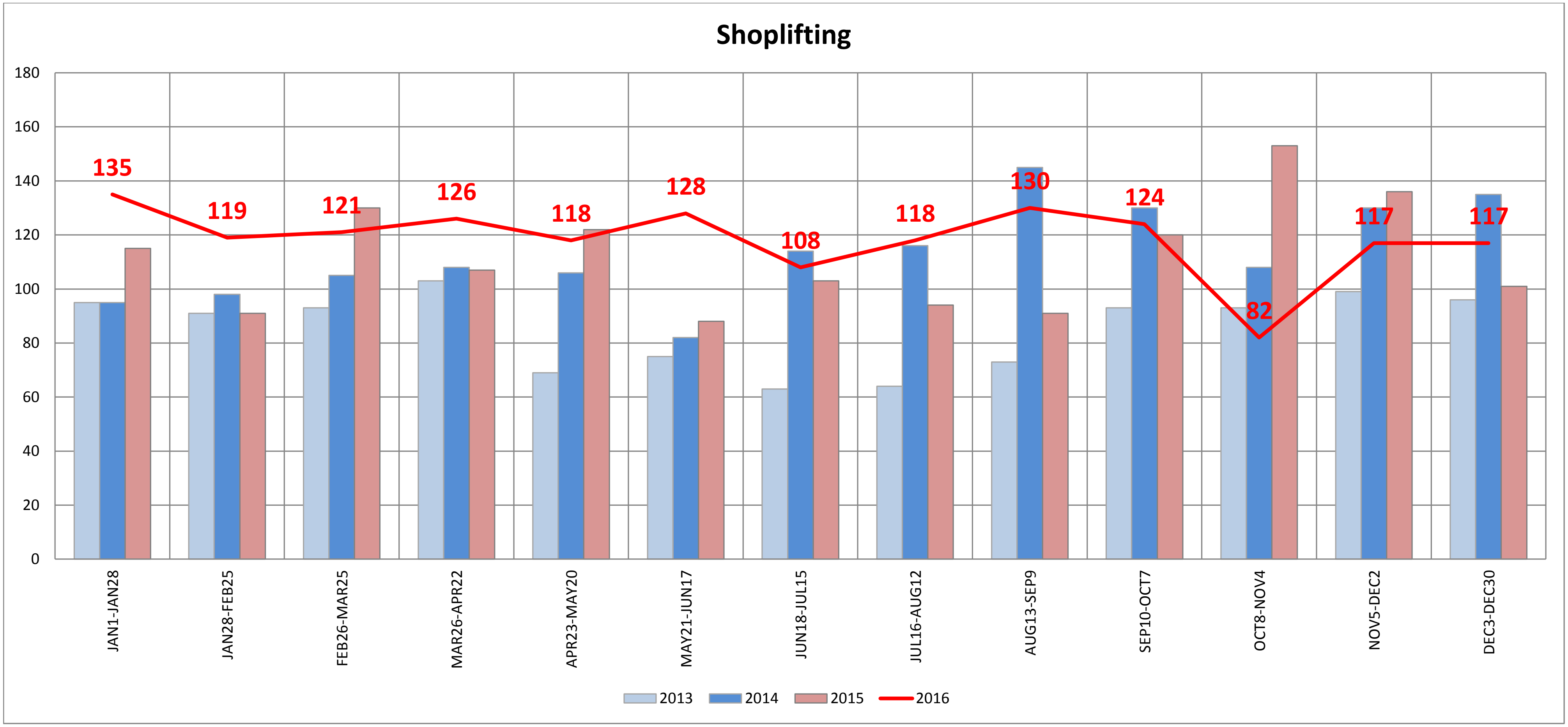
AVG	25.7	**ACTION**
+1 S.D.	32.4	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Burglary and Theft From Vehicle Trends



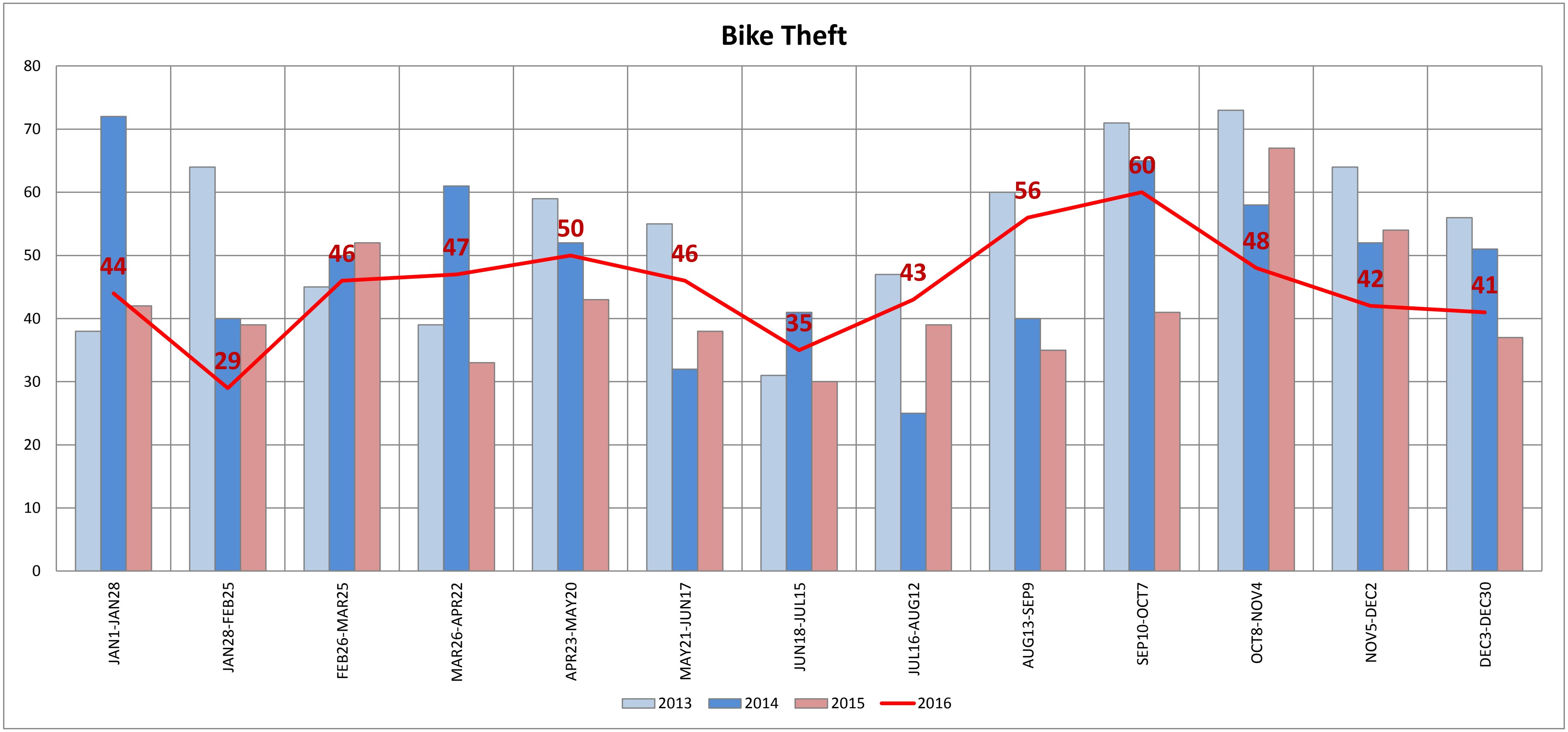
AVG	133.1	**ACTION**
+1 S.D.	155.4	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Shoplift Trends



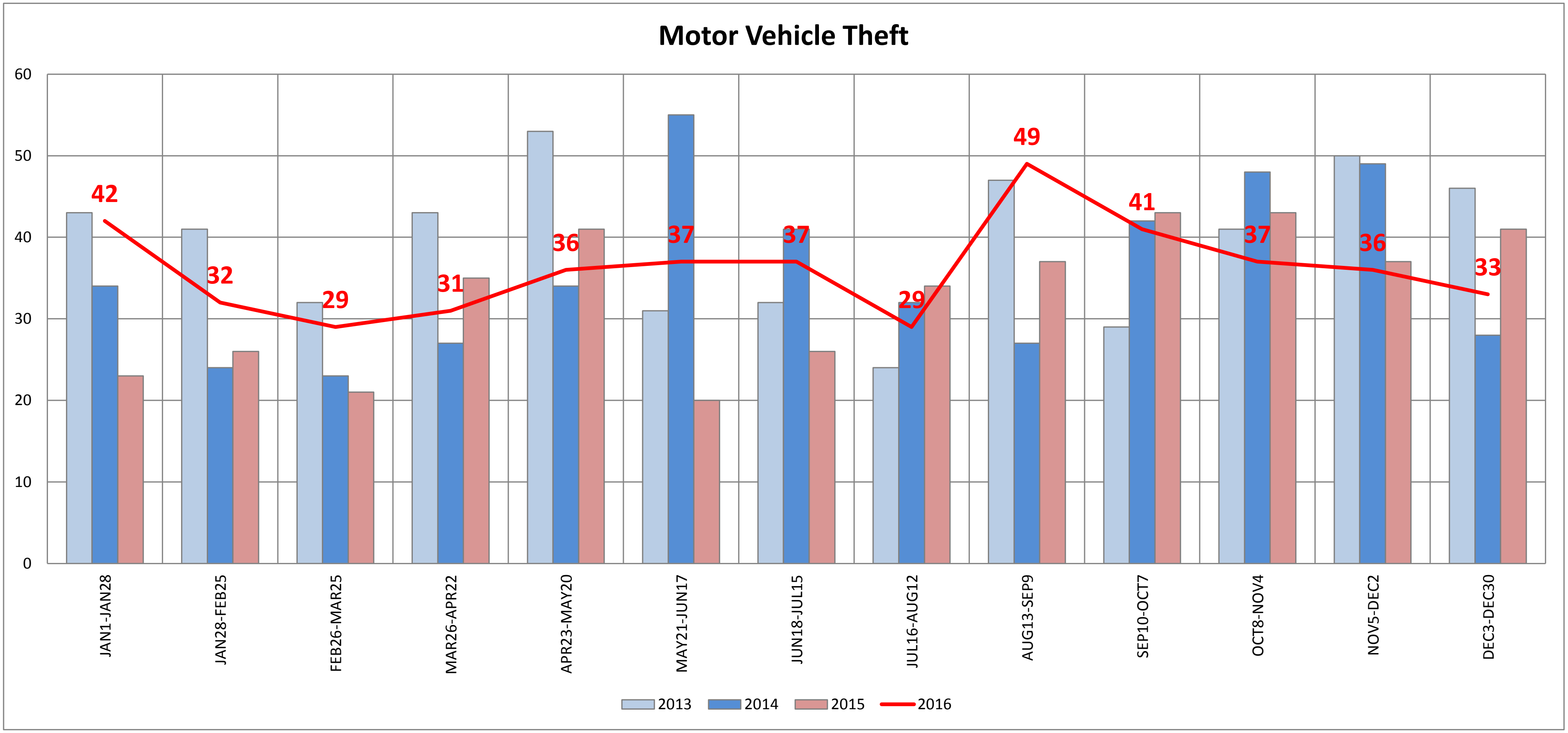
AVG	107.2	**ACTION**
+1 S.D.	127.6	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Theft of Bicycle Trends



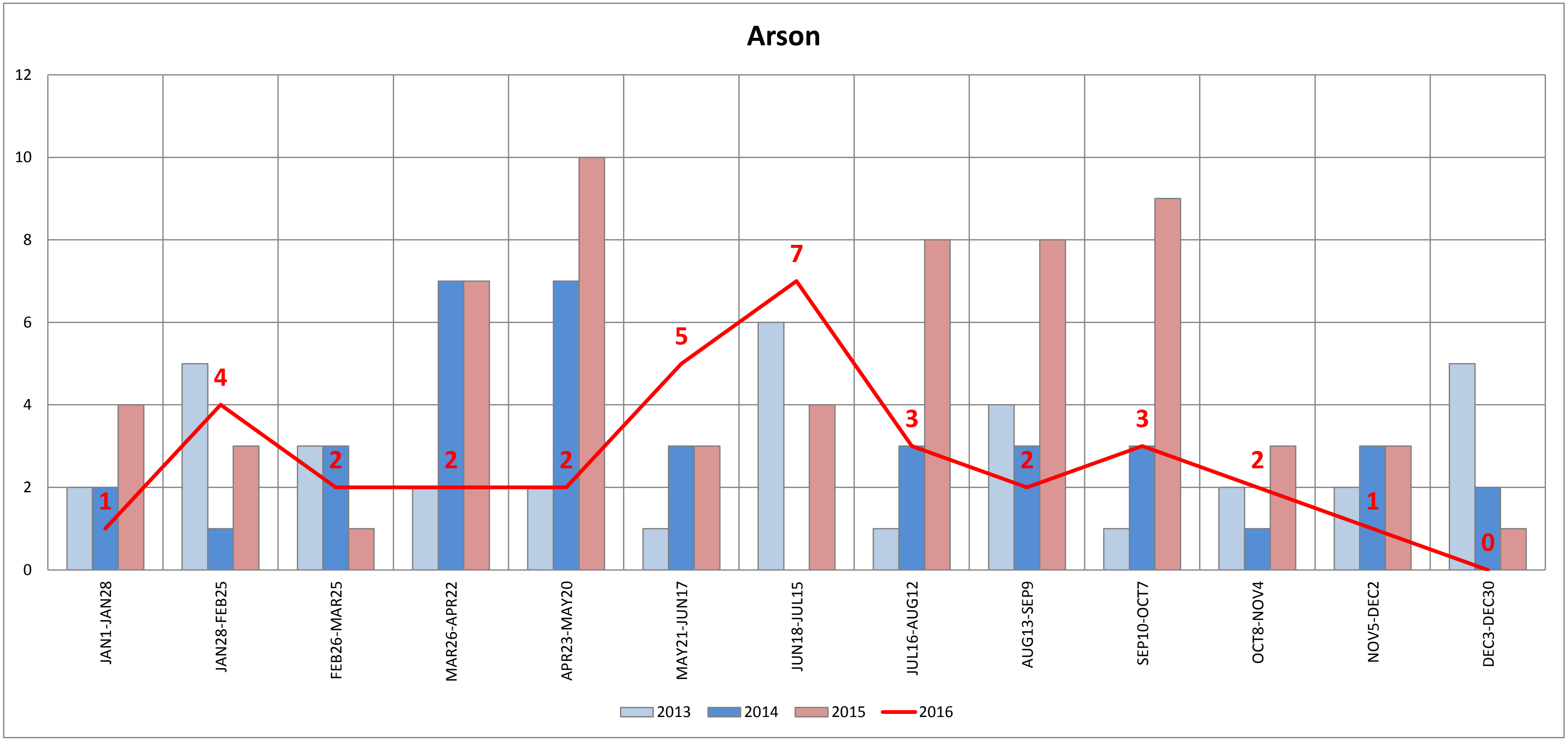
AVG	47.7	ACTION
+1 S.D.	59.4	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Motor Vehicle Theft Trends



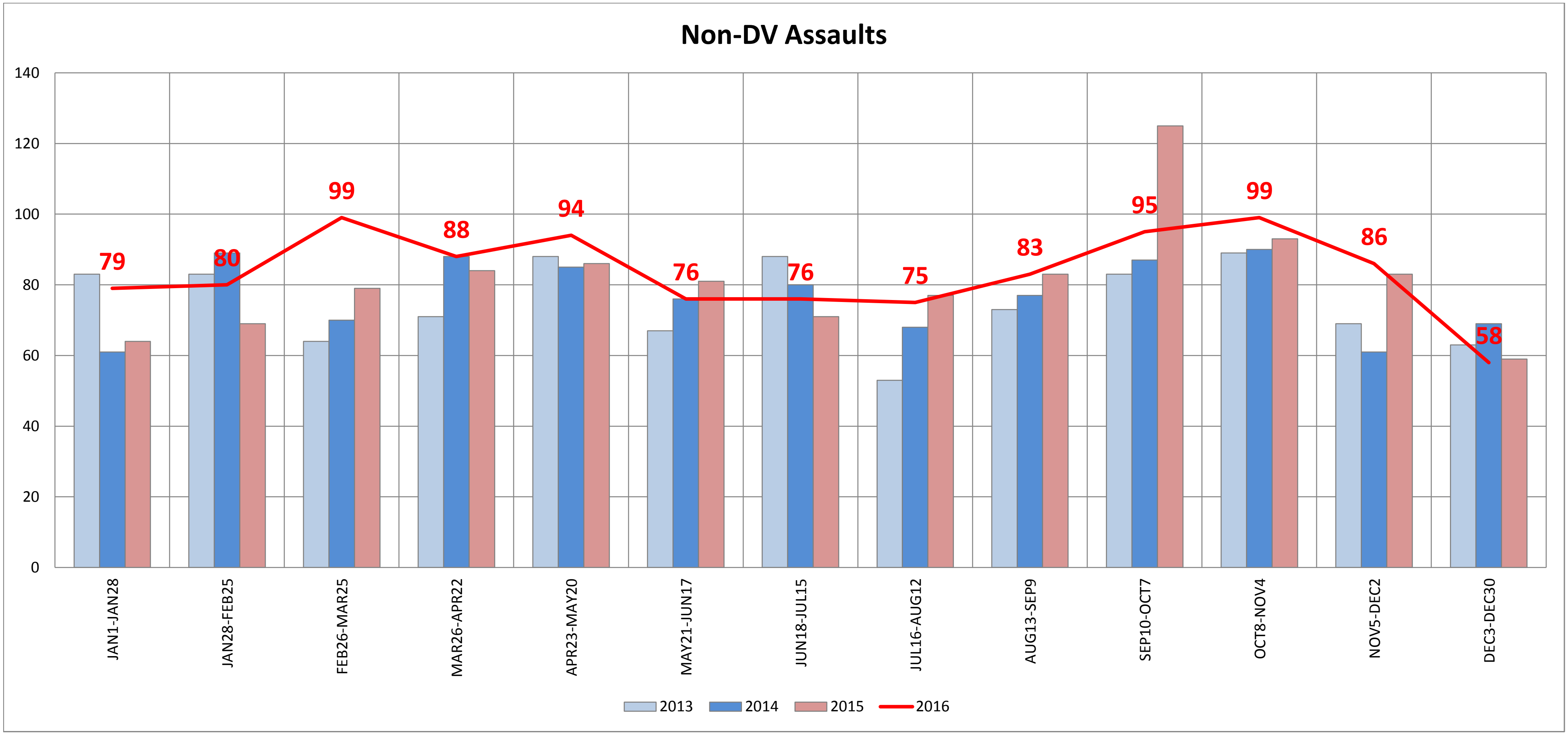
AVG	36.0	ACTION
+1 S.D.	44.5	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Arson Trends



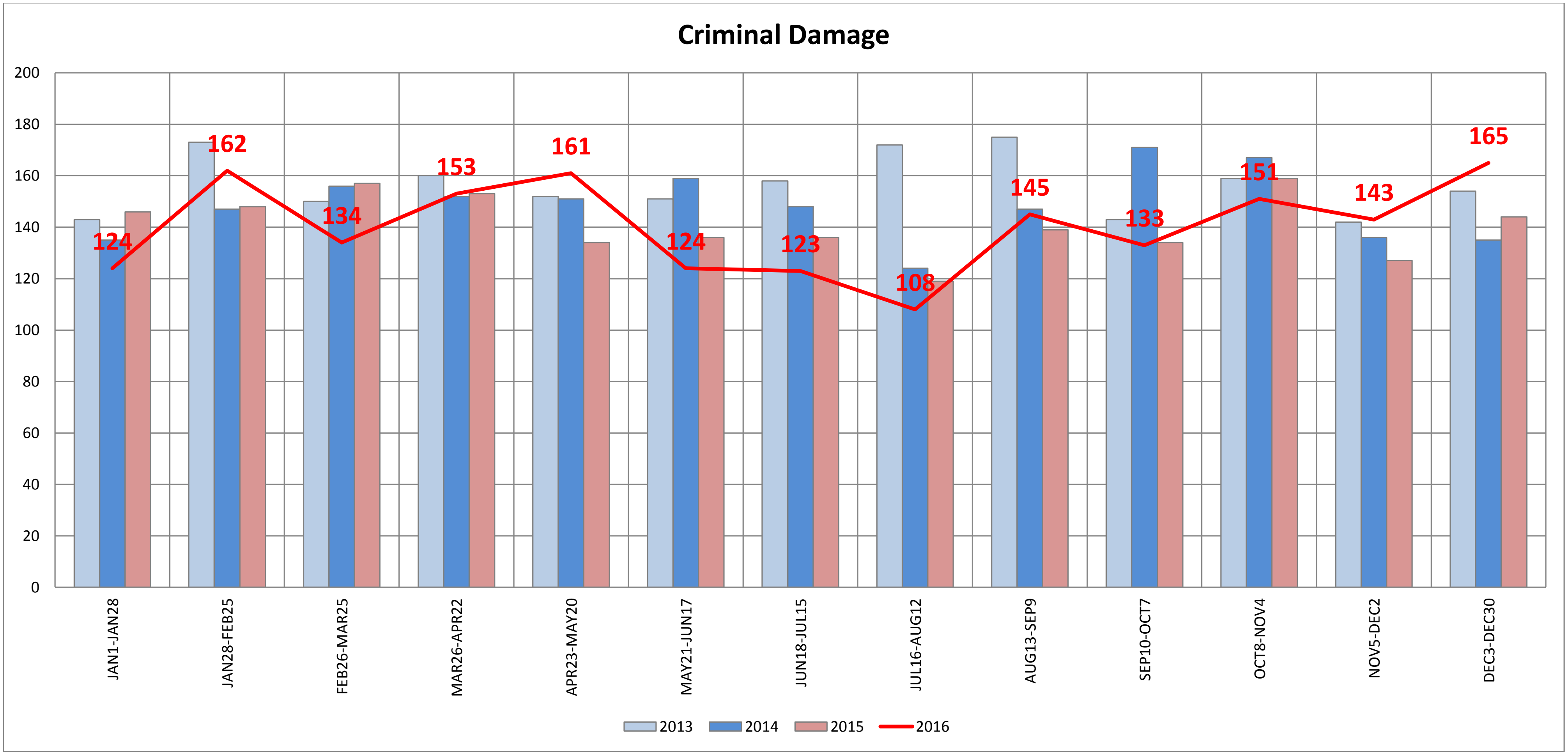
AVG	3.3	**ACTION**
+1 S.D.	5.6	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Non-DV Assault Trends



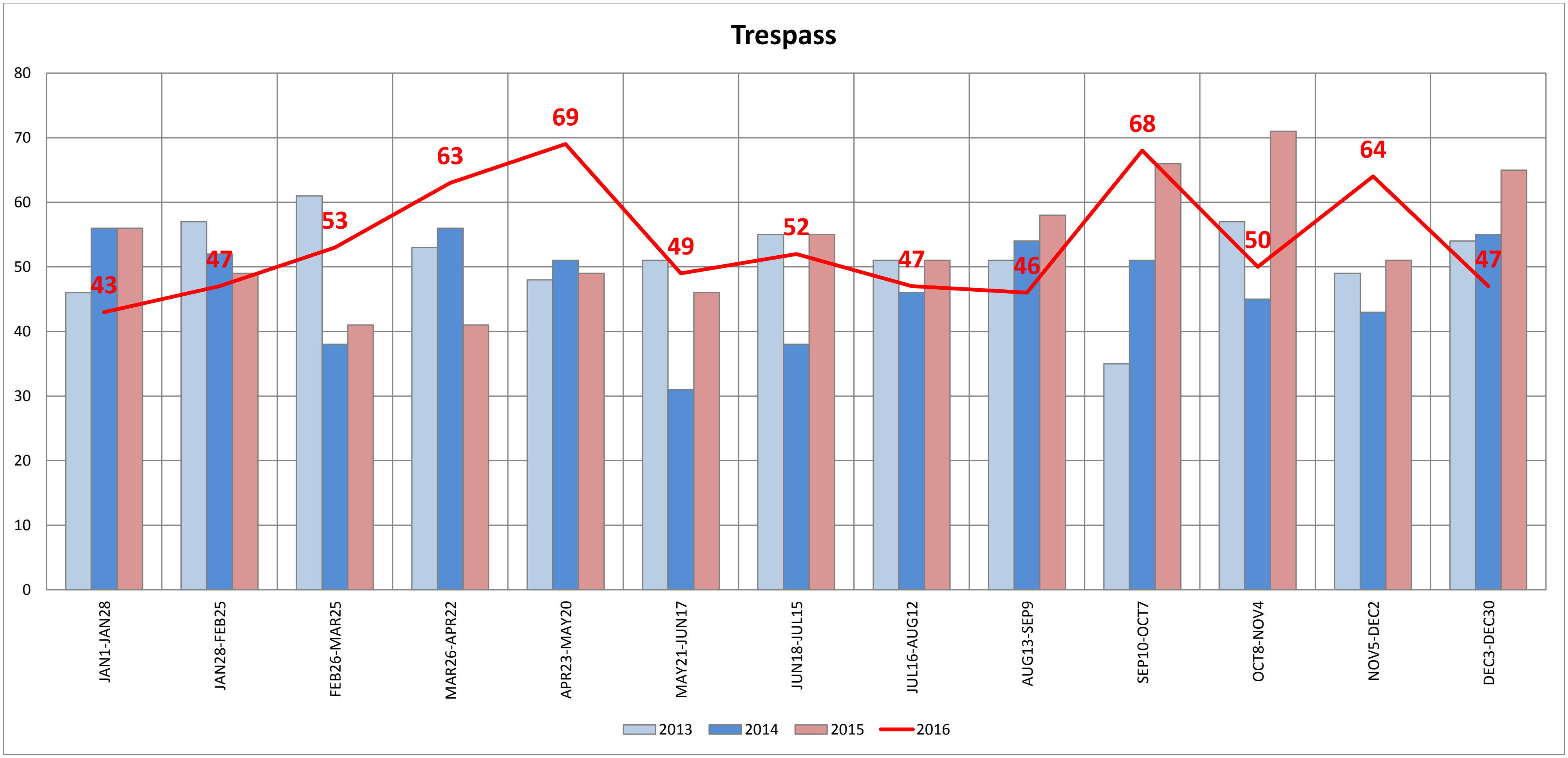
AVG	79.2	ACTION
+1 S.D.	91.8	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Criminal Damage Trends



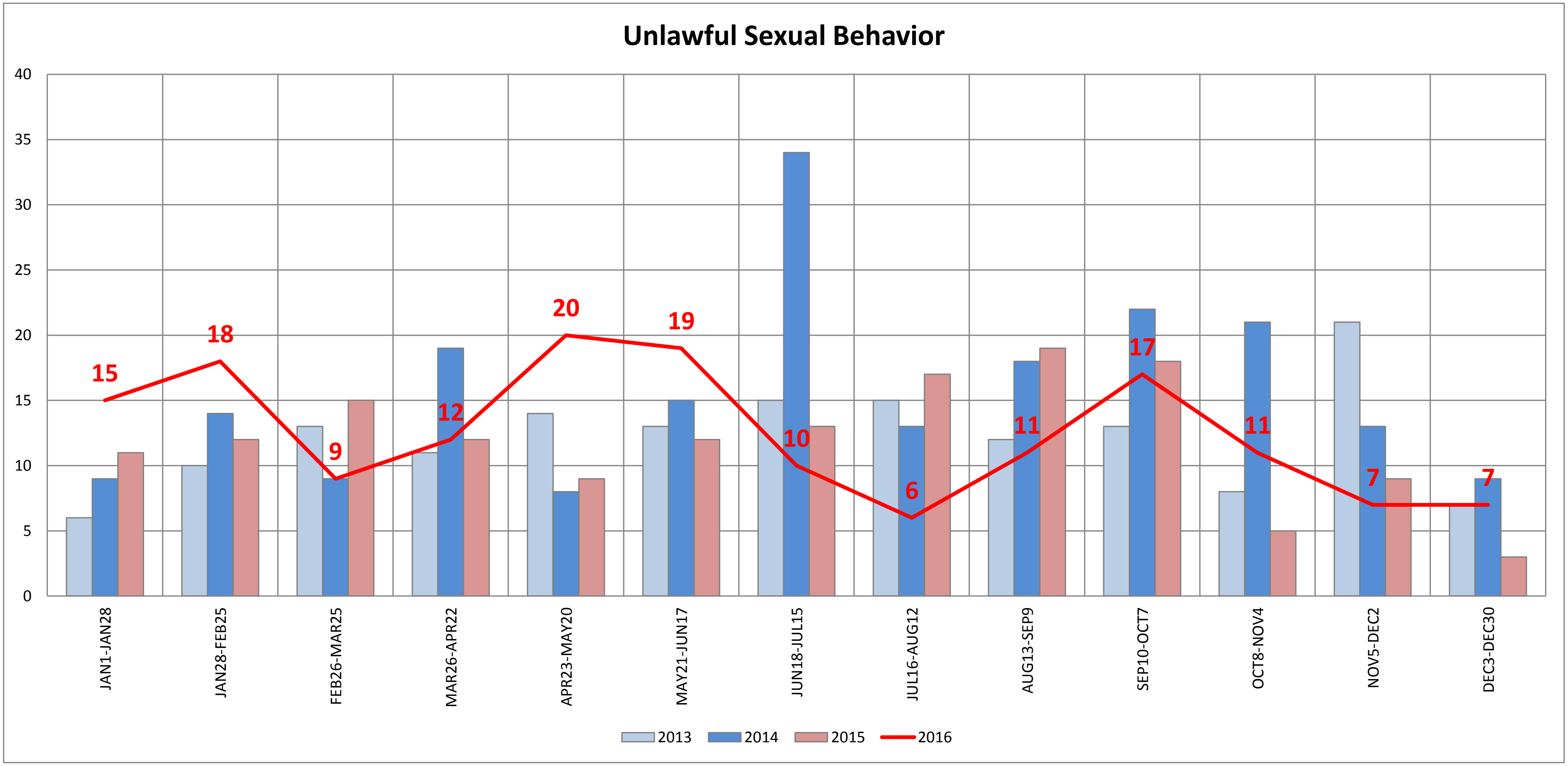
AVG	146.5	**ACTION**
+1 S.D.	161.2	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Tresspass Trends



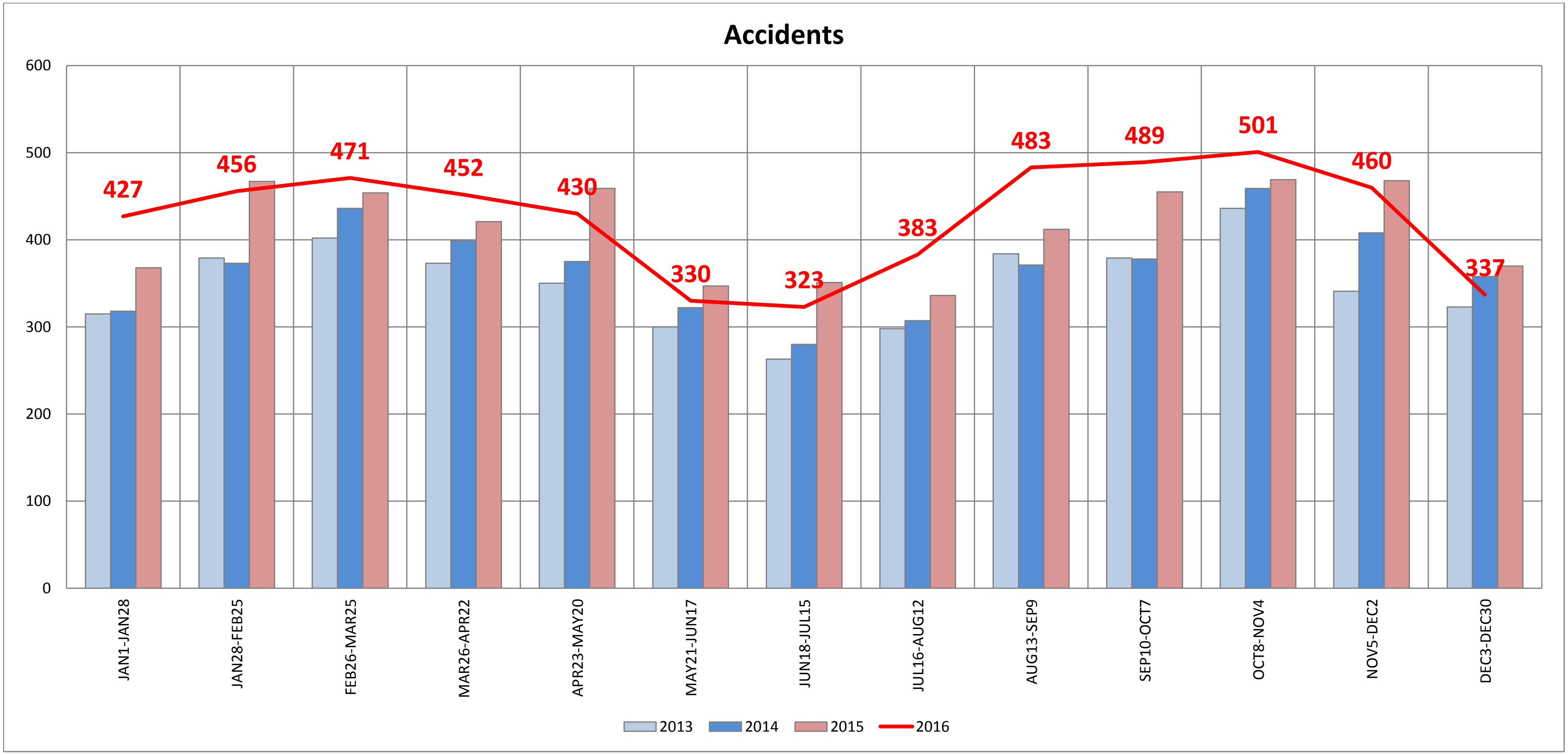
AVG	51.6	ACTION
+1 S.D.	59.9	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Unlawful Sexual Behavior Incident Trends



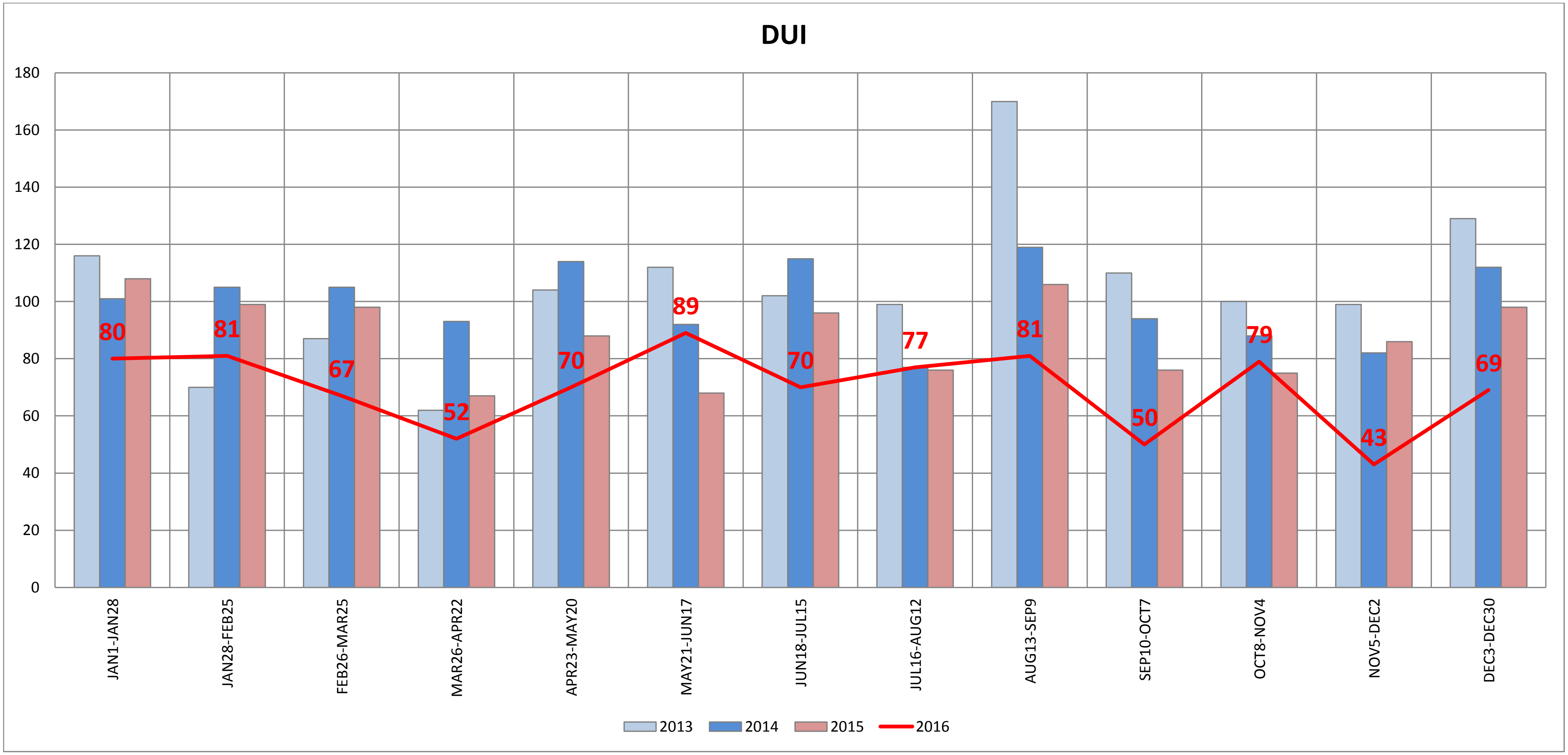
AVG	13.1	ACTION
+1 S.D.	18.4	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Accident Trends



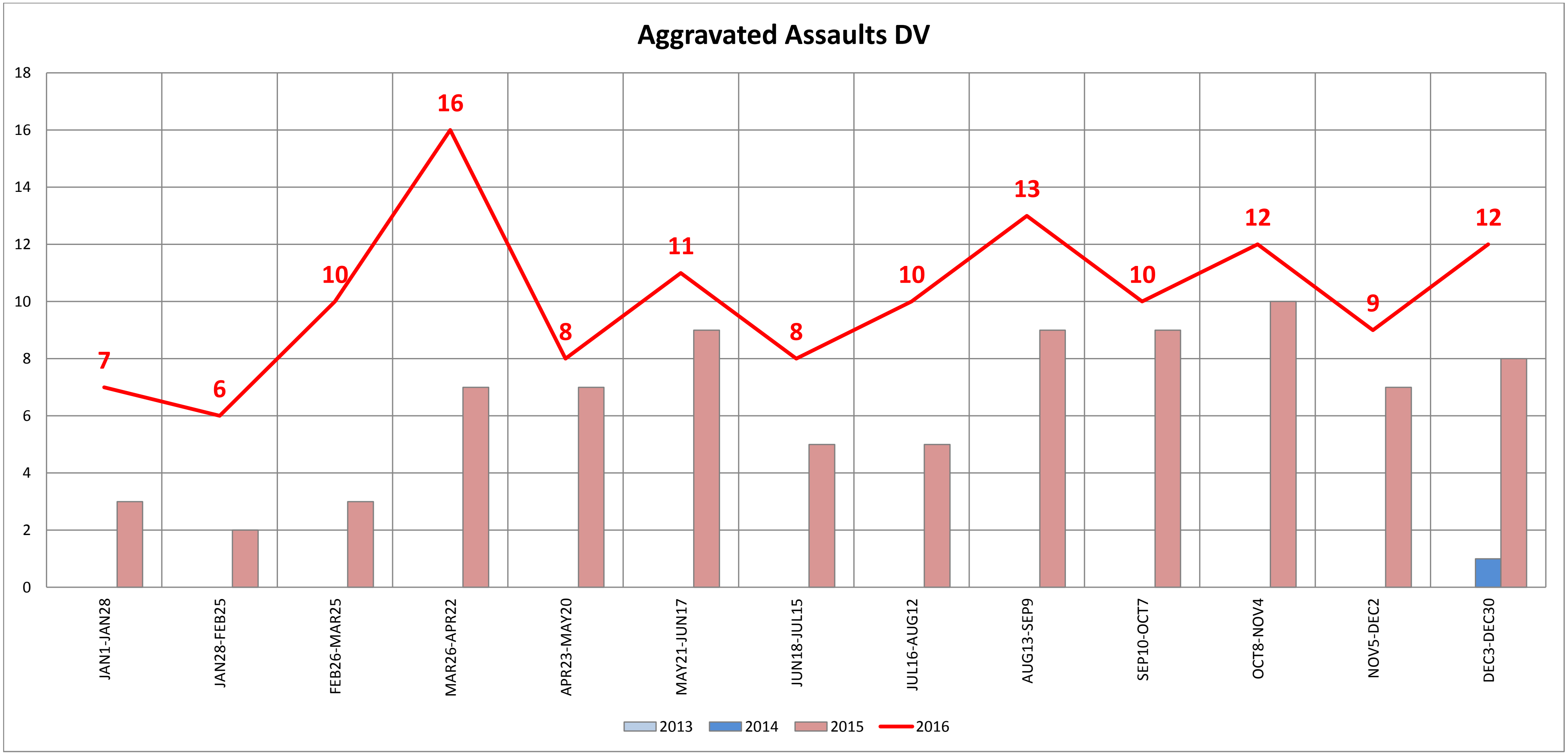
AVG	389.3	**ACTION**
+1 S.D.	450.1	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
DUI Trends



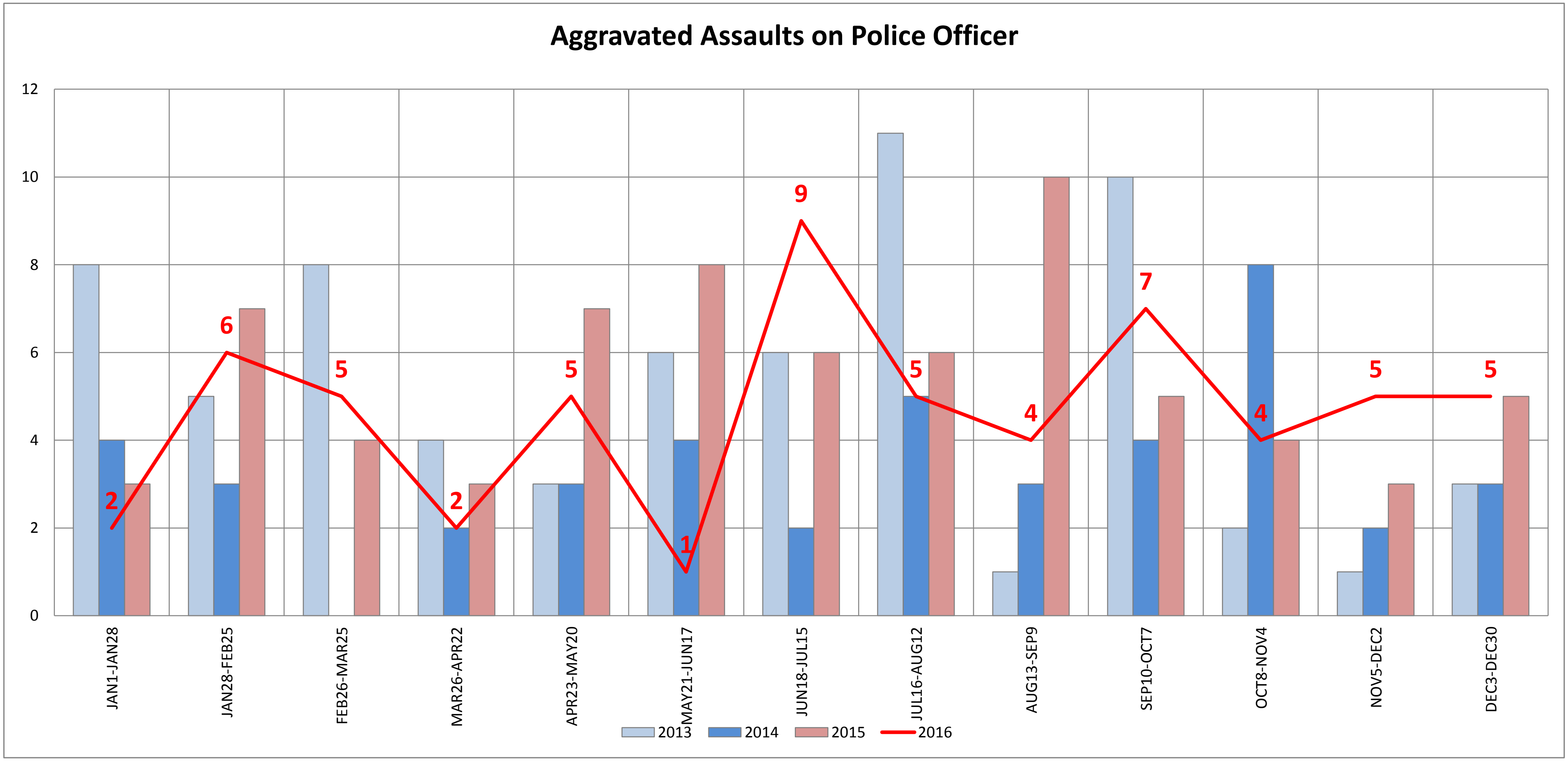
AVG	90.5	ACTION
+1 S.D.	112.3	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Aggravated Assaults DV Trends



AVG	4.2	**ACTION**
+1 S.D.	8.9	Above this number = Action
		Trending Up = Action
		YTD above previous = Action

City of Tempe - Citywide
Aggravated Assaults on Police Officer Trends



AVG	4.7	**ACTION**
+1 S.D.	7.2	Above this number = Action
		Trending Up = Action
		YTD above previous = Action