



**CRIME AND STAFFING ANALYSIS FOR THE TULSA POLICE  
DEPARTMENT: A FINAL REPORT\***

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## EXECUTIVE SUMMARY

The Institute of Crime Science (ICS) at the University of Cincinnati conducted a three-phase assessment of the distribution of crime as well as police staffing within the City of Tulsa in an effort to evaluate crime and policing approaches that follow evidence-based models of crime control effectiveness. First, a problem analysis was conducted to assess the distribution of crime, public nuisance and disorder problems in Tulsa with other large urban cities, as well as the long-term distribution of crime within the city. Second, a detailed staffing analysis was conducted to assess the police force size in the Tulsa Police Department in order to determine whether staffing levels are adequate for the agency based upon crime risk and organizational need. Third, a series of evidence-based strategies that are consistent with the persistent crime problems observed in Tulsa are presented as potential promising practices that we recommend policy makers, police, and city officials consider in terms of replicating, incorporating, and adapting to address local concerns related to public safety within Tulsa.

The findings and recommendations of this report are as follows.

- The City of Tulsa is in the top 25% of all US cities in its number of violent crime offenses; and, this high distribution of violence is uniform across most violent crime offense types and over time.

Problem analyses reveals that the City of Tulsa has, for the past ten years, remained in the upper quartile (i.e., the top 25 percent) in the number of serious Part I crimes (i.e., defined by the Federal Bureau of Investigation Uniform Crime Reports as the number of homicides, assaults, rapes, robberies, thefts, burglaries, and automobile theft) per capita among all U.S. cities with a population over 250,000 residents. Since Part I crimes are often disaggregated into violent and property offenses, we examined the distribution of crimes by type in Tulsa over the same period. It is noteworthy that violent and property crimes were both driving forces behind this persistently high serious crime distribution. More specifically, homicides per capita consistently lingered in the top 20 percent among urban settings; the number of rapes per resident were among the highest in the nation hovering between the 84<sup>th</sup> and 95<sup>th</sup> percentiles since 2004; aggravated assaults were also a persistent problem in that they were consistently between the 81<sup>st</sup> and 93<sup>rd</sup> percentiles; while robberies were relatively less of a problem rotating between the 42<sup>nd</sup> and 64<sup>th</sup> percentiles. Unlike violent crimes, the high property crime distribution was largely driven by a single offense type: burglaries per resident, which were consistently between the 84<sup>th</sup> and 93<sup>rd</sup> percentile among large U.S. cities. Comparatively, larcenies hovered between the 60<sup>th</sup> and 70<sup>th</sup> percentiles, while auto thefts widely fluctuated between the 40<sup>th</sup> and 75<sup>th</sup> percentiles.

Also, within the context of Tulsa, researchers at ICS conducted a series of time- and place-based analysis in order to determine the extent to which a) crimes persistently clustered at specific locations and/or at particular times, and b) whether the place- and time-based analyses revealed persistent (i.e., highly stable), sporadic (short-term duration), or emerging (i.e., evolving) clustering of serious crimes across event types. For example, homicides, robberies, assaults, and burglaries were seen to have persistent as well as emerging hot spot clustering across the city. Indeed, many of the burglary hotspots were observed in residential living communities. However, some high crime incidents (e.g., rape) do not have intensive spatial clustering, and therefore requires more detailed victim- and offender-based analyses in order to establish a comprehensive profile of event-based risk factors.

The precise details of these results (e.g., locations where crime clusters were observed) were shared with the Tulsa Police Department in an effort to contribute to proactive crime prevention efforts. More generally, each of the crime outcomes of concern illustrated both spatial and temporal clustering. Most importantly, each of the crime control recommendations presented within this report take into account national urban trends in violence as well as the spatial and temporal nature of the various distribution of offense types within the city.

- The police department is operating at a serious staffing deficiency.
- We recommend that the City of Tulsa increase its number of uniformed police to at least 958 sworn police officers (2015 level = 752 sworn officers).
- The patrol division should be allocated at least 459 patrol officers.

These estimates are consistent with staffing models recommended by national law enforcement and city management agencies. The staffing analysis compared Tulsa's historical staffing level since 1990 in comparison with other urban police departments (and their subsequent violent and property crime rates). Accounting for changes in population, the Tulsa Police Department maintained a very stable level of staffing within the city between 1990 through 2013; specifically, Tulsa had roughly 1.8 to 2.0 uniformed police officers per 1,000 residents over this period. This placed Tulsa on a trajectory among a group of agencies that had a moderate police force size per citizen pathway over time. However, the violent crime rate for Tulsa was considerably higher than its peers within this trajectory – providing suggestive evidence that the city has had a prolonged period of understaffing.

A more detailed within-city patrol analysis indicates that patrol officers within the city have been required to spend a disproportionate amount of their time responding in a reactive fashion to citizen-generated calls for service. Indeed, drawing upon the International City/County Management Association (ICMA – McCabbe, 2012) and the U.S. Department of Justice Community Oriented Policing Services (COPS) staffing guides (see Wilson and Weiss, 2012), the suggested allocation rule in terms of responding to calls for service ranges from 33% to 60% while also accounting for shift-relief. The results of this analysis clearly highlight 1) the strain placed on the current patrol division, and 2) the need for additional patrol officer resources in order for patrol officers to function in a more proactive crime-control fashion.

- The hiring of new patrol officers would likewise require at least a 13% increase (from 440 sworn non-patrol officers to 499 sworn non-patrol officers) such as detectives, supervisors, and specialized units to support management and supervision of the department.

Additionally, we recommend a patrol to nonpatrol ratio slightly higher (i.e., roughly 45%-50%) than the agencies current staffing level (i.e., current patrol percentage is less than 42%) in order to be consistent with other urban police agencies. In short, while we recommend the vast majority of new hires be devoted (at least initially) to patrol operations, a relative (though slightly lesser) increase in nonpatrol operations will also be needed.

- The detective division in the Tulsa Police Department outperforms the majority of urban law enforcement agencies in the United States for Part I offense clearance rate averages among five of seven serious offense types examined (homicides, robberies, rapes, larcenies, and mv thefts).

The two exceptions to their exceptional offense clearance type involves burglaries and assaults. The two divisions that mostly handle these offenses are the Family Violence and Burglary divisions, which have a far higher caseload distribution per officer than all of the other detective divisions.

- We recommend that additional resources be placed in the Family Violence and Burglary detective divisions in order to potentially enhance clearance rates for burglaries and assaults respectively.
- Tulsa has a very low number of civilian employees that work directly for the Tulsa Police Department when compared with other urban police agencies. This is very likely due to the outsourcing of services performed in Tulsa by other agencies to conduct accounting, dispatching, information technology, and human resources. A more nuisance analysis necessary. However, even when accounting for consolidation and contracting, more civilian employees to assist with data and analysis and other support operations are likely needed.

The majority of urban police departments have 1 civilian employee per 3 sworn police employees, as of 2013. We therefore recommend the hiring of considerably more civilian employees to assist in daily police operations. The hiring of additional civilian employees to assist the agency with technical expertise is consistent with the core recommendations that center on the promotion, use, and evaluation of data-driven crime solutions in Tulsa in an effort to reduce crime and citizen concerns.

We conclude this summary with a series of approaches and strategies that we believe the City of Tulsa should incorporate into a broader comprehensive crime control framework to promote proactive policing. These recommendations are based upon the research team's prior experience in implementing crime in multiple agencies across the nation, as well as a review of the scholarly literature that highlights some of the more promising evidence-based strategies to combat some of the problems observed within Tulsa. Beyond the problem analyses and staffing suggestions, our concluding recommendations are as follows:

- It is imperative that the Tulsa Police Department implement an organizational model that promotes the adoption of recent evidence-based approaches to crime prevention.

The hiring and utilization of civilian experts in data collection, management and analysis that can assist the agency in promoting promising crime solutions has the potential to enhance public safety and reduce crime. Serious violent crimes in Tulsa is disproportionately high relative to other urban settings. More detailed analysis shows that homicides, rapes, and aggravated assaults (and to a lesser extent robberies) were each a driving force behind these violent crime trends. More refined analysis shows that a large proportion of these incidents (i.e., 33% in

homicides, 50% in rapes, and 66% in aggravated assaults) have previously involved known domestic violence suspects.

- We recommend a more detailed and precise incident-as well as offender-based analysis of crimes involving domestic offenders as well as chronic violent offenders within the city to help calibrate effective crime prevention strategies related to these incidents.

The preliminary analyses presented here suggest the city would benefit from evidence-based practices such as place-based strategies (i.e., hot spots policing, directed patrol, the use of closed circuit television, and situational crime prevention strategies) as well as offender-based interventions (such as focused deterrence group and gang violence strategies as well as domestic violence and sexual assault prevention strategies). More detail on each of these specific strategies is outlined in Section 3. Most importantly, these strategies have shown a large degree of promise in a number of similar urban settings and are widely regarded by the research community as promising practices.

- The various collaborative approaches currently implemented in Tulsa has created a robust external capacity within the city to assist with crime and community problems beyond the law enforcement community.

Capitalizing on this external capacity is critically important for future crime prevention approaches. For example, the George Kaiser Family Foundation, the Family and Children Services, social service providers, and local neighborhoods leaders involved in current safety projects within Tulsa can complement and support the evidence-based strategies suggested herein. In summary, the promotion, coordination, and use of collaborative and integrative practices that have a strong foundation based in research provide the most promising framework to adopt in order to improve citizen quality of life and safety in Tulsa.

## SECTION I: TULSA CRIME PROBLEM ANALYSIS

In Section I of this report we examine the frequency, patterns, and trends of reported serious crimes within the City of Tulsa. We include two specific approaches to analyzing crime data. In Part I of the Crime Problem Analysis Section, we analyze and assess reported crimes in the City of Tulsa over a ten-year period compared to other cities nationally. Using data collected by the Federal Bureau of Investigations (FBI) for compilation of the Uniform Crime Report (UCR), we examined Tulsa's reported serious crimes to four different comparison categories: (1) all U.S. cities, cities with populations 100,000 or greater; (2) cities with populations 250,000 or greater; (3) cities with populations of 250,000 to 500,000; and (4) cities with populations of 250,000 to 1,000,000. For the sake of brevity, we report within the text only the comparisons of Tulsa to cities 250,000 or greater. Each of the additional comparison categories are displayed in Appendix C.<sup>1</sup>

In Part II of the Crime Problem Analysis Section, we examine 5 years of data to determine repeat crime problems and repeat crime locations within the City of Tulsa. The data for these analyses include crime incidents and victims reported to TPD.

Note that the data sources of reported crime used for national comparisons and the within city comparisons differ slightly from one another. When police agencies report UCR crime statistics, they must follow specific guidelines and procedures to ensure all agencies report the same way so that the results can be compared across agencies. For some crime categories, there will be slight reporting differences between UCR data and crime data retained by police departments for internal use. This is also the case with TPD, and therefore TPD crime data and UCR crime data for the City of Tulsa vary to some degree. For the national comparisons below, we use reported UCR data. For the within Tulsa comparison, we use all crimes reported within TPD jurisdictional boundaries that were not officially determined by the TPD to be unfounded.

### Part I: National Comparison

#### *UCR Data*

The UCR program is a “nationwide, cooperative statistical effort of nearly 18,000 city, university and college, county, state, tribal, and federal law enforcement agencies voluntarily reporting data on crimes brought to their attention” (U.S. DOJ, 2015). Crime statistics have been compiled by the FBI since 1930 and are routinely used by practitioners and scholars for research and planning purposes. In 1989, the FBI developed the UCR Program's National Incident-Based Reporting System. NIBRS is a more comprehensive data collection effort that includes 57 data elements via six types of data segments: administrative, offense, victim, property, offender, and arrestee. For the current report, we rely solely on Part I reported crime data. Part I Crimes include: Criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft, and arson. These Part I Crime categories are often further broken down into Part I Violent Crimes (homicide, forcible rape, robbery, and aggravated assault), and Part I

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<sup>1</sup> Note that our conclusions and recommendations remain the same regardless of which comparison category is used for analysis.



Property Crimes (burglary, larceny-theft, motor vehicle theft, and arson). Further note that arson is sometimes eliminated from analyses because not all police departments record arson events; rather these crime statistics are compiled by local fire departments and may not be reported to the UCR.

**All Part I Crime Trends**

Figure 1, below provides an overview of the Part I crime rate percentiles in Tulsa compared to other cities with populations of 250,000 or more for the years 2004 to 2013<sup>2</sup>. Tulsa’s percentile ranking of Part I crimes ranged from a low of 75.7 in 2006 to a high of 90.4 in 2009. **In 2013 (the most recent year of UCR available), it ranked in the 81<sup>st</sup> percentile. Overall, Tulsa has remained in the top quartile for Part I Crimes for the past 10 years compared to other similar sized cities.**

**Figure 1: Part I Crime Rate Percentiles**

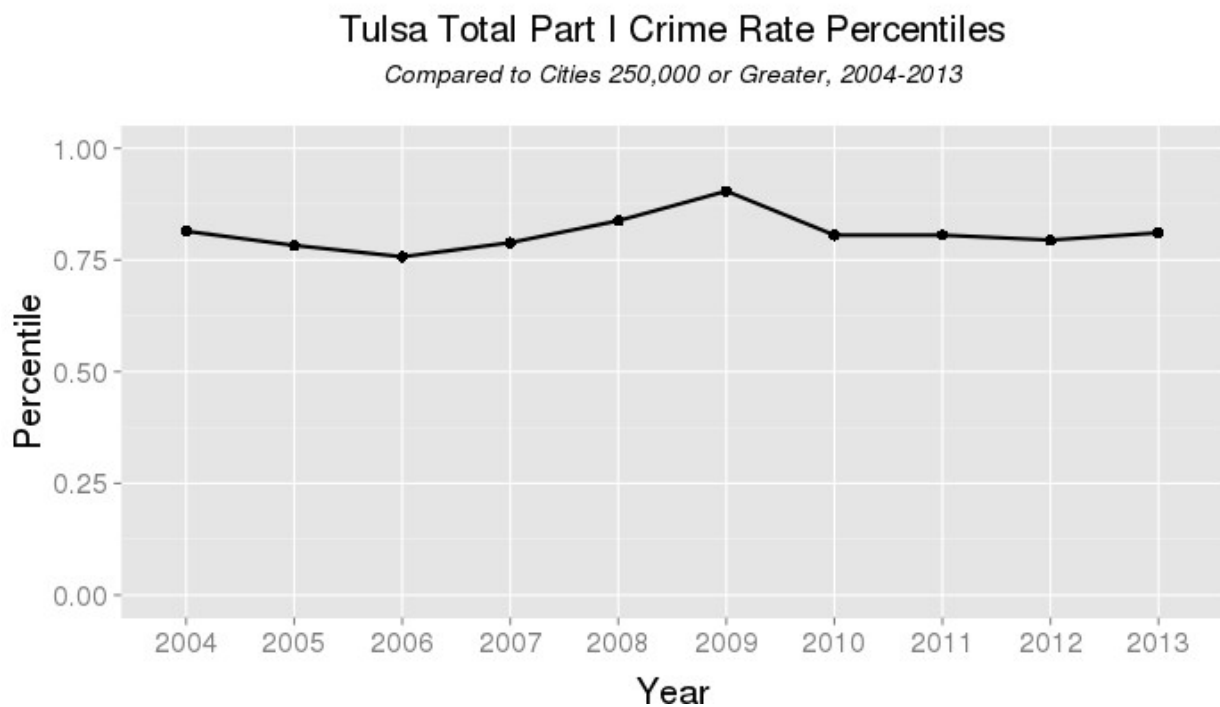
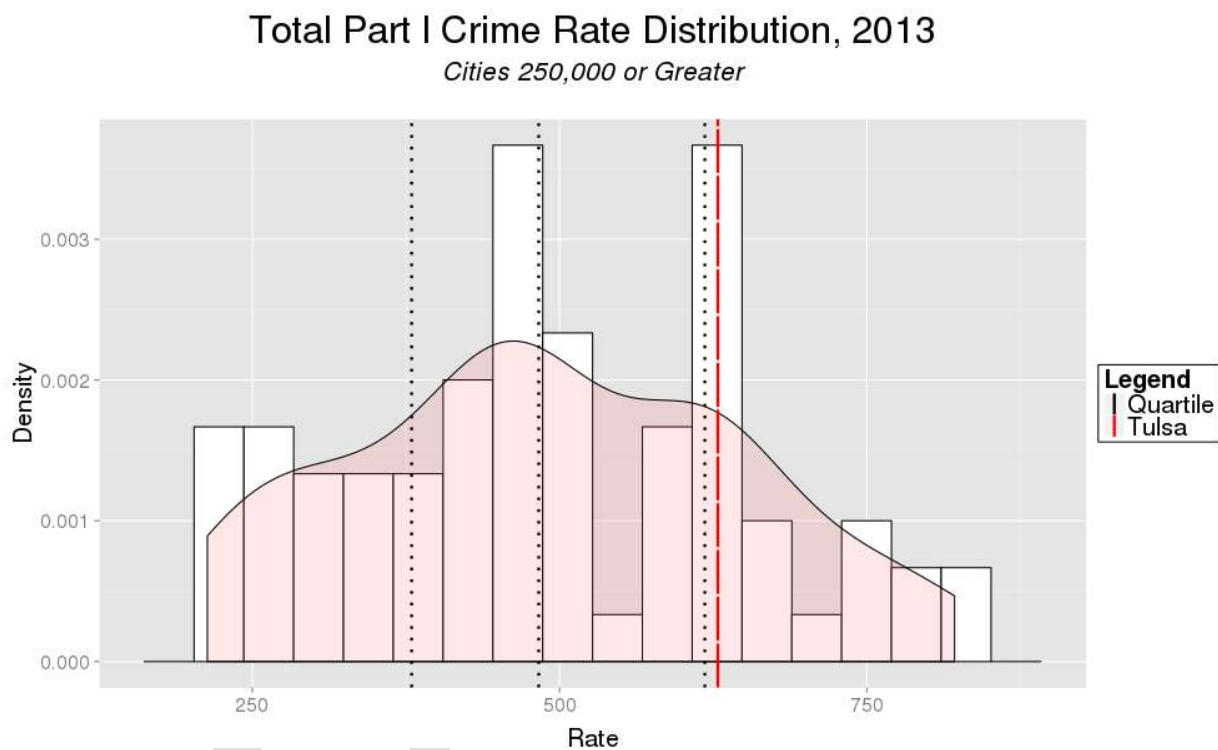


Figure 2 below shows the 2013 Part I Crime rate distribution for all U.S. cities sized 250,000 or greater. Visualizing data in this way can provide insight into the nature of Tulsa’s crime problem compared to other urban cities, and provides additional information that cannot be gleaned from considering percentile rankings alone. The bars in this chart represent the actual number of cities falling into each range of rate values. The overlaid red curved area is an estimation of the underlying distribution of these rate values. Within the chart there are also four vertical lines.

The data quartiles are marked with three black dotted lines. From left to right, these represent the 25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup> percentiles, respectively. Tulsa's percentile ranking is marked with a red vertical line. Comparing Tulsa's line to both the quartile lines and the overall distribution can provide insight regarding the level of crime relative to other cities. For instance, Figure 2 shows that cities' total Part I crime rates are spread fairly symmetrically around the median rate of 483 incidents per 10,000 residents, and that the middle 50% of cities fall within a rate of 379.6 and 618.2 incidents per 10,000 residents. **Tulsa falls slightly to the right of the 75<sup>th</sup> percentile, with a rate of 628.8 Part I Crimes per 10,000 residents, indicating that it has a relatively high rate of Part I crimes compared to other urban cities its size.**

**Figure 2: Part I Crime Rate Distribution**



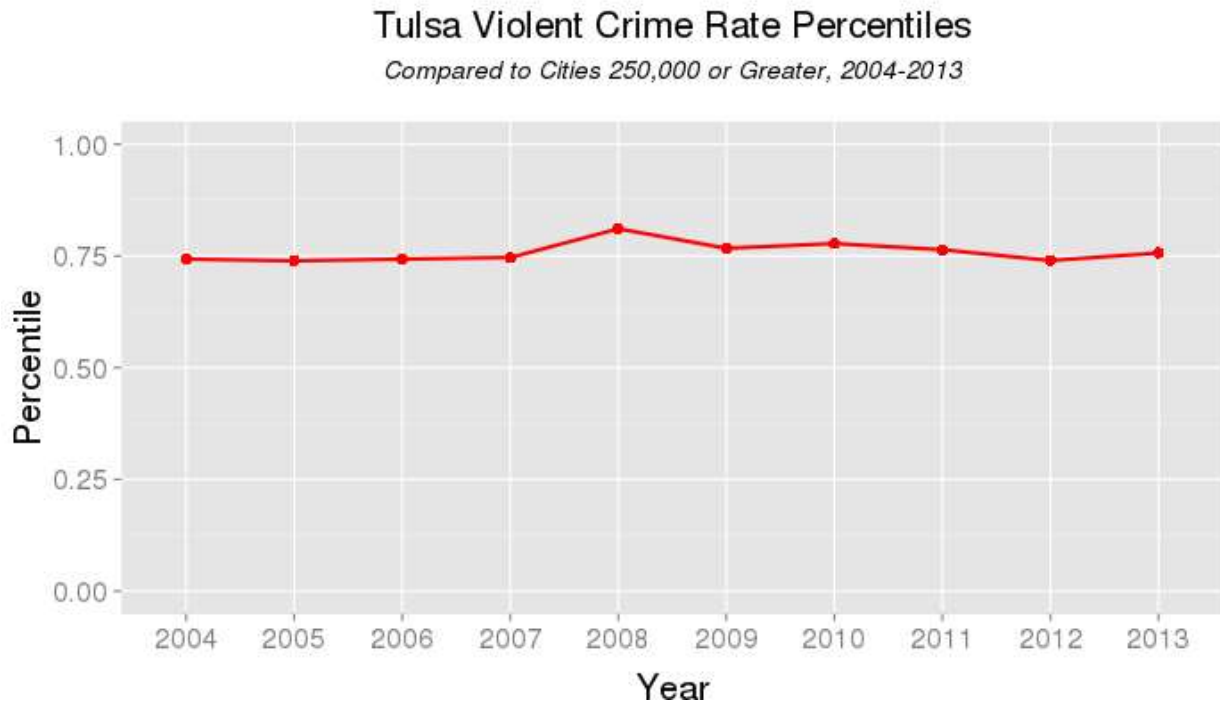
In Table 1 below we present the yearly number of incidents and rates per 10,000 residents for Part I crimes in Tulsa over the past ten years. This chart shows that, **although Tulsa's percentile ranking has remained steadily high for the past 10 years, its number of incidents has been reduced 21.6% from 31,649 in 2004 to only 24,805 incidents in 2013.** Similarly, the crime rate has dropped from 813.3 to 628.8 incidents per 10,000 residents in the same time frame. Yet, the fact that Tulsa's percentile ranking remains high while its incident and rate numbers are decreasing suggests that **Tulsa's decline in crime is not as large as other similarly-sized cities across the nation.**

**Table 1: Tulsa Part I Crime Incidents and Rates, 2004-2013**

Year	Number of Part I Crimes	Part I Crime Rate per 10,000 Residents	Percentile Ranking Population 250,000 or more
2004	31,649	813.3	81.4
2005	30,164	780.6	78.3
2006	28,827	747.1	75.7
2007	28,596	749.6	78.9
2008	27,691	723.1	83.8
2009	27,515	715.0	90.4
2010	25,659	654.7	80.6
2011	25,883	653.4	80.6
2012	24,756	620.6	79.5
2013	24,805	628.8	81.1

Further analyzing Tulsa’s Part I crimes by examining them categorically (i.e. violent and property) and individually will enable us to determine if Tulsa has any persistent crime problems that are driving the overall Part I Crime rate. A crime table, line chart, and density plot similar to those presented above appear in separate sections below for both violent and property crime, and then more specifically for the following crime categories: homicide, rape, robbery, aggravated assault, burglary, theft, and auto theft.

**Figure 3: Violent Crime Rate Percentiles**



## Violent Crime

Figure 3 above displays Tulsa's violent crime rate percentiles (violent crimes include criminal homicide, forcible rape, robbery, and aggravated assault) compared to other cities sized 250,000 or more for the years 2004 to 2013. Tulsa's percentile ranking ranged from a low of 73.9 in 2005 to a high of 81.1 in 2008. **In 2013, Tulsa's violent crime rate ranked in the 76<sup>th</sup> percentile. Overall, this rate has remained relatively stable for the past decade - with the exception of the slight spike in 2008, the ranking has remained between the 74<sup>th</sup> and 79<sup>th</sup> percentile nationally.**

The distribution chart for violent crime, presented below in Figure 4, indicates that the violent crime rates is heavily skewed, with more cities falling at the lower end of the distribution. Indeed, the bottom 50% of cases fall between 13.7 and 63.1 incidents per 10,000 residents. **In contrast, the top 25% of cases fall between 96.8 and 207.2 incidents per 10,000 residents. Tulsa falls within this range, with a violent crime rate of 97 incidents per 10,000 residents.**

Figure 4: Violent Crime Rate Distribution

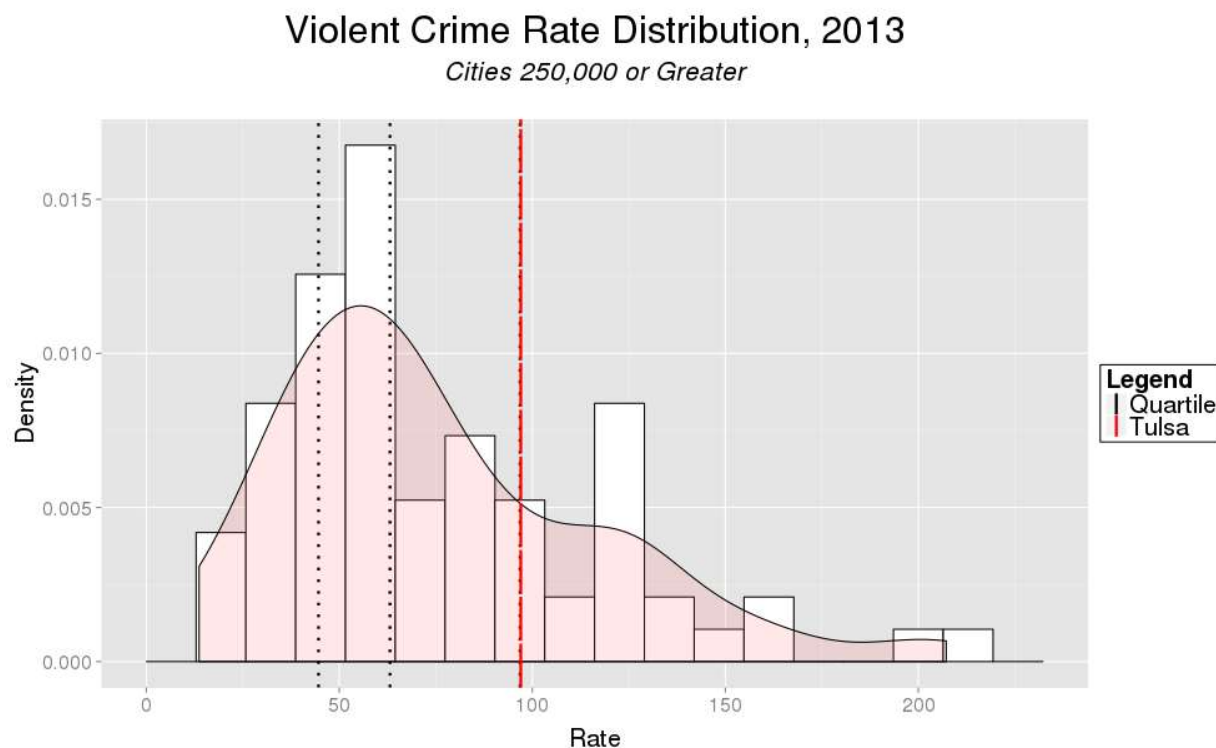


Table 2 below presents the yearly number of incidents and rates per 10,000 residents for violent crimes in Tulsa. This table shows that the number of violent crimes occurring in Tulsa has been decreasing fairly steadily since 2008, when the number of incidents was 4,922. **In 2013, the number of incidents was 3,827, the lowest in the past decade, representing a 23.4% reduction from its peak of 4,995 in 2005.** Likewise, the crime rate has decreased from a high of 129.3 per 10,000 residents in 2005 to a low of 97 per 10,000 residents in 2013. **However, as with all Part I Crimes, the fact that Tulsa's violent crime percentile ranking remains high**

while violent crime incidents are decreasing indicates that the violent crime reductions in Tulsa are not surpassing reductions experienced in similarly sized cities throughout the nation.

**Table 2: Tulsa Violent Crime Incidents and Rates, 2004-2013**

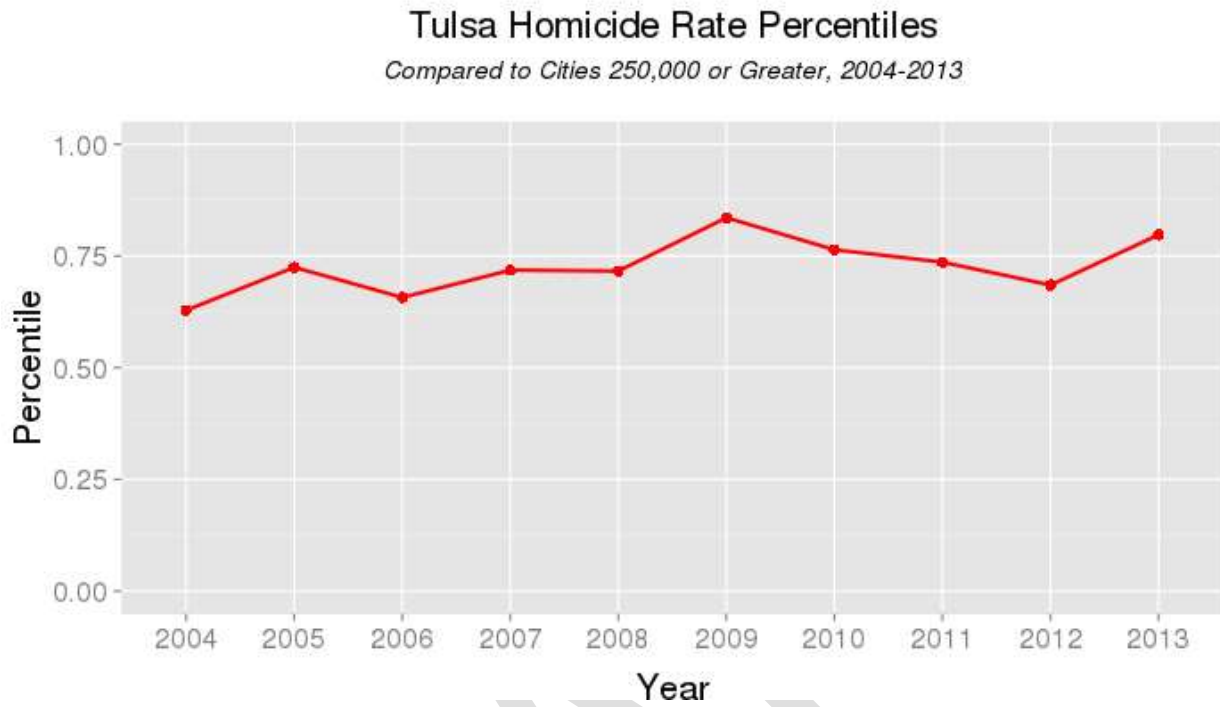
Year	Number of Violent Crimes	Violent Crime Rate per 10,000 residents	Percentile Ranking Population 250,000 or more
2004	4,688	120.5	74.3
2005	4,995	129.3	73.9
2006	4,816	124.8	74.3
2007	4,552	119.3	74.6
2008	4,922	128.5	81.1
2009	4,295	111.6	76.7
2010	4,304	109.8	77.8
2011	3,960	100.0	76.4
2012	3,949	99.0	74.0
2013	3,827	97.0	75.7

### *Homicide*

Figure 5 below displays Tulsa’s homicide rate percentiles as compared to other cities sized 250,000 or more, for the years 2004 to 2013. Tulsa’s percentile ranking ranged from a low of 62.9 in 2004 to a high of 83.6 in 2009. In 2013, it ranked in the 80<sup>th</sup> percentile. Although the homicide rates have fluctuated a fair bit over the past decade, in general they have been increasing slightly since the mid-2000s.

The distribution chart for homicide, presented in Figure 6, is highly skewed. The vast majority of cities have homicide rates below 1.4 incidents per 10,000 residents. A small number of cities are outliers (represented by the second hump and the three small bars on the far right of the chart) with markedly higher homicide rates than the rest of the urban cities that are included in the analysis, and range from 3.7 to 4.5 incidents per 10,000 residents. These cities include New Orleans, Louisiana; Baltimore, Maryland; Detroit, Michigan; St. Louis, Missouri; and Newark, New Jersey. Indeed, if these five anomalous outlier cases are removed and the percentiles are recalculated, Tulsa increases from the 80<sup>th</sup> percentile to the 86<sup>th</sup> percentile for homicides.

**Figure 5: Homicide Rate Percentiles**



**Figure 6: Homicide Rate Distribution**

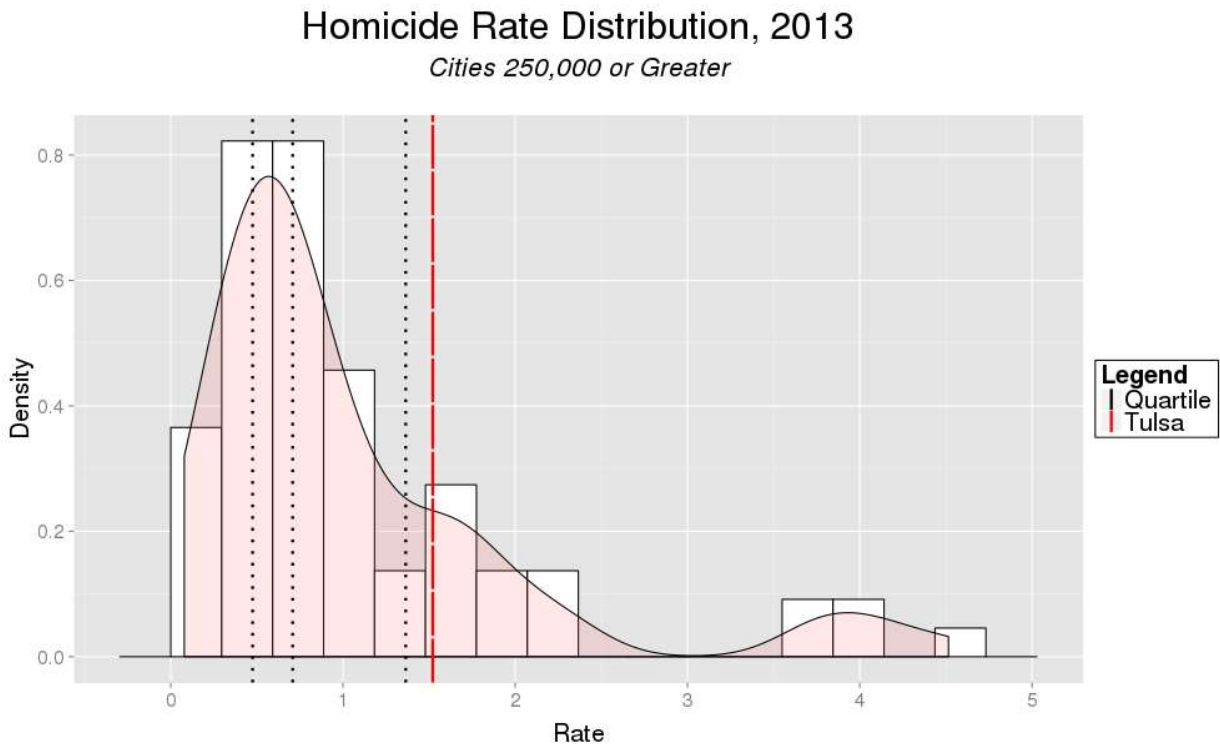


Table 3 below presents the yearly number of homicides and the homicide rates per 10,000 residents for Tulsa between 2004 and 2013. This table shows that the number of homicides occurring in Tulsa has fluctuated a great deal, from a low of 42 homicides in 2012 to a high of 68 homicides in 2009. In 2013, Tulsa had its second highest number of homicides in the past decade, with a total of 60 incidents, up 42.9% from the 42 incidents it had the year before. The homicide rate has fluctuated similarly, with a low of 1.1 incidents per 10,000 residents in 2012, to a high of 1.8 incidents per 10,000 residents in 2009. Taken together, the general fluctuations in both the number and rate of homicides, and the consistently high percentile ranking for homicides in Tulsa as compared to other urban cities suggests that Tulsa would benefit from incorporating additional evidence-based strategies targeting homicides.

**Table 3: Tulsa Homicide Incidents and Rates, 2004-2013**

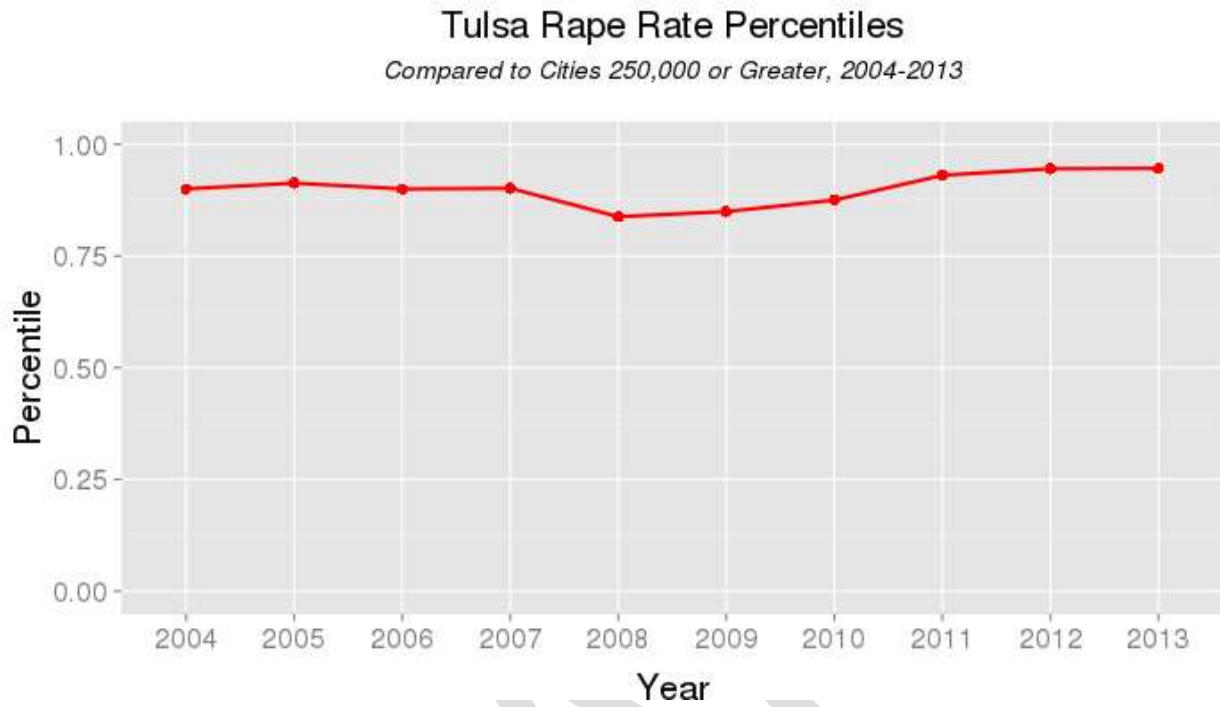
Year	Number of Homicides	Homicide Rate per 10,000 residents	Percentile Ranking Population 250,000 or more
2004	48	1.2	62.9
2005	58	1.5	72.5
2006	53	1.4	65.7
2007	55	1.4	71.8
2008	50	1.3	71.6
2009	68	1.8	83.6
2010	54	1.4	76.4
2011	49	1.2	73.6
2012	42	1.1	68.5
2013	60	1.5	79.7

### *Rape*

Figure 7 below demonstrates Tulsa's forcible rape rate percentiles compared to other cities sized 250,000 or more for the years 2004 to 2013. Tulsa's rape percentile ranking has ranged from a low of 84<sup>th</sup> percentile in 2008 to a high of 95<sup>th</sup> percentile in 2013. Indeed, Tulsa's rape rate percentile has been steadily increasing since 2008.

More than any other crime discussed in this analysis, the distribution chart for forcible rape, presented below in Figure 8, demonstrates that Tulsa has a rape rate which is markedly higher than the remainder of urban cities in the U.S. These rape rates range from a low of 1 to a high of 13.6 incidents per 10,000 residents, with the middle 50% of cases being narrowly dispersed between 2.4 and 4.6 incidents. **Tulsa more than doubles this, with a rate of 9.5 rapes per 10,000 residents, which is less than only 4 out of the 74 cities with populations greater than 250,000.**

**Figure 7: Rape Rate Percentiles**



**Figure 8: Rape Rate Distribution**

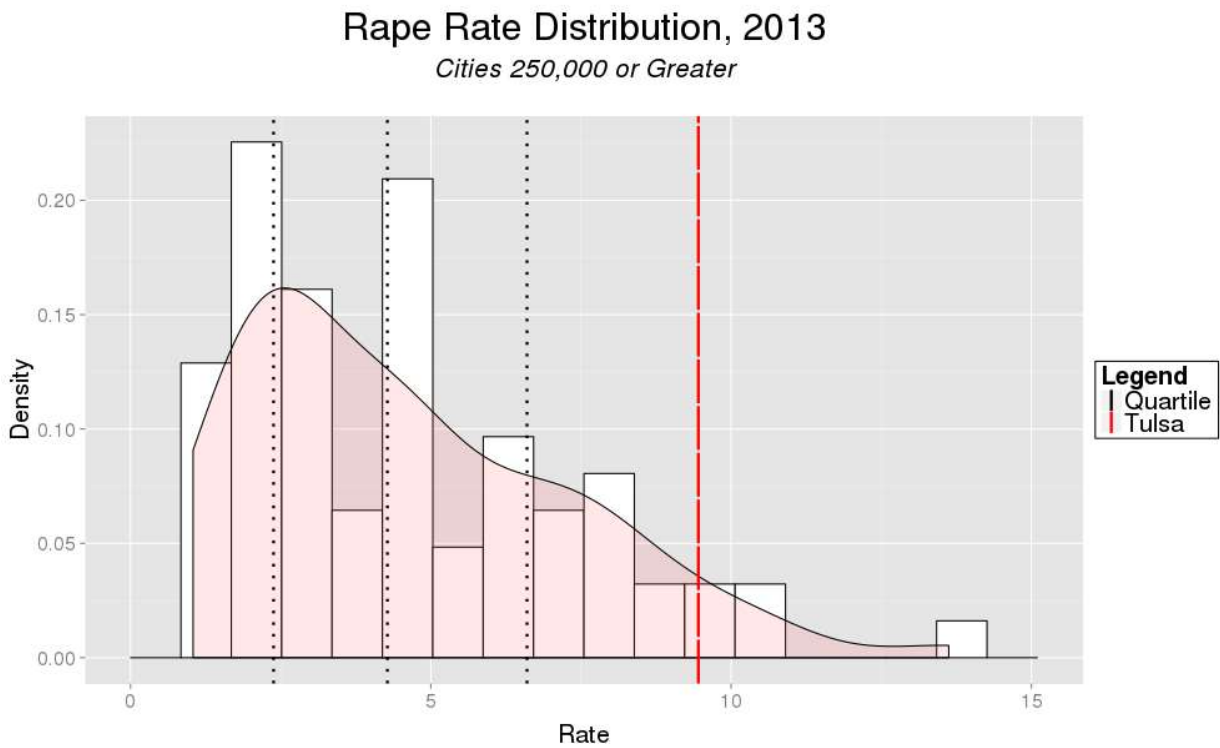




Table 4 below presents the yearly number of rapes and the rape rates per 10,000 residents for Tulsa between 2004 and 2013. This table shows that the number of rapes and the rape rate in Tulsa was high in the mid-2000s, dipped in the late-2000s, and increased again in the early 2010s. The number of rapes hit a low of 252 incidents in both 2008 and 2010, and a high of 373 incidents in 2013. Similarly, the rape rate was at its lowest in 2010, at 6.4 incidents per 10,000 residents, and peaked in 2013, with 9.5 incidents per 10,000 residents. Importantly, the Uniform Crime Report definition of rape changed in 2013, from “the carnal knowledge of a female forcibly and against her will” to “penetration, no matter how slight, or the vagina or anus with any body part of object, or oral penetration by a sex organ of another person, without the consent of the victim” (FBI, 2014). However, Tulsa did not begin to transition to using this new definition until October 2014, and thus this did not contribute to the 18% increase in the number of rapes reported in Tulsa between 2012 and 2013. Tulsa’s overall trend toward increasing numbers of rapes, rape rate, and percentile ranking is particularly troubling given the national trend downward for rape (with the exception of the definition change between 2012 and 2013, which resulted in an increased average number of reported incidents nationwide).

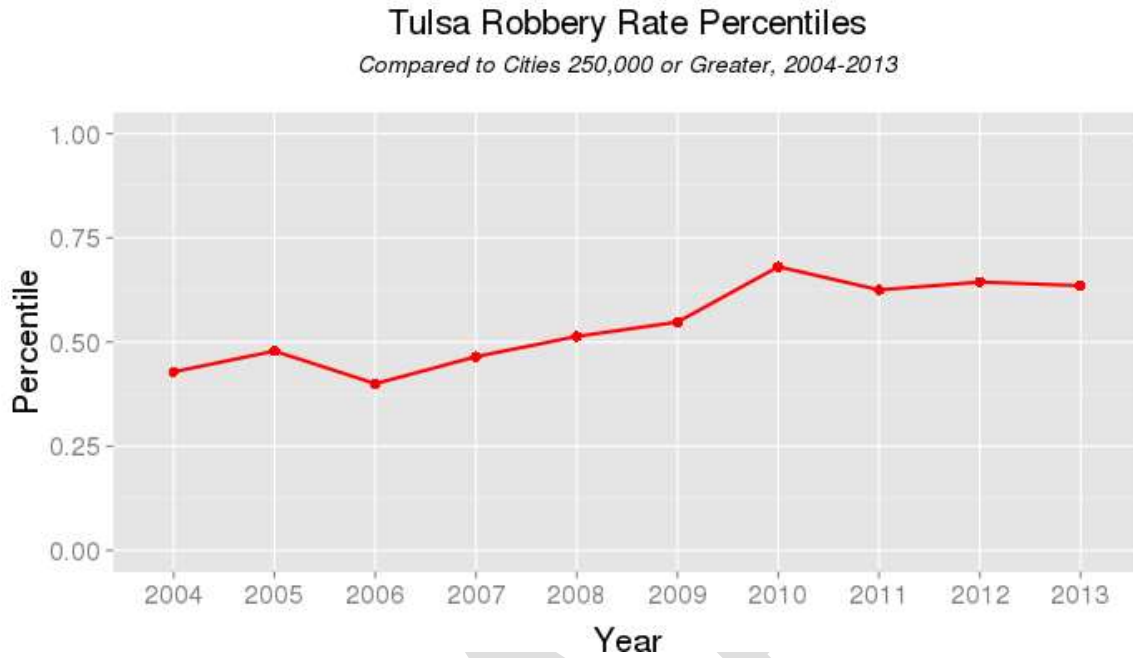
**Table 4: Tulsa Rape Incidents and Rates, 2004-2013**

<b>Year</b>	<b>Number of Rapes</b>	<b>Rape Rate per 10,000 Residents</b>	<b>Percentile Ranking Population 250,000 or more</b>
2004	299	7.7	90.0
2005	303	7.8	91.3
2006	289	7.5	90.0
2007	299	7.8	90.0
2008	252	6.6	83.8
2009	254	6.6	84.9
2010	252	6.4	87.5
2011	266	6.7	93.1
2012	316	7.9	94.5
2013	373	9.5	94.6

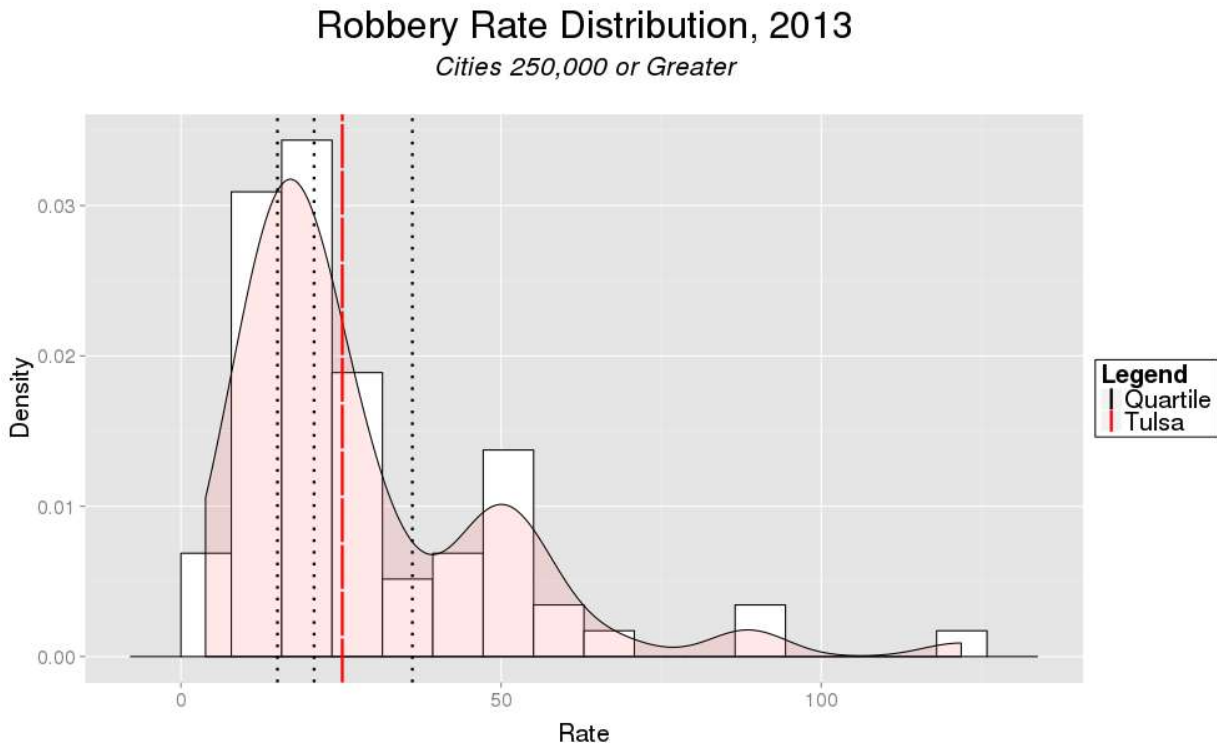
### ***Robbery***

Figure 9 below displays Tulsa’s robbery rate percentiles compared to other cities sized 250,000 or more for the years 2004 to 2013. Tulsa’s percentile ranking for robbery ranged from a low of 40.0 in 2006 to a high of 68.1 in 2010. Generally, Tulsa’s robbery ranking increased from 2004 until 2010 when it peaked, and then remained between the 62<sup>nd</sup> and 65<sup>th</sup> percentiles between 2011 and 2013.

**Figure 9: Robbery Rate Percentiles**



**Figure 10: Robbery Rate Distribution**



The distribution chart for robberies in 2013, presented above in Figure 10, shows a right skew, with one large peak on the left hand side of the chart and several smaller peaks in a long tail to the right. This indicates that most cities fall at the lower end of the distribution, while a number of cities are outliers with higher robbery rates. Cities range from a low of 3.8 incidents per 10,000 residents to a high of 121.9 incidents per 10,000 residents, with a median value of 20.8 incidents per 10,000 residents. Tulsa falls slightly higher than this, with a rate of 25.2 incidents per 10,000 residents. **Despite falling above the 63<sup>rd</sup> percentile for robberies, the distribution chart shows that Tulsa falls near the center of the distribution, where the majority of the cities are fairly narrowly dispersed.** Thus, although Tulsa’s robbery rate is higher than most cities, it is not dramatically higher, as is the case for the forcible rape rate.

Table 5 below presents the yearly number of robberies and the robbery rates per 10,000 Tulsa residents between 2004 and 2013. An analyses show that Tulsa has a relatively stable robbery rate, which peaked in 2009 with a high of 35.2 incidents per 10,000 residents, but otherwise has remained between 25 and 29 incidents per 10,000 residents. Likewise, the number of robbery incidents has remained between 994 and 1,096, with the exception of 2010 which had 1,381 robberies. **While both the robbery rate and the number of robbery incidents have decreased since their peak in 2010, Tulsa’s percentile ranking has remained fairly stable, and at the 63<sup>rd</sup> percentile, is much higher than it was in the mid-2000s.**

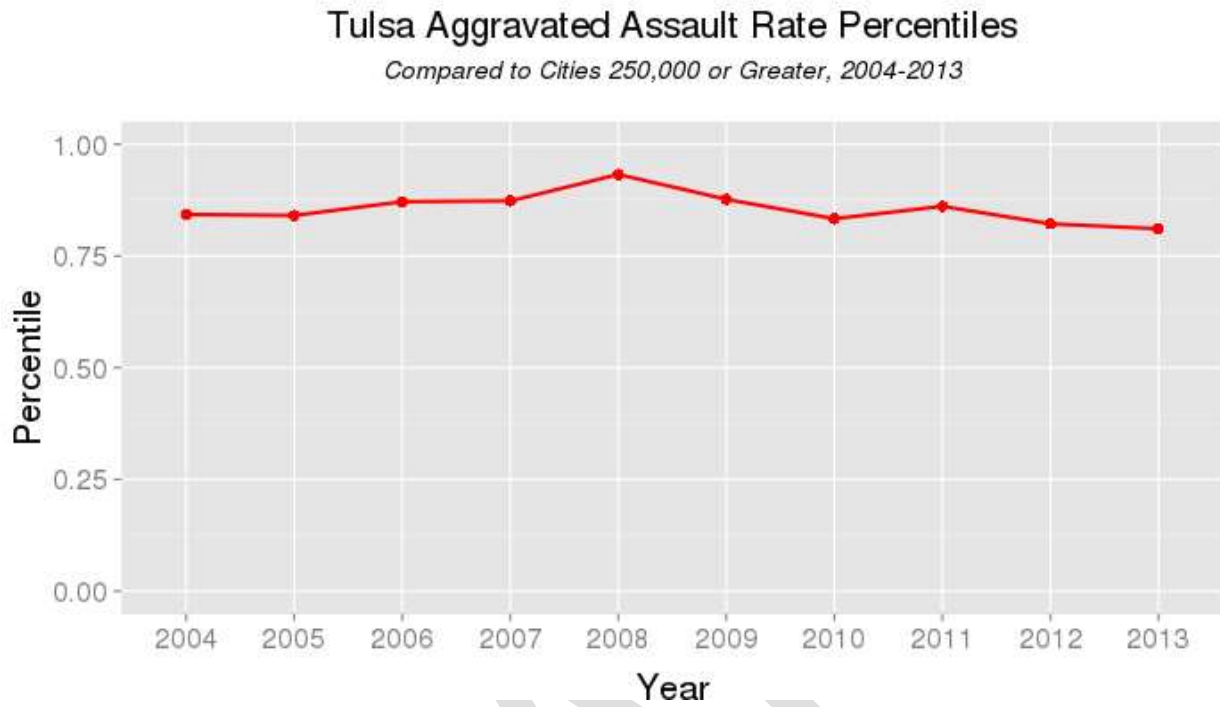
**Table 5: Tulsa Robbery Incidents and Rates, 2004-2013**

Year	Number of Robberies	Robbery Rate per 10,000 Residents	Percentile Ranking Population 250,000 or more
2004	1035	26.6	42.9
2005	1096	28.4	47.8
2006	997	25.8	40.0
2007	1023	26.8	46.5
2008	1096	28.6	51.4
2009	1117	29.0	54.8
2010	1381	35.2	68.1
2011	1090	27.5	62.5
2012	1062	26.6	64.4
2013	994	25.2	63.5

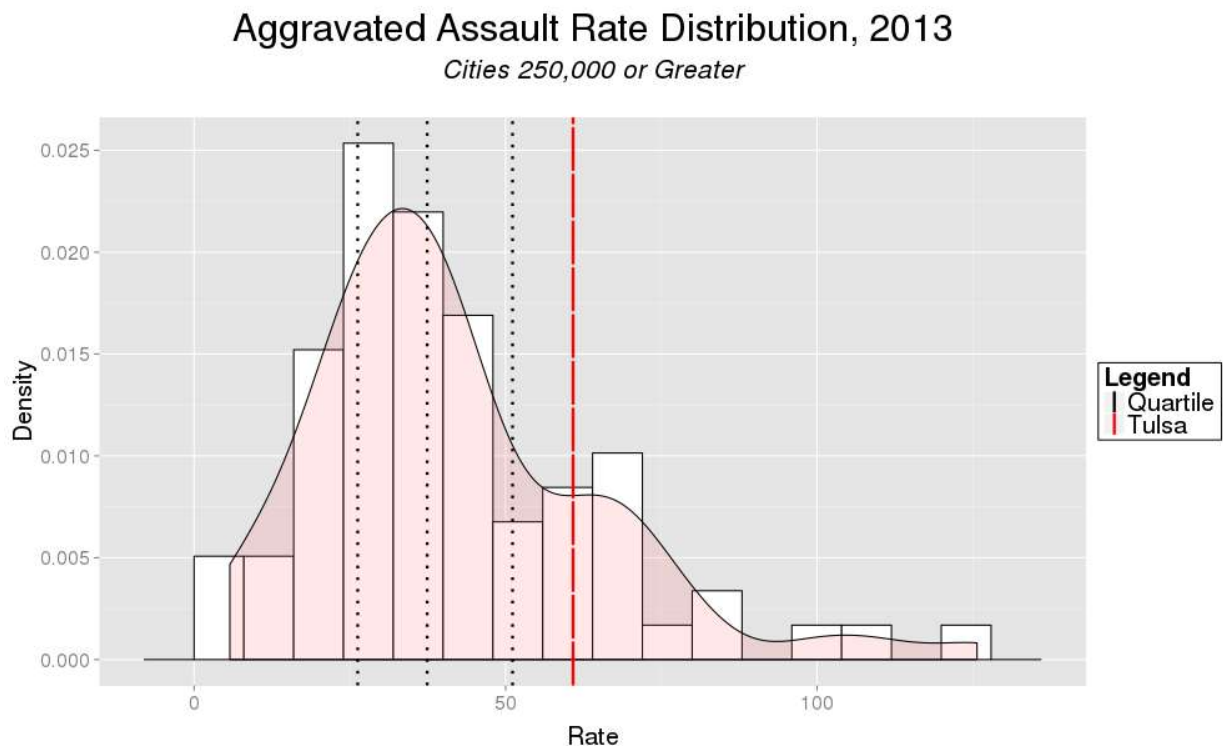
***Aggravated Assault***

Figure 11 below provides an overview of Tulsa’s aggravated assault rate percentiles compared to other cities sized 250,000 or more for the years 2004 to 2013. Tulsa’s percentile ranking peaked in 2008 when it hit the 93<sup>rd</sup> percentile, and declined until 2013 when it reached a decade long low of 81<sup>st</sup> percentile.

**Figure 11: Aggravated Assault Rate Percentiles**



**Figure 12: Aggravated Assault Rate Distribution**



The distribution chart for aggravated assaults (see Figure 12 above), shows a right skew, with one large peak on the left hand side of the chart and a tail to the right. Again, this indicates that most cities fall at the lower end of the distribution, while a number of cities are outliers with higher aggravated assault rates. Cities range from a low of 5.7 incidents per 10,000 residents to a high of 125.7 incidents per 10,000 residents, with a median value of 37.4 incidents per 10,000 residents. **Tulsa falls markedly higher than the median, with a rate of 60.8 aggravated assault incidents per 10,000 residents. Although Tulsa decreased to the 81<sup>st</sup> percentile for aggravated assaults in 2013, the distribution chart shows that Tulsa continues to fall near the right hand side of the distribution, well above most cities.**

Table 6 below presents the yearly number of aggravated assaults and rates per 10,000 residents for Tulsa between 2004 and 2013. An analysis of the table shows that Tulsa has experienced a declining number of aggravated assault incidents over the past six years, decreasing from 3,524 incidents in 2008 to a decade long low of 2,400 incidents in 2013. Similarly, the aggravated assault rate has decreased from a high of 92 incidents per 10,000 residents in 2008 to a low of 60.8 incidents per 10,000 residents in 2013. **Collectively, the evidence suggests that although Tulsa has remained in the top 20<sup>th</sup> percentile for aggravated assaults nationwide for the past decade, its percentile rankings, number of incidents, and aggravated assault rate have all been on the decline.**

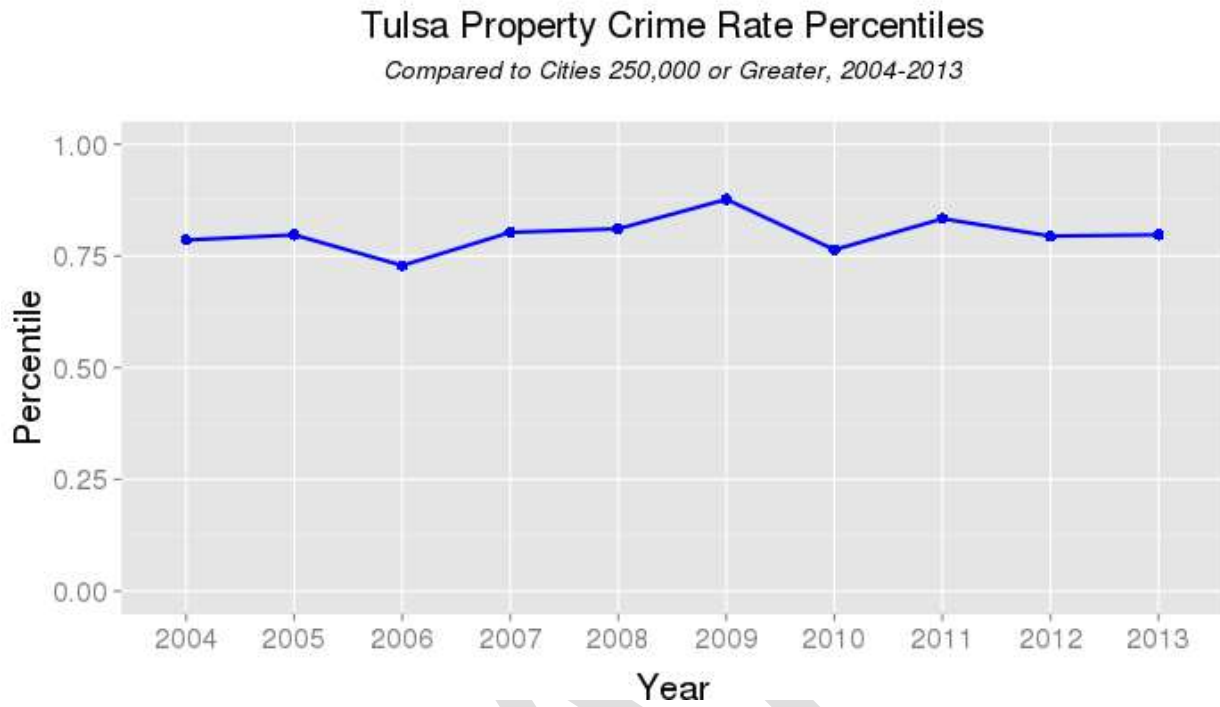
**Table 6: Tulsa Aggravated Assault Incidents and Rates, 2004-2013**

Year	Number of Aggravated Assaults	Aggravated Assault Rate per 10,000 Residents	Percentile Ranking Population 250,000 or more
2004	3306	85.0	84.3
2005	3538	91.6	84.1
2006	3477	90.1	87.1
2007	3175	83.2	87.3
2008	3524	92.0	93.2
2009	2856	74.2	87.7
2010	2617	66.8	83.3
2011	2555	64.5	86.1
2012	2529	63.4	82.2
2013	2400	60.8	81.1

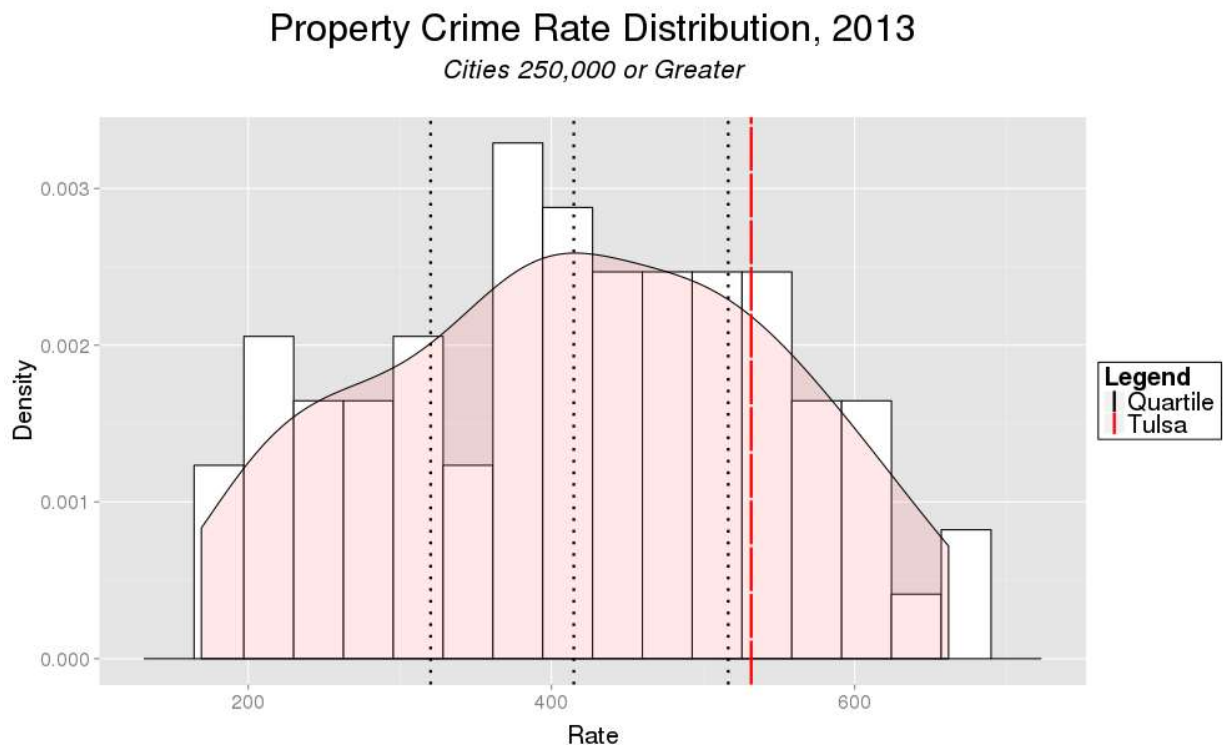
### *Property Crime*

Figure 13, below, displays Tulsa’s property crime rate percentiles compared to other cities sized 250,000 or more for the years 2004 to 2013. **Tulsa’s ranking in reported property crime ranged from a low of 73<sup>rd</sup> percentile in 2006 to a high of 88<sup>th</sup> percentile in 2009. In 2013, it ranked in the 80<sup>th</sup> percentile.** Although Tulsa has fluctuated with respect to its property crime percentile ranking, in general the early-2010s had higher rankings than the mid-2000s.

**Figure 13: Property Crime Rate Percentiles**



**Figure 14: Property Crime Rate Distribution**



The distribution chart for property crime in cities over 250,000 presented above in Figure 14, shows a fairly symmetrical distribution of cases around the median rate of 414.8 incidents per 10,000 residents, without any outlier cities. The middle 50% of cities fall within a rate of 320.3 and 516.6 incidents per 10,000 residents. **Tulsa falls slightly to the right of the 75<sup>th</sup> percentile, with a rate of 531.8 property crimes per 10,000 residents, indicating that it has a relatively high rate of property crimes compared to other urban cities its size.**

Table 7 below presents the yearly number of incidents and rates per 10,000 residents for property crimes in Tulsa. This table shows that the number of property crimes occurring in Tulsa has been decreasing fairly steadily since 2004, when the number of incidents was 26,961. **In 2013, the number of incidents was 20,978, just 171 incidents higher than 2012, which was the lowest in the past decade. This represents a 22.2% reduction in the number of property crime incidents from 2004 to 2013.** Likewise, the property crime rate has decreased from a high of 692.8 incidents per 10,000 residents in 2004 to a low of 521.6 per 10,000 residents in 2012. **However, as with violent crimes, the fact that Tulsa’s property crime percentile ranking remains high, and has even increased since the mid-2000s, while property crime incidents are decreasing, indicates that the property crime reductions in Tulsa are not surpassing or even meeting reductions experienced in similarly sized cities across the nation.**

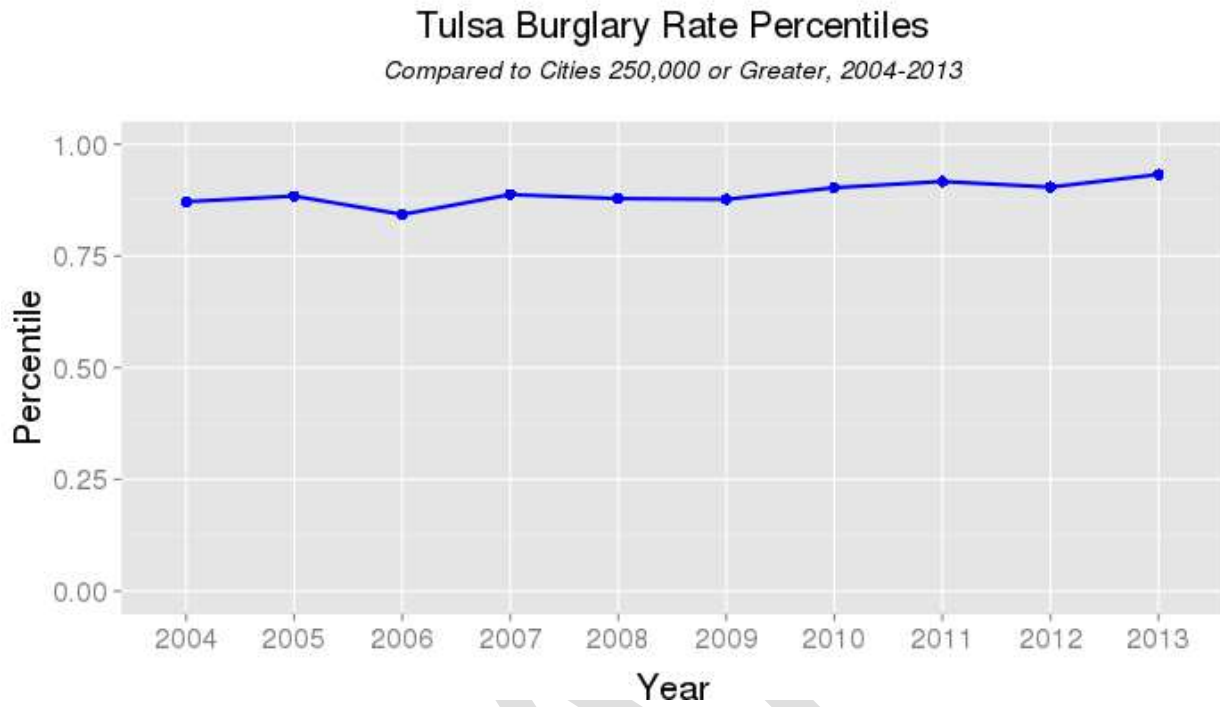
**Table 7: Tulsa Property Crime Incidents and Rates, 2004-2013**

<b>Year</b>	<b>Number of Property Crimes</b>	<b>Property Crime Rate per 10,000 Residents</b>	<b>Percentile Ranking Population 250,000 or more</b>
<b>2004</b>	26,961	692.8	78.6
<b>2005</b>	25,169	651.3	79.7
<b>2006</b>	24,011	622.3	72.9
<b>2007</b>	24,044	630.3	80.3
<b>2008</b>	22,769	594.6	81.1
<b>2009</b>	23,220	603.4	87.7
<b>2010</b>	21,355	544.9	76.4
<b>2011</b>	21,923	553.5	83.3
<b>2012</b>	20,807	521.6	79.5
<b>2013</b>	20,978	531.8	79.7

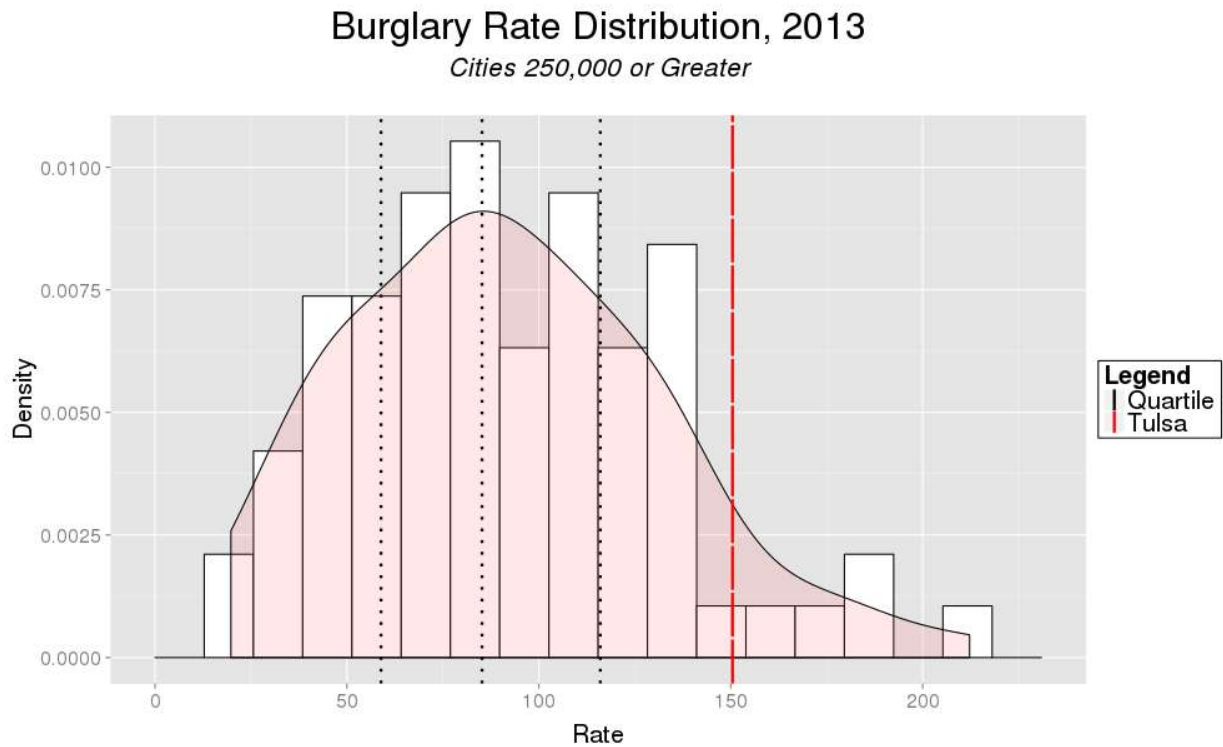
### ***Burglary***

Figure 15 below demonstrates Tulsa’s burglary rate percentiles compared to other cities sized 250,000 or more for the years 2004 to 2013. **Tulsa’s burglary percentile ranking has ranged from a low of 84<sup>th</sup> percentile in 2006 to a high of 93<sup>rd</sup> percentile in 2013.** In general, Tulsa’s burglary rate percentile has increased since the mid-2000s.

**Figure 15: Burglary Rate Percentiles**



**Figure 16: Burglary Rate Distribution**





The distribution chart for burglary, presented above in Figure 16, indicates that the 2013 burglary rates are slightly skewed, with a small tail to the right, and more cities falling at the lower end of the distribution. Indeed, the bottom 50% of cases fall between 19.8 and 85.2 incidents per 10,000 residents. **In contrast, the top 25% of cases fall between 116.0 and 212.2 incidents per 10,000 residents. Tulsa falls within this range, with a burglary rate of 150.4 incidents per 10,000 residents.**

Table 8 below presents the yearly number of incidents and rates per 10,000 residents for burglary in Tulsa. This table shows that the number of burglaries occurring in Tulsa has been fairly steady from 2004 to 2013, with the exception of an increase in 2010 and 2011, followed by a decrease in 2012 and 2013. **Indeed, the highest number of burglary incidents in the past decade was 7353, which occurred in 2011. Shortly thereafter, 2013 had the lowest number of incidents, with only 5935 burglaries occurring. This represents a drop of 19.3%.** Likewise, Tulsa’s burglary rate decreased from an eight year high of 185.6 incidents per 10,000 residents in 2011 to a decade long low of 150.4 incidents per 10,000 residents in 2012. **However, despite the decrease in Tulsa’s burglary incidents and rate between 2011 and 2013, the increase in percentile ranking occurring over the past ten years, and Tulsa’s burglary percentile ranking of 90<sup>th</sup> percentile or higher each year from 2010 to 2013, indicates that burglary is a persistent and ongoing problem for Tulsa.**

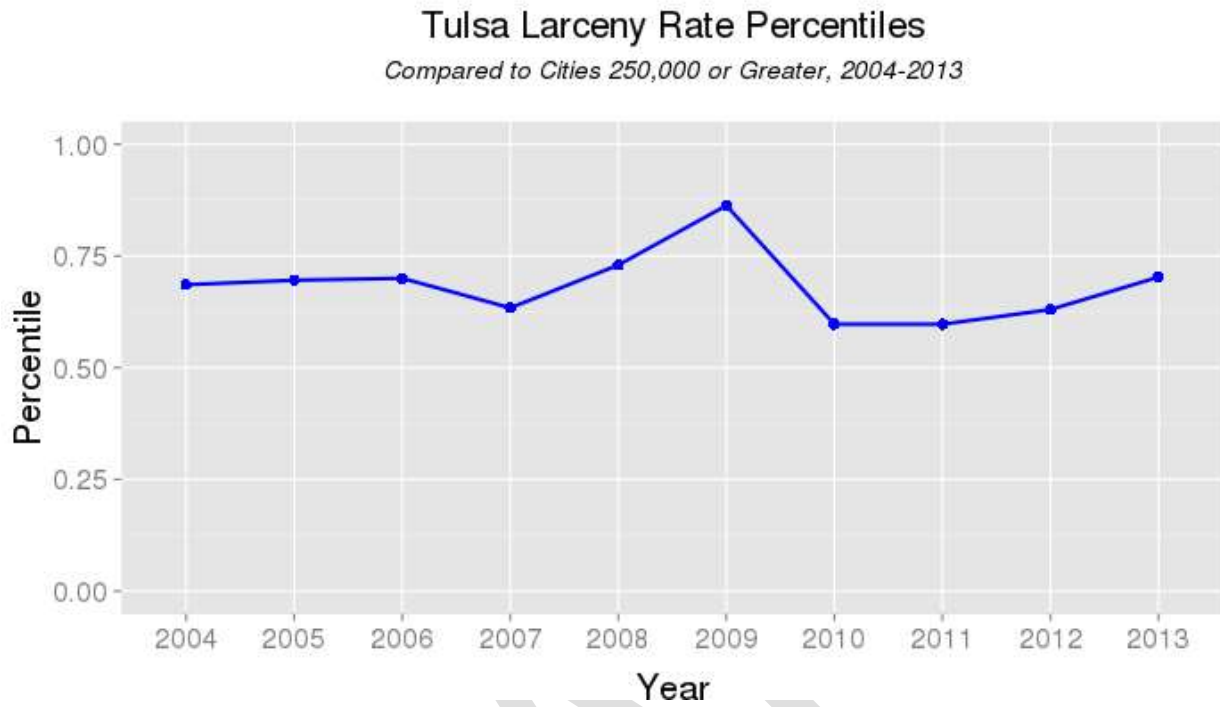
**Table 8: Tulsa Burglary Incidents and Rates, 2004-2013**

Year	Number of Burglaries	Burglary Rate per 10,000 Residents	Percentile Ranking Population 250,000 or more
2004	6648	170.8	87.1
2005	6592	170.6	88.4
2006	6315	163.7	84.3
2007	6843	179.4	88.7
2008	6725	175.6	87.8
2009	6626	172.2	87.7
2010	7146	182.3	90.3
2011	7353	185.6	91.7
2012	6235	156.3	90.4
2013	5935	150.4	93.2

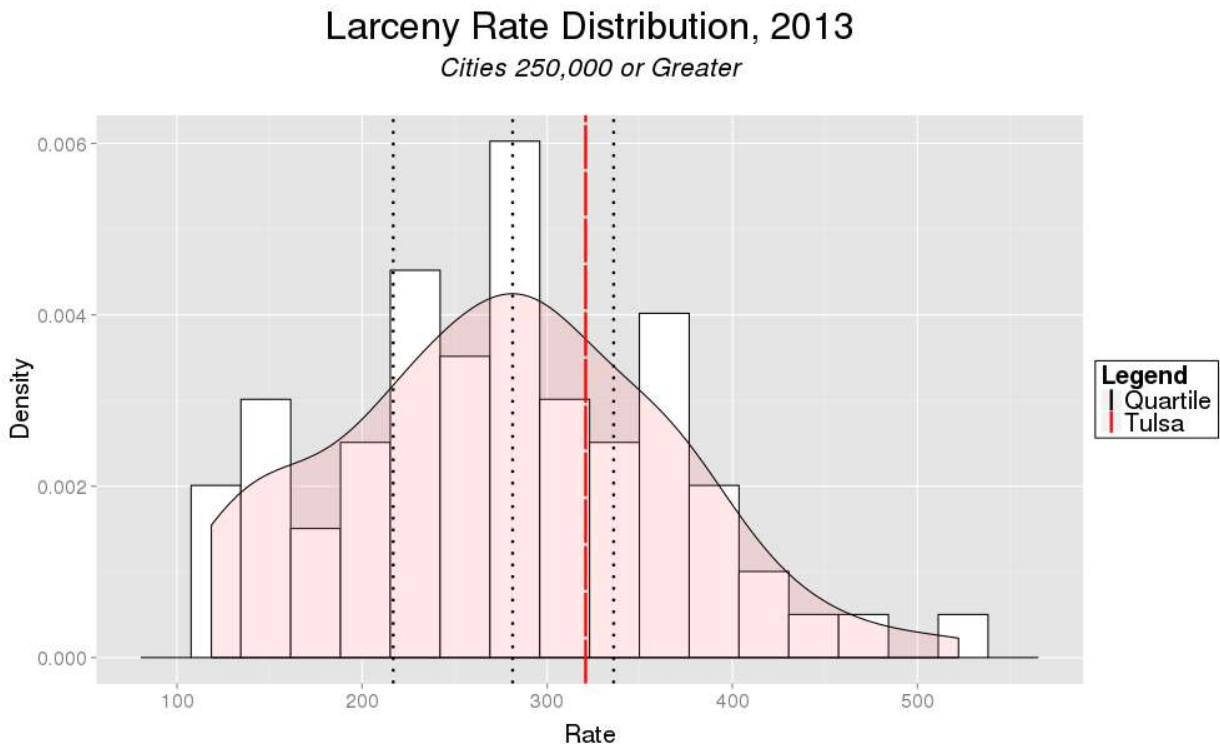
### ***Larceny***

Figure 17 below demonstrates Tulsa’s larceny rate percentiles compared to other cities sized 250,000 or more for the years 2004 to 2013. Tulsa’s larceny percentile ranking has ranged from a low of 60<sup>th</sup> percentile in 2010 and 2011 to a high of 86<sup>th</sup> percentile in 2009. **Between 2011 and 2013, Tulsa’s larceny percentile increased from the 60<sup>th</sup> to the 70<sup>th</sup> percentile.**

**Figure 17: Larceny Rate Percentiles**



**Figure 18: Larceny Rate Distribution**



The distribution chart for 2013 theft rates, presented above in Figure 18, indicates that the 2013 burglary rates are slightly skewed, with a small tail to the right, and more cities falling at the lower end of the distribution. **The middle 50% of cases fall between 216.8 and 335.9 incidents per 10,000 residents. Tulsa falls within this range, with a theft rate of 320.8 incidents per 10,000 residents, which is approximately 40 incidents higher than the median rate of 281.3 incidents per 10,000 residents.**

Table 9 below presents the yearly number of incidents and rates per 10,000 residents for theft in Tulsa. **This table shows that the number of larceny reports in Tulsa has generally declined from 2004 to 2013.** The highest number of thefts occurred in 2004, when the city had 16,590. The lowest number of incidents was 11,857 in 2010. Likewise, Tulsa’s larceny rate was at its lowest in 2010, with only 302.5 incidents per 10,000 residents, and at its highest in 2004, with a rate of 426.3 incidents per 10,000 residents. **Overall, despite ranking slightly above the 70th percentile for theft, the distribution chart shows that Tulsa is near the center of the distribution, where the majority of the cities are fairly narrowly dispersed. Thus, although Tulsa’s larceny rate is high, and is on the incline, it is not dramatically higher than other similarly populated urban areas.**

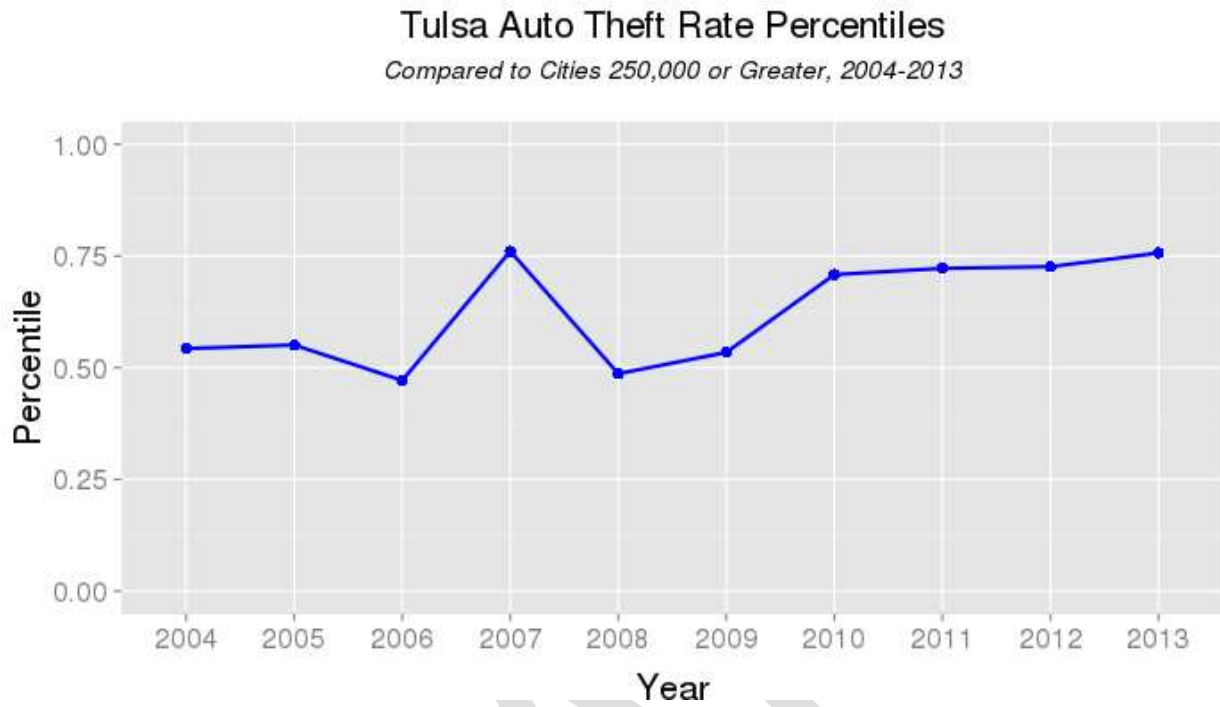
**Table 9: Tulsa Larceny Incidents and Rates, 2004-2013**

Year	Number of Thefts	Theft Rate per 10,000 Residents	Percentile Ranking Population 250,000 or more
2004	16590	426.3	68.6
2005	14847	384.2	69.6
2006	14523	376.4	70.0
2007	13522	354.5	63.4
2008	13746	358.9	73.0
2009	14521	377.3	86.3
2010	11857	302.5	59.7
2011	12136	306.4	59.7
2012	12162	304.9	63.0
2013	12654	320.8	70.3

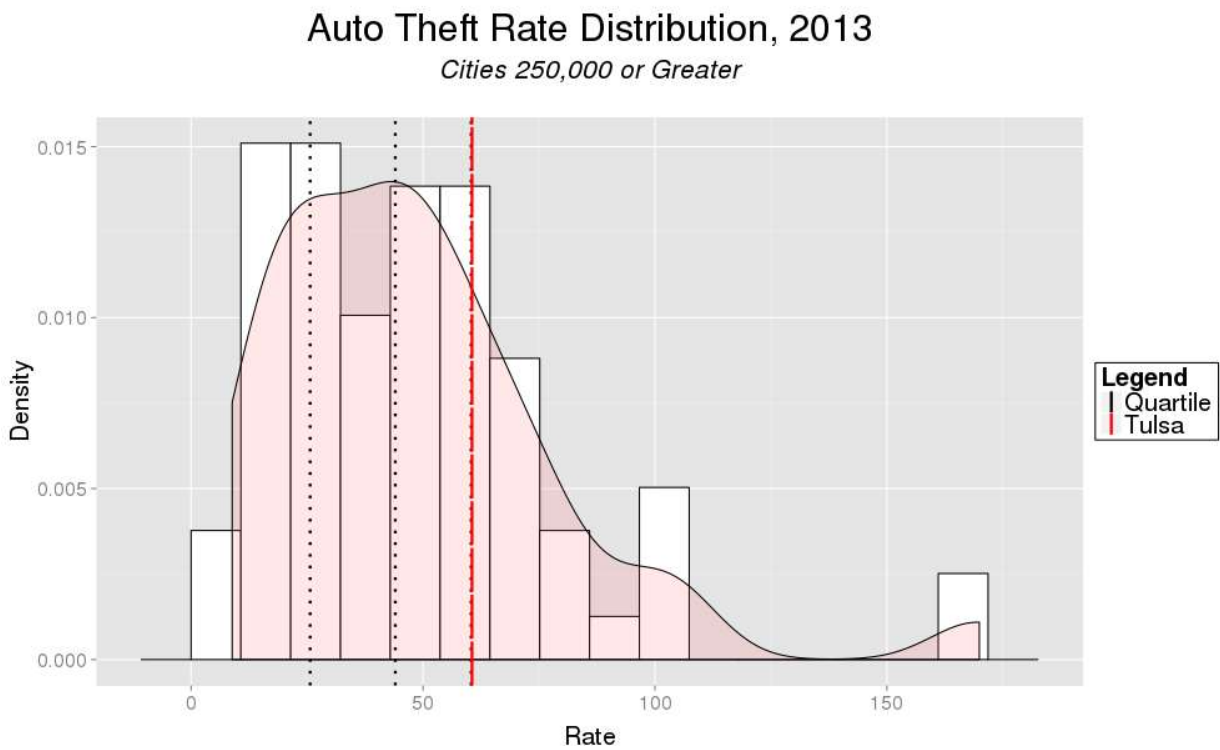
### *Auto Theft*

Figure 19 below demonstrates Tulsa’s auto theft rate percentiles compared to other cities sized 250,000 or more for the years 2004 to 2013. **Tulsa’s auto theft percentile ranking has ranged from a low of 47<sup>th</sup> percentile in 2006 and to a high of 76<sup>th</sup> percentile in 2007. The ranking then dropped again in 2008 to 49<sup>th</sup>, and thereafter steadily increased to the 76<sup>th</sup> percentile in 2013.**

**Figure 19: Auto Theft Rate Percentiles**



**Figure 20: Auto Theft Rate Distribution**



The distribution chart for 2013 theft rates, presented above in Figure 20, indicates that the 2013 auto theft rates are skewed, with a set of outlier cases at the end of the tail to the right. **The middle 50% of case are fairly narrowly dispersed between rates of 25.7 and 60.4 incidents per 10,000 residents. Tulsa falls just slightly higher than this, with a rate of 60.6 incidents per 10,000 residents, which is approximately 17 incidents higher than the median rate of 44 incidents per 10,000 residents.** The outlier cases include Oakland, California and Detroit, Michigan, and have rates of 169.2 and 169.9 incidents per 10,000 residents, respectively.

Table 10 below presents the yearly number of incidents and rates per 10,000 residents for auto theft in Tulsa. **This table shows that the number of auto thefts occurring in Tulsa declined by over a third from the mid-2000s to the early 2010s.** The highest number of auto thefts occurred in 2005, when the city had 3,730, while the lowest occurred in 2009, when the city had 2,073. Similarly, Tulsa’s auto theft rate was at its lowest in 2009, with only 53.9 incidents per 10,000 residents, and at its highest in 2005, with a rate of 96.5 incidents per 10,000 residents. Overall, the distribution chart shows that Tulsa falls to the right of the modal peak, where the rates of most cities are located. **While its rate is relatively stable over the last four years, Tulsa’s national percentile ranking for auto thefts increased from a low of 47<sup>th</sup> percentile in 2006 to a high of 76<sup>th</sup> percentile in 2013.** This suggests that the reductions in auto theft crimes experienced in other cities is surpassing the reductions reported in Tulsa.

**Table 10: Tulsa Auto Theft Incidents and Rates, 2004-2013**

Year	Number of Auto Thefts	Auto Theft Rate per 10,000 Residents	Percentile Ranking Population 250,000 or more
2004	3723	95.7	54.3
2005	3730	96.5	55.1
2006	3173	82.2	47.1
2007	3679	96.4	76.1
2008	2298	60.0	48.6
2009	2073	53.9	53.4
2010	2352	60.0	70.8
2011	2434	61.4	72.2
2012	2410	60.4	72.6
2013	2389	60.6	75.7

***Summary of Findings***

Taken together the previous analyses suggest that Tulsa has had consistently high levels of Part I crime over the past decade when compared to similarly situated cities. Specifically, Tulsa’s rape, aggravated assault, and burglary rates all remained in the top quartile of US cities with populations of 250,000 or larger for the years 2004 through 2013. Similarly, Tulsa’s homicide rate ranking averaged the 76<sup>th</sup> percentile for the five years between 2009 and 2013. Tulsa’s

robbery rate percentile ranking is also notable as it has increased greatly over the past decade, climbing from the 42<sup>nd</sup> percentile in 2004 to the 63<sup>rd</sup> in 2013. The between city analysis for each of these five crimes suggest that they may be worth targeting with additional evidence based crime prevention tactics. In the following section we further examine each of these crimes to determine their distribution and spatial concentrations within Tulsa.

DRAFT

## **Part II: Within City Comparisons over Time**

The purpose of examining crime patterns and trends within a jurisdiction over time is to identify persistent and emerging crime problems, along with the locations and types of crimes that cluster in time and space. Identification of these clusters helps to inform the appropriate evidence-based strategies for intervention. In the following sections we discuss place concentrations, time concentrations, repeat suspects and repeat victims within Tulsa for homicide, rape, robbery, aggravated assault and burglary.

### ***Hot Places***

For each of the crimes identified as being a problem for Tulsa in the above national comparison, an analysis of hot spots is presented below. Hot spots are those areas with a higher concentration of crime than would otherwise be expected if crime was randomly dispersed. Hot spots are identified for year 2014, and for the years 2010 through 2014. For the latter, three types of hot spots are identified: persistent, sporadic, and emerging. Persistent hotspots are those areas which have had a high concentration of crime for all of the last five years. In contrast sporadic hot spots are those that have had a high concentration of crime for some, but not all of the five years between 2010 and 2014. For instance, if an area was identified as a hot spot in 2010 and 2013-2014, but not 2011 or 2012, it would be identified as a sporadic hot spot. Finally, emerging hot spots are those which have been identified as hot spots in 2014, but otherwise have no previous activity, or only distant previous activity.

### ***Homicide***

In the national comparison analysis presented above, homicide was determined to be an ongoing problem in Tulsa due to its persistently high percentile ranking as compared to other urban cities with populations of 250,000 or greater.

The 44 homicide incidents that occurred in Tulsa between January 1 and December 31, 2014, were relatively dispersed with the exception of two areas of concentration. When assessing homicides occurring between January 1, 2010 and December 31, 2014, findings mirror that of the homicide distribution in 2014.

### ***Rape***

Like homicide, in the national comparison analysis rape was determined to be an ongoing problem in Tulsa due to its persistently high percentile ranking as compared to other urban cities with populations of 250,000 or greater. Three rape hotspots emerged in 2014, containing a total of 14 incidents, or 5.7% of Tulsa's total 245 rape incidents. When considering all rapes occurring between January 1, 2010 and December 31, 2014, the number of hotspots increases to eight, including two sporadic and one emerging.

## ***Robbery***

In contrast to the other crimes highlighted in this section, robbery is identified as a problem in Tulsa because of its increasing percentile ranking over the past decade, rather than a persistently high percentile ranking. Tulsa had six robbery hotspots between January 1 and December 31, 2014, which clustered only in Riverside and Mingo Valley. Together, these six robbery hotspots contain 78 incidents or 8.7% of Tulsa's total 897 robbery incidents in 2014. Similarly, six robbery hotspots were found in Tulsa when considering all robberies occurring between January 1, 2010 and December 31, 2014, including one persistent, three sporadic, and two emerging.

## ***Aggravated Assault***

In the national comparative analysis presented above, aggravated assault was determined to be an ongoing problem as Tulsa has consistently remained in the top 20<sup>th</sup> percentile of cities sized 250,000 or greater for the past decade. Between January 1 and December 31, 2014, 14 hotspots contain 186 incidents or 10.0% of Tulsa's total 1855 aggravated assault incidents were identified. Eleven of these overlap with burglary or robbery hotspots. Similarly, when considering all aggravated assaults between January 1, 2010 and December 31, 2014, fourteen hotspots were identified, including six emerging, four sporadic and four persistent.

## ***Burglary***

Burglary was the only property crime determined to be an ongoing problem in Tulsa in the national comparison analysis, as it was the only crime to consistently rank in the 80th percentile and above for the past decade. Between January 1 and December 31, 2014, 16 hotspots containing 516 incidents or 9.8% of Tulsa's total 5253 burglary incidents were identified. All burglary hotspots in 2014 were located in residential areas. Similarly, when considering all burglaries between January 1, 2010 and December 31, 2014, fourteen hotspots were identified, including two emerging, three sporadic and eleven persistent hotspots.

## ***Hot Times***

As with places, crimes tend to disproportionately concentrate during certain days of the week and times of day. In the next section of the report we present a series of tables overviewing the hot times within which Tulsa's homicides, rapes, robberies, aggravated assaults and burglaries tend to occur.



## Homicide

Table 11 below overviews the times of day homicides were reported in Tulsa, broken down by day of the week. Between 8:00pm Monday evenings and 1:00am Tuesday morning appears to have a disproportionate concentration of homicides. However, because homicides are such a rare event, apparent clustering is often driven by multiple victim incidents, and may not be indicative of overall trends.

**Table 11: Time Analysis of Homicide Crimes in Tulsa (Jan. 1, 2014 - Dec. 31, 2014)**

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
00	0	2	0	0	0	0	0
01	0	0	0	0	0	1	1
02	0	1	0	0	0	0	2
03	0	1	0	0	0	1	0
04	1	0	0	0	0	0	0
05	0	1	0	0	0	0	0
06	0	0	0	0	0	0	0
07	0	0	0	0	0	0	0
08	0	0	0	0	0	0	0
09	0	0	2	2	0	0	0
10	0	0	1	1	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	2	0	0	0	0	0	1
14	0	0	1	0	0	1	0
15	0	2	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	1	0	0	0	0	0
19	0	0	1	1	0	0	0
20	1	0	1	0	0	1	0
21	4	1	0	0	0	0	1
22	1	1	1	0	0	0	0
23	1	0	0	0	1	1	2
<b>Total</b>	<b>10</b>	<b>10</b>	<b>7</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>7</b>

**Rape**

The time breakdown for rape, presented below in Table 12, indicates that rape most often occurs in the evening and early morning hours. Furthermore, rapes are also concentrated within weekend days, between Friday evening and Sunday morning.

**Table 12: Time Analysis of Rape Crimes in Tulsa (Jan. 1, 2014 - Dec. 31, 2014)**

<b>Time</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>
00	2	3	0	5	6	1	6
01	1	2	1	1	3	2	3
02	1	1	3	3	2	3	4
03	3	2	0	1	1	1	1
04	1	0	2	1	1	2	3
05	0	0	0	1	1	3	0
06	0	1	2	0	0	0	0
07	0	0	0	0	0	2	0
08	1	1	1	3	1	0	1
09	0	1	0	0	0	0	0
10	0	0	1	1	0	0	0
11	0	1	0	1	1	0	0
12	0	1	2	2	3	0	2
13	0	0	1	1	1	1	0
14	1	1	2	3	0	0	2
15	1	1	0	1	0	2	2
16	0	1	0	0	2	4	0
17	5	1	1	2	0	2	2
18	2	1	3	3	3	1	4
19	1	1	1	0	3	1	4
20	4	1	4	1	2	4	1
21	2	1	2	2	5	3	3
22	1	3	4	2	3	1	0
23	3	0	2	2	7	4	4
<b>Total</b>	<b>29</b>	<b>24</b>	<b>32</b>	<b>36</b>	<b>45</b>	<b>37</b>	<b>42</b>

**Robbery**

The time breakdown for robbery, presented below in Table 13, indicates that this crime most often occurs during the evening between 7:00pm and 1:00am. With respect to the distribution throughout the week, robberies tend to be fairly evenly spread, with the highest number (N = 141) occurring on Saturday and the lowest occurring on Wednesday (N = 120).

**Table 13: Time Analysis of Robbery Crimes in Tulsa (January 1 - December 31, 2014)**

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
00	8	4	4	6	7	6	9
01	2	7	6	3	11	7	9
02	6	9	5	6	5	7	6
03	3	5	1	2	4	7	9
04	3	1	3	5	0	3	4
05	2	3	3	5	4	5	3
06	3	2	1	3	1	3	2
07	1	8	0	3	1	3	1
08	0	2	4	2	0	4	0
09	1	4	3	7	3	5	1
10	1	4	7	5	2	4	1
11	5	5	4	0	2	6	2
12	3	0	4	4	4	2	5
13	6	2	8	5	4	3	5
14	5	5	6	3	4	3	3
15	4	5	4	8	3	5	7
16	7	6	8	5	6	1	8
17	6	5	6	5	6	5	5
18	6	6	5	3	4	7	8
19	5	9	8	4	8	9	10
20	14	11	7	12	11	9	7
21	18	10	9	7	9	10	7
22	12	12	7	9	12	18	9
23	9	5	7	9	13	9	10
<b>Total</b>	<b>130</b>	<b>130</b>	<b>120</b>	<b>121</b>	<b>124</b>	<b>141</b>	<b>131</b>

## Aggravated Assault

The time breakdown for aggravated assault, presented below in Table 14, indicates that this crime most often occurs during the evening between 3:00pm and midnight. On Saturday and Sunday, this hot time window extends beyond midnight until 3:00am. Wednesday evenings between 11pm and 12:00am appear to be a particularly concentrated time for robberies, with 36 incidents occurring during this timeframe in 2014.

**Table 14: Time Analysis of Aggravated Assaults in Tulsa (Jan. 1, 2014 - Dec. 31, 2014)**

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
00	12	12	11	9	18	12	15
01	18	5	9	5	11	21	29
02	3	5	4	4	8	19	27
03	5	10	1	4	17	9	14
04	4	6	4	2	6	5	10
05	6	3	4	4	1	10	4
06	2	1	5	5	2	4	3
07	2	12	5	5	8	3	6
08	6	5	8	9	6	4	2
09	9	7	2	4	7	8	9
10	10	7	12	8	3	4	9
11	7	14	8	9	6	10	9
12	5	5	11	11	12	11	16
13	8	9	13	4	11	9	8
14	9	14	11	8	16	21	8
15	16	16	17	20	12	12	9
16	16	11	10	13	11	12	11
17	14	10	11	16	9	10	14
18	10	18	26	27	22	21	15
19	15	20	14	18	19	12	26
20	10	12	20	21	13	27	13
21	18	28	8	16	14	6	12
22	23	16	9	17	15	16	12
23	9	15	36	17	18	18	12
<b>Total</b>	<b>237</b>	<b>261</b>	<b>259</b>	<b>256</b>	<b>265</b>	<b>284</b>	<b>293</b>

## Burglary

A time analysis of burglary crime in Tulsa is presented below in Table 15. Unlike the violence crimes discussed above, burglary tends to occur during the work week throughout the day. Specifically, burglaries are predominantly perpetrated between 7:00am and 6:00pm, Monday through Friday. The hours between 7:00am and 9:00am are particularly active, with 703, or 13.4%, of all burglaries happening during this time.

**Table 15: Time Analysis of Burglary Crimes in Tulsa (Jan. 1, 2014 - Dec. 31, 2014)**

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
00	21	31	34	34	29	32	32
01	22	25	15	8	16	15	17
02	17	12	13	16	11	14	19
03	11	17	7	11	7	13	13
04	11	11	11	7	14	12	13
05	19	23	17	22	8	11	13
06	31	34	35	23	28	11	13
07	63	72	53	67	63	14	10
08	95	73	64	68	85	30	22
09	43	48	40	34	49	25	23
10	41	38	40	38	48	28	33
11	41	24	40	45	41	32	33
12	58	40	51	45	54	52	43
13	35	28	40	31	31	34	22
14	28	34	31	35	37	27	26
15	36	18	36	43	37	34	29
16	39	40	33	35	46	30	22
17	36	46	41	47	78	46	35
18	44	39	40	45	47	51	33
19	22	29	27	27	36	25	28
20	21	21	32	24	41	32	22
21	30	23	30	16	21	33	35
22	33	27	30	21	24	38	25
23	21	18	18	22	15	37	19
<b>Total</b>	<b>818</b>	<b>771</b>	<b>778</b>	<b>764</b>	<b>866</b>	<b>676</b>	<b>580</b>

## Summary

Crimes tend to concentrate among certain days of the week and times of day. In Tulsa, these concentrations vary by crime type. Specifically, in 2014, robbery tended to occur in the evenings between 7:00pm and 1:00am, while aggravated assault concentrated between 3:00pm and midnight, with hot time windows for both crimes extending into the earlier morning hours on the

weekend. Somewhat similarly, rape tended to concentrate in the evening and early morning hours, and occurred most often on the weekend. In contrast, burglary tended to occur during the work week in the daytime, and was particularly concentrated between the hours of 7:00am and 9:00am. Lastly, homicide concentrated on Monday nights between 8:00pm and 1:00am.

***Repeat Suspects***

In the next section of the report we provide a breakdown of suspect data for rape, robbery, aggravated assault, and burglary. Analysis includes an overview of average suspect age, sex, race, and the average number of offenses per suspect. It is important to note that the following analysis includes only those incidents with suspect information. The proportion of incidents with known suspect information varies by crime type.

***Rape***

Tables 16 and 17 summarize information about Tulsa’s rape suspects. Between January 1, 2014 and December 31, 2014, 50 individuals were arrested for rape by Tulsa PD while 245 rape incidents were reported. Therefore, our analysis is based only on 22.0% of the rapes reported to Tulsa PD.

Of the 50 individuals arrested, analysis identifies only three individuals as repeat offenders, accounting for 6.0 % of the total number of rapes in Tulsa. In addition, the analysis suggests that the most likely offenders are male between the ages of 30 and 35. This is the oldest average age of all crime types assessed in this section. Males make up the most frequent suspects, and although black males are more frequently identified as rape suspects, the difference between the numbers of black and white suspects is small.

**Table 16: Suspects of Rape (January 1 - December 31, 2014)**

<b>Number of Crimes Committed</b>	<b>Number of Suspects</b>	<b>Number of Crimes</b>	<b>Percentage of Total Rapes</b>	<b>Average Age</b>
<b>5 or more</b>	0	0	0.00%	0
<b>4</b>	0	0	0.00%	0
<b>3</b>	1	3	5.56%	30
<b>2</b>	2	4	7.41%	35
<b>1</b>	47	47	87.04%	33.2
<b>TOTAL</b>	<b>50</b>	<b>54</b>	<b>--</b>	<b>33.2</b>

**Table 17: Rape Suspects Demographics (January 1 - December 31, 2014)**

<b>Sex</b>	<b>Race</b>	<b>Number of Suspects</b>
<b>Female</b>	Black	0
<b>Female</b>	White	2
<b>Male</b>	Black	26
<b>Male</b>	White	23

***Robbery***

Tables 18 and 19 present a breakdown of robbery suspects in Tulsa between January 1, 2014 and December 31, 2014. The tables display characteristics of the 292 incidents that ended with arrested suspects in Tulsa in 2014 (32.6% of the total 897 robberies).

Analysis suggests that 121 out of 186 robbery suspects (65.1%) are repeat offenders. In other words, just over half of the robberies (53.7%) that led to arrest in 2014 were committed by repeat offenders. Interestingly, Table 18 suggests repeat offenders tend to be younger, averaging between 21 and 23 years of age, than single offenders, who averaged 25.5 years of age.

Table 19 shows that males are most likely to be suspected of robbery (84.5%). Furthermore, black males are most often robbery suspects, accounting for just over half (51.7%) of all suspects. Of the 33 females suspected of robbery, two-thirds (N=22) were white, while the remaining third (N=11) were black.

**Table 18: Suspects of Robbery (January 1 - December 31, 2014)**

<b>Number of Crimes Committed</b>	<b>Number of Suspects</b>	<b>Number of Crimes</b>	<b>Percentage of Robberies</b>	<b>Average Age</b>
<b>5 or more</b>	5	32	10.96%	23.2
<b>4</b>	7	28	9.59%	22.4
<b>3</b>	19	57	19.52%	22.7
<b>2</b>	20	40	13.70%	21.2
<b>1</b>	135	135	46.23%	25.5
<b>TOTAL</b>	<b>186</b>	<b>292</b>	<b>--</b>	<b>24.5</b>

**Table 19: Robbery Suspects Demographics (January 1 - December 31, 2014)**

Sex	Race	Number of Suspects
Female	Black	11
Female	White	22
Male	Black	151
Male	White	96

***Aggravated Assault***

Tables 20 and 21 present the breakdown of aggravated assault crimes with arrested suspects. Overall, 906 of the 1855 (48.8%) total aggravated assaults reported in 2014 to Tulsa PD ended in arrest.

An analysis of Table 20 shows that 93 of the 773 arrested suspects (12.0%) were repeat offenders. This small percentage of individuals are suspected of committing a quarter (24.9%) of aggravated assaults resulting in arrest in Tulsa. The average age of aggravated assault suspects is 32.6 years, but there is no clear pattern in terms of average age for repeat offenders.

According to Table 21, most aggravated assault suspects are male (82.1%). Furthermore white males are the most prevalent suspects of aggravated assault, accounting for 43.9% of the total arrested suspects. Female offenders made up 30.3% of aggravated assault suspects, the largest percentage of female suspects for the crimes included in the analysis.

**Table 20: Suspects of Aggravated Assault (January 1 - December 31, 2014)**

Number of Crimes Committed	Number of Suspects	Number of Crimes	Percentage of Aggravated Assaults	Average Age
5 or more	4	25	2.76%	28
4	2	8	0.88%	37
3	19	57	6.29%	29.1
2	68	136	15.01%	30.5
1	680	680	75.06%	32.9
<b>TOTAL</b>	<b>773</b>	<b>906</b>	<b>--</b>	<b>32.6</b>



**Table 21: Aggravated Assault Suspects Demographics (January 1 - December 31, 2014)**

Sex	Race	Number of Suspects
Female	Black	127
Female	White	107
Male	Black	295
Male	White	339

***Burglary***

Table 22 and 23 present 389 of the 5253 (7.4%) burglary incidents ending with an arrested suspect. Analysis shows that only 14.9% of burglary suspects are repeat offenders, or have been arrested for two or more burglary incidents. Although a small number suspects, these 47 offenders account for 31.1% (121) of burglaries resulting in arrest in 2014. Overall, the average range of suspects ranges from 18 to 25.5 years of age, averaging at 24.2.

Table 23 shows the sex and race breakdown for arrested suspects of burglary. Consistent with the analyses for all other crimes, males are the most likely suspects (82.3%) as compared to females (12.9%). Furthermore, black and white males have a similar level of prevalence in burglary arrests, as do black and white females.

**Table 22: Suspects of Burglary (January 1 – December 31, 2014)**

Number of Crimes Committed	Number of Suspects	Number of Crimes	Percentage of Burglaries	Average Age
5 or more	3	18	4.63%	25.3
4	4	12	3.08%	18.3
3	11	33	8.48%	24
2	29	58	14.91%	21.5
1	268	268	68.89%	25.5
<b>TOTAL</b>	<b>315</b>	<b>389</b>	<b>--</b>	<b>24.2</b>

**Table 23: Burglary Suspects Demographics (January 1 – December 31, 2014)**

Sex	Race	Number of Suspects
Female	Black	24
Female	White	26
Male	Black	157
Male	White	163

### ***Repeat Victims***

In the next section of the report we provide a breakdown of victim data. Overall, only 12.8% of victimizations (N=2,407) concentrate within repeat victims. Because of this, only two crime types were identified as problematic for repeat victims, aggravated assault and burglary. Victim information was collected for nearly every incident reported, but in some cases victim information was unknown. The following analysis includes any victim information that was reported. As not all victim information is gathered all of the time, some numbers may not. For example, in some cases the table will not match because the identity of the suspect does not contain race or sex breakdowns.

### ***Aggravated Assaults***

Tables 24 and 25 present victim information of aggravated assault between January 1, 2014 and December 31, 2014. Overall, there were 2,077 known victims of aggravated assault. Of the 1,916 known victims, 140 (7.3%) were identified as repeat victims. These victims, although only 7% of known victims, account for 14.5% of the aggravated assaults. The age of aggravated assault victims range between, 30 and 45 years old, but overall averages 31.6 years old.

Table 25 displays the sex and race breakdown of aggravated assault victim. Males (55.4%) more likely to report being victims of aggravated assault than females (44.6%) although the gap is smaller than most violent crime. However, black males (33.6%) are most likely group to report aggravated assault victimization in 2014 when compared to other sex and race combinations; the next leading group, white females account for 24.5% of aggravated assaults.

**Table 24: Victims of Aggravated Assault (January 1 - December 31, 2014)**

<b>Number of Victimization</b>	<b>Number of Suspect</b>	<b>Number of Crime</b>	<b>Percentage of Aggravated Assaults</b>	<b>Average Age</b>
<b>5 or more</b>	0	0	0.00%	--
<b>4</b>	2	8	0.39%	45
<b>3</b>	17	51	2.46%	32.7
<b>2</b>	121	242	11.65%	30.4
<b>1</b>	1776	1776	85.51%	31.6
<b>T O T A L</b>	<b>1916</b>	<b>2077</b>	<b>--</b>	<b>31.6</b>

**Table 25: Aggravated Assault Victims Demographics (January 1 - December 31, 2014)**

<b>Sex</b>	<b>Race</b>	<b>Number of Suspects</b>
<b>Female</b>	Black	392
<b>Female</b>	White	479
<b>Male</b>	Black	425
<b>Male</b>	White	656

## ***Burglary***

Tables 26 and 27 present victim information of burglary incidents between January 1, 2014 and December 31, 2014. Overall, there were 5,032 incidents of burglary with known victims. Table 29 shows that 554 of burglary victims (12.6%) were repeat victims; these victims accounted for 23.8% of all burglaries in Tulsa in 2014. The average age of burglary victims is 42.4 years of age, but no clear pattern was found in repeat victim ages.

Unlike repeat offender analysis, Table 27 shows nearly an equal portion of males (46.9%) and females (53.1%) are victims of burglary, although females report more frequently being victims. Additionally, white individuals (74.3%) report being victims of burglary more often than black individuals (25.7%).

**Table 26: Victims of Burglary (January 1 - December 31, 2014)**

<b>Number of Victimization</b>	<b>Number of Victims</b>	<b>Number of Crimes</b>	<b>Percentage of Burglaries</b>	<b>Average Age</b>
<b>5 or more</b>	2	10	0.00%	52.5
<b>4</b>	8	32	0.64%	42
<b>3</b>	70	210	4.17%	38
<b>2</b>	474	948	18.84%	39.7
<b>1</b>	3832	3832	76.15%	42.8
<b>TOTAL</b>	<b>4386</b>	<b>5032</b>	<b>--</b>	<b>42.4</b>

**Table 27: Burglary Victim Demographics (January 1 - December 31, 2014)**

<b>Sex</b>	<b>Race</b>	<b>Number of Suspects</b>
<b>Female</b>	Black	794
<b>Female</b>	White	1705
<b>Male</b>	Black	418
<b>Male</b>	White	1791

## ***Domestic Violence***

As noted in the Center for Problem-Oriented Policing's Guide for Domestic Violence (Sampson, 2006), domestic violence (DV) has become increasingly important to include in problem analyses. By definition, a crime is deemed domestic violence-related when the two individuals are associated in some way - this definition includes family members, past or present romantic partners, and individuals who are cohabitating. Unlike other interpersonal crimes, domestic violence is not necessarily tied to a particular place, but rather is defined by the dynamic between

two individuals. It is often a longstanding pattern of behavior, with violence being just one of the potential outcomes.

Because of its unusual characteristics, and the fact that it can potentially overlap with each of the crimes we have assessed above, we have given special attention to DV in this section of the report. We examine the prevalence and concentration of DV-related Part I crimes between January 1 and December 31, 2014. Generally, we find that Tulsa's level of domestic violence match that of the national rate of intimate partner violence (not including familial or cohabitating violence) when compared to rates found in the National Crime Victimization Survey (Truman and Morgan, 2014).

***Prevalence of Domestic Violence Cases***

Table 28 displays the number of domestic violence-related UCR crimes and their percentage of total crimes that are known to Tulsa PD. Between January 1 and December 31, 2014, 2.5% of UCR Part I crimes in Tulsa were DV-related. Table 28 displays that violent crimes are the only recorded DV-related crimes, accounting for 18.7% of all Part I violent crimes in Tulsa. Homicides in Tulsa account for the highest percentage of DV-related crimes; seventeen of the city's 44 homicides (38.6%) involved individuals that knew each other. A large proportion of aggravated assaults are also DV-related, with DV crimes accounting for 28.1% of all aggravated assaults in Tulsa in 2014.

**Table 28: Percentage of Domestic Violence Cases in Reported Crimes (January 1 - December 31, 2014)**

	<b>Domestic Violence Related Cases</b>	<b>Non-Domestic Violence Cases</b>	<b>Total # of Cases</b>	<b>Percentage</b>
<b>Homicide/Murder</b>	17	27	44	38.6%
<b>Rape</b>	22	223	245	9.0%
<b>Robbery</b>	8	889	897	0.9%
<b>Felonious Assault</b>	521	1334	1855	28.1%
<b>Burglary</b>	0	5253	5253	0.0%
<b>Theft from Auto</b>	0	3923	3923	0.0%
<b>Auto Theft</b>	0	2206	2206	0.0%
<b>All Other Theft</b>	0	7918	7918	0.0%
<b>T O T A L</b>	<b>568</b>	<b>21773</b>	<b>22341</b>	<b>2.5%</b>

***Prevalence of Domestic Violence Suspects and Victims***

Tables 29 and 30 display the number of domestic violence-related crimes and the percentage of total crimes where the suspects and victims are known to the police. In these cases, numbers may not match the previous tables if multiple suspects or victims were involved in a single incident. These tables show similar trends to that above, with some slight differences.

Most notable of these differences is the large proportion of DV-related rapes when assessing suspects rather than reported crimes or victims. Table 29 shows that nearly half of the cases of rape with known suspects (49.1%) are domestic violence related; however, Table 30 shows that only 11.2% of rape cases reported from victims involve domestic violence. Although the frequency of these rape cases are quite different (57 known suspects and 304 known victims), they give clues as the pervasive nature of DV-related rapes.

**Table 29: Domestic Violence in Known Suspects (January 1 - December 31, 2014)**

	Domestic Violence Related Suspects	Non-Domestic Violence Suspects	Total # of Suspects	Percentage
<b>Homicide/Murder</b>	19	33	52	36.5%
<b>Rape</b>	28	29	57	49.1%
<b>Robbery</b>	9	283	292	3.1%
<b>Felonious Assault</b>	612	313	925	66.2%
<b>Burglary</b>	0	389	389	0.0%
<b>Theft from Auto</b>	0	119	119	0.0%
<b>Auto Theft</b>	0	116	116	0.0%
<b>All Other Theft</b>	0	3745	3745	0.0%
<b>T O T A L</b>	<b>668</b>	<b>5027</b>	<b>5695</b>	<b>11.7%</b>

**Table 30: Domestic Violence in Known Victims (January 1 - December 31, 2014)**

	Domestic Violence Related Victims	Non-Domestic Violence Victims	Total # of Victims	Percentage
<b>Homicide/Murder</b>	19	37	56	33.9%
<b>Rape</b>	34	270	304	11.2%
<b>Robbery</b>	11	922	933	1.2%
<b>Felonious Assault</b>	613	1486	2099	29.2%
<b>Burglary</b>	0	5059	5059	0.0%
<b>Theft from Auto</b>	0	3959	3959	0.0%
<b>Auto Theft</b>	0	2463	2463	0.0%
<b>All Other Theft</b>	0	3945	3945	0.0%
<b>T O T A L</b>	<b>677</b>	<b>18141</b>	<b>18818</b>	<b>3.6%</b>

### *Summary of Domestic Violence Analysis*

The analysis above indicates that Tulsa follows similar trends for domestic violence related crime that are found among national samples (Sampson, 2006; Tjaden and Thoennes, 2000:9). For example, we see aggravated assault being the leading form of violence followed by rape (Tjaden and Thoennes, 2000:9). Overall, domestic violence is most well documented in Tulsa's interpersonal violent crimes. We see that 2.5% of all reported Part I crimes are known to be domestic violence-related. Further broken down, when the victim is known, 3.6% of victims reported being domestic violence related, and . 11.7% when suspects are known.

Most importantly, we see that the proportion of domestic violence related aggravated assaults ranges from 28% (of total reported crimes) to 66% (of DV cases with known suspects). This fact is important to note when deciding on crime prevention tactics to implement, as it has implications for the types of programs that are effective at reducing aggravated assault. Relevant recommendations will be discussed in later sections of the report.

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## SECTION II: STAFFING ANALYSIS

In Section II of this report we provide a detailed staffing analysis of the Tulsa Police Department. The purpose of this analysis is two-fold. First, it is important to compare police force size and crime rates within the City of Tulsa with other large U.S. cities (including those in nearby geographic locations). These analyses provide for a better understanding of the crime and staffing issues that are related to the core mission of the Tulsa Police Department (i.e., public safety, crime prevention, and responding to citizen needs). Second, it is likewise important to assess these crime and staffing trends over an extended time period (i.e., over twenty five years) to ensure the Tulsa Police Department is not experiencing an unusual fluctuation in police force size or crime at the time of the current study. Thus, assessing temporal stability is the purpose of the latter analytic approach.

We achieve these goals by initially providing an overview of the number of sworn officers as compared to both Uniform Crime Report (UCR) Part I offenses and city population size. This information is used to compare Tulsa to other cities nationally, by region, and over time. We then identify a series of eight staffing trajectory groups and their respective crime rates in order to compare Tulsa to similarly staffed organizations nationwide.

Next, we present a patrol staffing analysis using calls-for-service (CFS) within the City of Tulsa to measure workload demands for the Tulsa Police Department. We further break these analyses down by season, type of call, day/time, and number of responding officers, and factor in shift relief performance objectives to determine the number of officers that are needed to address patrol (and other operations) at any given time.

We next present a detective division staffing analysis that includes an examination of both the workload of the specialized units within the Tulsa Police Department and the clearance rate of these units over time. We also present a traffic staffing analysis including examinations of the number of accidents in Tulsa, traffic-related calls-for-service, and the distribution of workload related to traffic requests by time of day.

We conclude this section of the report by offering a number of overall staffing objectives and recommendations to address the problems identified by these analyses in order to provide a road-map of potential solutions to recurring crime and staffing problems. Our recommendations are based upon scholarly literature as well as the best practices available related to staffing concerns.

### **Part I: City Population and Uniform Crime Report Part I Offenses**

#### ***Officer-to-Citizen Ratio by Region***

The first phase of our detailed staffing analysis is to examine the per capita method to determine the expected number of sworn police officers per person based on the crime rate (see Orrick, 2008). One of the most common, though limited, analytical approaches to staffing has been to examine the number of police officers per population (i.e., rate calculation) to approximate the number of sworn officers needed to address community crime problems. A relative comparison against other regional jurisdictions or other police departments is a common approach for the per

capita staff analysis. Since the FBI collects both police employee and crime data for each reporting agency, calculating the officer ratio is a popular technique due to its relative ease of analysis. A simple cross-sectional analysis of 2013 Uniform Crime Reports data illustrates that there were 1.97 sworn police officers in Tulsa per 1,000 residents (FBI, 2013).<sup>3</sup>

An examination of national population ratios shows there were 2.53 sworn police officers per 1,000 residents among the 8,847 police agencies in the U.S. that reported their number of law enforcement employees to the FBI in 2013. As expected, police force size per population varies across both city population size (i.e., larger cities contain more officers per citizen) and geographic region, and thus we disentangle these averages further. Table 31 below presents the geographic and population specific averages from 2013.

The Tulsa Police Department is responsible for investigations, responding to calls for police assistance, and ultimately arresting offenders who commit criminal incidents against the city’s **394,498 inhabitants** (as of 2013). As noted earlier, the **City of Tulsa has 1.97 officers per 1,000 residents**, which is less than the **2.42 officers in the other large U.S. cities located within the South** (with populations greater than 250,000 residents), as well as the overall Southern police force size average of 3.09 officers per 1,000 residents. Also, since the State of Oklahoma borders Kansas and Missouri (Midwestern states) we also see that Tulsa’s police force size is lower than large (greater than 250,000) Midwestern cities (2.51 officers per 1,000).

**Table 31: Comparing the City of Tulsa Police Department Sworn Police Officer per 1,000 Residents with All Other U.S. Police Departments (N = 8,847) in 2013**

Population Category	Northeast	Midwest	South	West
0 – 49,999	2.00	2.10	3.17	3.46
50,000 -99,999	1.92	1.47	1.95	1.16
100,000 - 249,999	2.43	1.73	1.96	1.18
250,000 plus	3.41	<b>2.51</b>	<b>2.42</b>	1.54
<i>Unweighted (Raw) Average</i>	<i>2.01</i>	<i>2.07</i>	<i>3.09</i>	<i>3.02</i>
<b>City of Tulsa</b>	--	<b>1.97</b>	--	--

***Officer-to-Citizen Ratio Over Time – A National Comparison***

In terms of a broader national comparison over time, we examined all urban police departments in the United States (located in cities with populations greater than 100,000 residents) that reported their number of sworn police officers to the Federal Bureau of Investigation from 1990 through 2013 (N = 170). The fundamental question underlying this exploratory analysis pertains to whether or not there is evidence of *clustering of cities* with respect to trajectories of police force size over time – for example, some cities may have persistently high police force size rates over time, some with persistently low rates, and some in between. The use of latent class analysis

<sup>3</sup> The data for this analysis were obtained from the Uniform Crime Reports, Table 78, Crime in the United States, Full Time Law Enforcement Employees by State by City. Retrieved on March 15, 2015. [http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2013/crime-in-the-u.s.-2013/tables/table-78/table\\_78\\_full\\_time\\_law\\_enforcement\\_employees\\_by\\_state\\_by\\_city\\_2013.xls/view](http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2013/crime-in-the-u.s.-2013/tables/table-78/table_78_full_time_law_enforcement_employees_by_state_by_city_2013.xls/view)



for this investigation allows us to identify *different trajectories* of cities with *unique police force sizes over time*.<sup>4</sup> We take the position that the number of officers per citizen in a jurisdiction may follow unique developmental pathways over time, and across different urban police departments in the country. As such, we believe it is important to examine the optimum number of officers-per-citizen over time across urban settings.

The results of our trajectory analysis demonstrated two important findings. First, urban police departments have incredible stability in terms of their number of police officers per citizen ratio. More specifically, urban police departments that were classified in a unique trajectory group maintained their police force size levels relative to their city's rise or decline in population size. Second, the analysis indicates that the distinctions between different urban police departments were unique and identifiable based on their trajectory group classification.

As shown in Figure 21, there are eight distinct police-to-citizen trajectories across U.S. cities. The lowest trajectories (Groups 1-2) have maintained a little over 120 (or so) sworn officers per 100,000 residents. The next trajectory groups (Groups 3-5) averaged between roughly 150 officers per 100,000 residents (Group 3), to roughly 190 officers per 100,000 (Group 4), to roughly 220 or so sworn police officers per 100,000 residents (Group 5) over this period. The clear observational distinctions became even more apparent among the highest trajectory groups (Groups 6-8), which consistently ranged from 280 officers per 100,000 residents (Group 6) to 350 officers per 100,000 (Group 7), to almost 500 officers per 100,000 people (Group 8). These findings clearly illustrate both the consistency and the high degree of variability that exists among urban police forces in terms of their officer-to-citizen ratios.

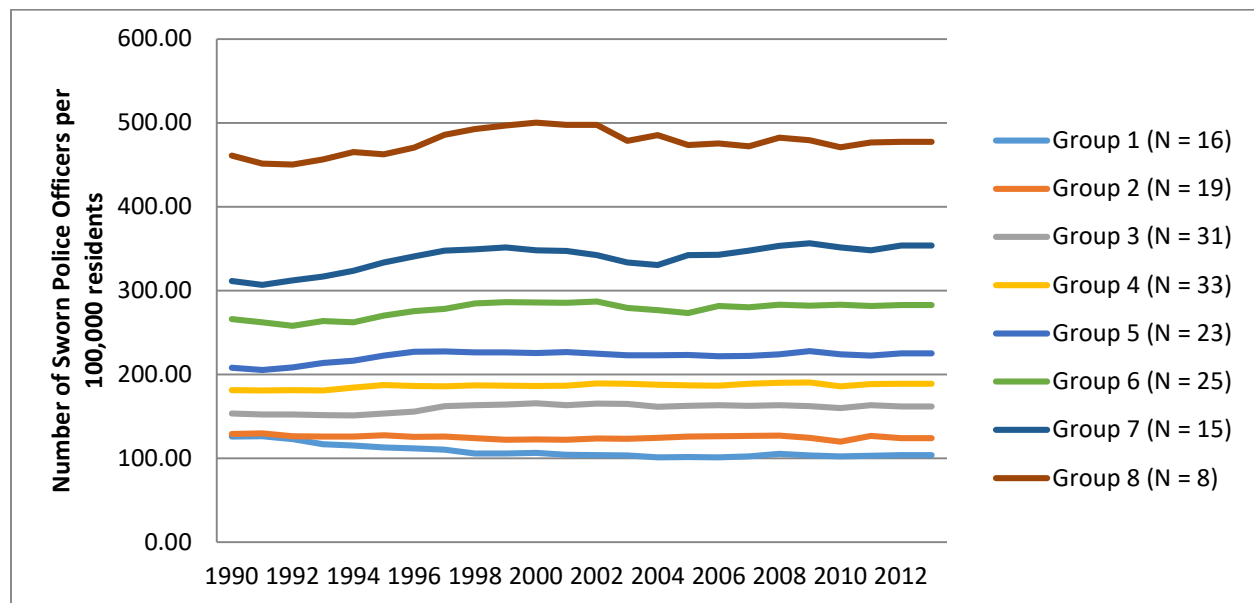
The Tulsa Police Department was uniquely classified within Trajectory Group 4. **In 1990, TPD had 1.90 officers per 1,000 residents; 2.06 per 1,000 in 2000; 1.88 per 1,000 in 2010; and 1.98 per 1,000 in 2013.** Thus the city has maintained a relatively stable level of police over this twenty-three year period, which is very consistent with other city police departments classified in Group 4.<sup>5</sup>

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<sup>4</sup> For the analysis over time, we use semi-parametric trajectory analyses, which have been applied primarily to individual-level longitudinal cohort data to identify unique offending trajectories (see Nagin and Land, 1993; Nagin, 2005), though recent research have drawn upon these techniques to identify cities that have unique crime rate trends (see McCall, Land, and Cohen, 2010). We adapt the approach to identify which cities have unique police force size trajectories over time.

<sup>5</sup> A total of 33 urban police departments are also classified into Group 4: Albuquerque (NM), Allentown (PA), Austin (TX), Berkeley (CA), Des Moines (IA), Erie (PA), Fort Wayne (IN), Green Bay (WI), Hampton (VA), Inglewood (CA), Jacksonville (FL), Lexington (KY), Long Beach (CA), Manchester (NH), Newport News (VA), Oakland (CA), Oklahoma City (OK), Omaha (NE), Peoria (IL), Phoenix (AZ), Portland (OR), Pueblo (CO), Raleigh (NC), Reno (NV), Richmond (CA), Rockford (IL), Springfield (IL), St. Paul (MN), Tacoma (WA), Tucson (AZ), Tulsa (OK), Waco (TX), and Wichita Falls (TX).

**Figure 21: Number of Sworn Police Officers Per 100,000 Residents (8 Group Solution)**



However, it is important to examine information beyond police officers-to-citizen population ratios. For example, it is particularly informative to understand the average number of serious violent and property crimes across the various trajectory classifications. First, we compare the average number of serious crimes observed within Group 4 with the City of Tulsa since the 33 cities in Group 4 have maintained very comparable and stable officer-citizen ratios since 1990.

Table 32 below clearly shows that the **violent crime rate** (i.e., the number of assaults, robberies, rapes, and homicides per population) **and homicide rate** (number of homicides per population) **are disproportionately higher for the Tulsa Police Department when compared with other Group 4 city agencies**. Specifically, the overall violent crime rate for TPD for years 2012-2013 was 980 violent crimes per 100,000 residents; comparatively, the Group 4 average for this same period was 658 violent crimes per 100,000 people. The murder rate for Tulsa was 12.8, while the Group 4 average murder rate was 8.0. However, **the property crime rate** (burglaries, thefts and motor vehicle thefts) **for TPD (2,925 per 100,000 people) was consistent with Group 4 police agencies (average = 3,150 property crimes per 100,000)**.

**Table 32: National Comparison of Urban Police Department Sizes (N = 170): Police Officer Size Per 100,000 and Average Violent, Murder, and Property Crime Rates Per Trajectory Classification**

	1990 Avg Police Per 100,000	2000 Avg Police Per 100,000	2010 Avg Police Per 100,000	2013 Avg Police Per 100,000	2012- 2013 Avg Murder Rate	2012- 2013 Avg Violent Crime Rate	2012- 2013 Avg Prop Crime Rate
<b>City of Tulsa</b>	<b>190.3</b>	<b>206.3</b>	<b>187.8</b>	<b>197.7</b>	<b>12.8</b>	<b>980.1</b>	<b>2,924.9</b>
Group 1	125.6	106.2	101.9	107.2	4.5	365.3	3,051.3
Group 2	128.7	122.3	119.9	126.2	4.8	473.8	3,409.9
Group 3	153.2	165.5	159.7	168.1	5.5	566.5	4,114.5
<b>Group 4</b>	<b>181.1</b>	<b>186.1</b>	<b>185.5</b>	<b>195.2</b>	<b>8.0</b>	<b>658.3</b>	<b>3,149.7</b>
Group 5	207.8	225.5	223.8	235.6	7.6	757.8	4,564.3
Group 6	265.8	285.6	282.9	297.8	10.8	882.9	4,616.7
Group 7	311.2	348.1	351.2	369.7	14.9	968.1	7,777.1
Group 8	465.1	504.1	470.9	495.7	11.7	872.2	2,610.9

We next move to an analysis that assesses the murder, violent, and property crime rate per 100 police officers for the previously indemnified eight trajectory groups. The findings, presented in Table 33, indicate that **Tulsa PD has a higher number of violent crimes-per-100 officers (498 per 100 sworn police officers), as well as a higher murder-to-officer ratio (6.5 per 100 officers) relative to other Group 4 agencies (354 and 4.4 violent crimes and murders per 100 officers respectively).** As seen in the prior analyses, the property crime-per-officer rate actually is lower for TPD than other Group 4 agencies.

**Table 33: National Comparison of Urban Police Department Sizes (N = 170) All City Agencies Serving 100,000 plus: Average Violent, Murder, and Property Crime Rates Per 100 Police Officers in 2012-2013**

	2012-2013 Avg Violent Per 100 Officers	2012-2013 Avg Murder Per 100 Officers	2012-2013 Avg Prop Per 100 Officers
<b>City of Tulsa</b>	<b>497.5</b>	<b>6.5</b>	<b>1484.7</b>
Group 1	366.7	4.5	3060.4
Group 2	405.7	4.1	2920.3
Group 3	359.1	3.5	2607.9
<b>Group 4</b>	<b>353.9</b>	<b>4.4</b>	<b>2437.8</b>
Group 5	363.9	3.5	2131.8
Group 6	327.4	4.0	1711.9
Group 7	399.4	5.4	1357.6
Group 8	202.1	2.7	804.7

### ***Civilian-to-Sworn Police Employee Ratio Comparison***

Here we assess the number of civilian employees employed within Tulsa Police Department and compare the civilian to sworn employee ratio to national urban police force size averages. According to the 2013 Law Enforcement Management and Administrative Statistics (LEMAS) survey of all urban police departments, Tulsa employed 93 civilians and 780 sworn personnel with arrest powers. This equates to a civilian-to-sworn ratio of .119. The national urban average (all U.S. cities with 100,000 or greater) is .315. This means that, on average, cities have 1 civilian employee per 3 sworn employees. Tulsa, comparatively, has 1 civilian employee per every 8 sworn employees.

This disparity is very likely due to the outsourcing of services performed in Tulsa by other agencies to conduct accounting, dispatching, information technology, and human resources. A more nuisance analysis necessary. However, even when accounting for consolidation and contracting, more civilian employees to assist with data and analysis and other support operations are likely needed. We recommend a more nuisance analysis to determine whether and to what extent Tulsa PD can be supported by additional civilian employees.

### ***Supervisor-to-Patrol Sworn Officer Ratio Comparison***

Again, using data from the 2013 LEMAS national survey, urban police departments 4.1 patrol officers per every 1 supervisor (pooled number of Chiefs, Intermediate Supervisors, and First-Line Sergeants). Tulsa's patrol to supervisor ratio for 2013 was 4.84, which was slightly higher patrol to supervisor ratio than the national urban police force size average. Thus, any increases made to the patrol division should focus on maintaining the current national patrol to supervisor ratio currently established within the department.

In summary, the City of Tulsa has a consistent staffing level over time, and is comparable to other cities in the fourth trajectory (out of eight identified). However, when comparing to other cities with similar officer-to-population ratios over time, the City of Tulsa has a significantly higher violent crime rate and homicide rate. Further, Tulsa's violent crime and homicide rates are higher than the averages for even those cities identified as having the largest officer-to-population staffing. The property crime rate for Tulsa, by comparison is within the expected range relative to other cities in its trajectory. We also find that Tulsa PD is operating at a deficiency in terms of its number of civilian employees within the agency (roughly 1/3 of the national urban police force average).

## Part II: Patrol Staffing Analysis – Calls for Service (CFS)<sup>6</sup>

In this section, we examine a staffing analysis within the City of Tulsa. The responsibilities of a police department that focus on handling patrol officers include the following:

- 1) Responding to *citizen-generated* calls for police services
- 2) Responding to *police-generated* calls for police services
- 3) Police *administrative* tasks
- 4) Proactive *police patrol*, such as hotspot or problem-oriented policing, in order to promote crime prevention (for more detail see the National Academy of Sciences, 2004)

Table 34, below, overviews the citizen initiated calls for service in Tulsa each year between 2007 and 2014. Calls for service ranged from a high of 240,517 in 2007 to a low of 195,714 in 2010. In general, calls for service decreased from 2007 until 2010, and then increased until 2014. However, despite this increase, calls were still 14% lower in 2014 than in 2007.

**Table 34: Citizen Initiated Calls for Service (Jan 1, 2007 to Dec 31, 2014)**

<u>Year</u>	<u>Number of CFS</u>
2007	240517
2008	231855
2009	219177
2010	195714
2011	196828
2012	201294
2013	200445
2014	206718

Table 35 further breaks down the calls for service by type of call. Alarm calls decreased from 2008 until 2011, when they reached a low of 18,055, and then increased until 2014 when they reached a high of 36,223. Similarly, rape was at its lowest earlier in the decade, with only 367 calls for service in 2007, and increased in the 2010's, reaching a high of 456 in 2012, and remained above 400 into 2014. Burglary decreased from a high of 16,150 in 2007 to a low of 11,718 in 2011, only to increase again to 13,459 in 2014, just as child in need calls were at a high of 1916 in 2007, decreased to 1490 in 2011, and increased again thereafter.

In contrast, assault, fighting, hazard, shooting, suspect and traffic related calls for service were all at their highest in 2007 or 2008 and lowest in 2014. Specifically, assault calls declined by 28% from 5218 to 3776; fighting calls declined 36% from 2243 to 1430; hazard calls declined by 33% from 6145 to 4110; shootings calls declined 32% from 4718 to 3197; suspect calls declined by 35% from 9239 to 5988; and finally, traffic related calls declined by 48%, from 26,923 to

<sup>6</sup> While we have more recent crime data for the City of Tulsa than 2012-2013 statistics, the FBI does not provide such updated information for comparison cities. Thus, for comparative consistency, Part IA of this report focuses on 2012-2013 crime data. However, the workload analyses in Part I B relies on more recent data when analyses focus only on the City of Tulsa (e.g. the use of Calls for Service Data for 2014).

14,036. Child abuse and missing person calls for service both remained relatively stable, ranging between 604 to 742, and 1130 to 1368 from 2007 and 2014, respectively. Similarly, domestic violence calls for service remained between 19,304 and 21,140, and robbery calls for service stayed between 1130 and 1372.

Disturbance calls for service were at their highest in 2007, at 17,441, and then declined, reaching a low of 14,260 in 2013. They then increased to 15,087 in 2014. Likewise, stolen vehicle calls for service were at their highest in 2007 at 1052, reached a low of 695 in 2011, fluctuating by less than 100 calls thereafter. Physical disorder calls for service fluctuated a great deal between a low of 1211 and a high of 1711, just as runaway calls for service fluctuated greatly between 1218 and 1628. Theft calls reached a high of 5996 in 2007, dropping to 4128 in 2009, and thereafter increasing again to 5306 in 2014. Lastly, suspicious activity increased from 8262 calls for service in 2008 to 10321 in 2010, and thereafter remained between 10,000 and 11,000 into 2014.

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**Table 35: Classification of Citizen Initiated Calls for Service (Jan 1, 2007 - Dec 31, 2014)**

<b>Call Type</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Alarm	21714	26812	18460	18801	18055	22444	29236	36223
Assault	5218	5018	4217	4529	4338	4415	4026	3776
Burglary	16150	15732	16022	11835	11718	13721	14175	13459
Child Abuse	742	655	604	687	637	668	642	636
Child in Need	1916	1864	1644	1529	1490	1744	1790	1630
Disturbance	17441	16374	15191	15606	16117	15547	14360	15087
Domestic Violence	19741	19304	19848	20378	20433	21140	20614	20071
Fighting	2191	2243	2033	1699	1717	1746	1607	1430
Hazard	6145	5813	5593	5276	5030	4984	4778	4110
Missing Person	1368	1241	1298	1130	1143	1230	1214	1175
Physical Disorder	1468	1211	1397	1711	1603	1366	1352	1465
Rape	367	369	375	424	419	456	433	405
Robbery	1171	1176	1197	1372	1167	1130	1155	1139
Runaway	1510	1628	1315	1377	1279	1613	1582	1218
Shooting	4718	4540	4293	4183	4398	4394	3327	3197
Stolen Vehicle	1052	833	793	816	695	793	773	702
Suspect	9239	8136	8193	7915	7679	7338	6846	5988
Suspicious Activity	9062	8262	8561	10321	10898	10844	10075	10725
Theft	5996	4493	4128	4680	4722	4610	4843	5306
Traffic Related	26923	25816	25324	21264	20083	20878	18472	14036
<b>TOTAL</b>	<b>154132</b>	<b>151520</b>	<b>140486</b>	<b>135533</b>	<b>133621</b>	<b>141061</b>	<b>141300</b>	<b>141778</b>

For this staffing analysis, we draw from staffing publications disseminated by the International City/County Management Association (ICMA – see McCabbe, 2012) and the U.S. Department of Justice Community Oriented Policing Services (COPS) staffing guide (see Wilson and Weiss, 2012). Standard performance measures focus on two important dimensions: 1) percentage of patrol time allocated to *citizen generated CFS*, and 2) percentage of patrol time allocated to *both citizen + police generated CFS*.

In terms of the former (citizen-only CFS), the COPS office cites the 33% to 50% allocation rule (i.e., that roughly 33% to 50% of patrol time should be used to address citizen-generated CFS). For both citizen and police generated CFS combined, the IMCA (as well as Shane, 2007) cites a 60% rule for both citizen and police generated CFS (i.e., that roughly 60% of patrol time should be used to address both citizen and police generated CFS). Thus, our staffing models draw from both guiding models, and the results from both sets of analyses provide highly comparable performance objectives.

In this report we provide staffing information within the following format:

- 1) Examine the distribution of total calls for service by hour of day, day of week, and month
- 2) Examine the nature of calls for service
- 3) Estimate the time consumed on calls for service
- 4) Provide staffing estimates commensurate with citizen demands
- 5) Estimating the agency shift relief factor
- 6) Establish performance objectives

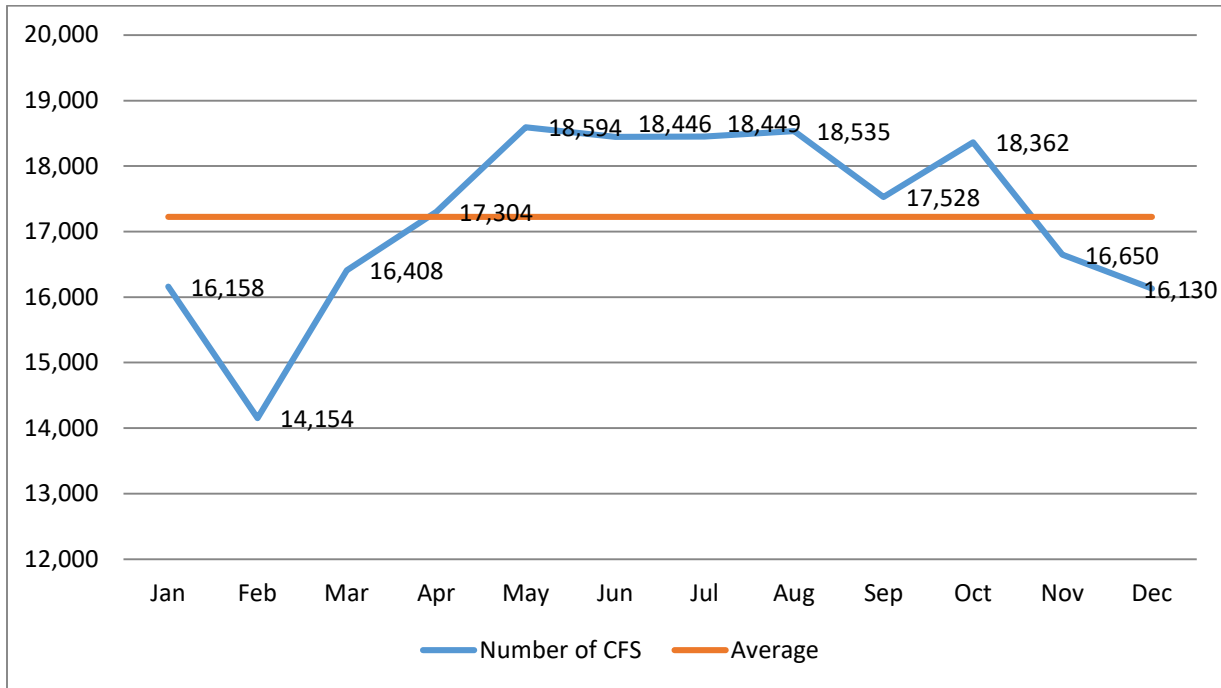
We first document the distribution of citizen-generated CFS data to understand current workload assignments for the Tulsa Police Department generated by Tulsa residents. Figure 22 shows the monthly CFS distribution for TPD from January 1, 2014 through December 31, 2014. The average number of citizen-generated CFS per month was roughly 17,227 calls for police service.<sup>7</sup> In general, the winter season slightly receives less CFS compared to the other seasons. The lowest number of CFS in 2014 was for February, and the highest number of CFS was in August (a seasonal difference of roughly 31%).

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<sup>7</sup> This distribution excludes CFS for the same incident. For example, if multiple callers report a single incident, only one call regarding that specific incident is included in the calculations.



**Figure 22: Distribution of Citizen-Generated CFS Jan 1 - Dec 31, 2014 (N = 206,718)**



**Daily Distribution of Calls for Service Across Seasons**

Table 36 displays seasonal daily percentages of CFS for Winter (December-February), Spring (March-May), Summer (June-August), and Fall (September-October). It is important to note that the daily percentages were obtained by using column totals for each day to minimize possible disproportional effects of seasonal variation. Table 36 shows that the average CFS percentage is 14.3, and the majority of the percentages across the days are very close to that average. The only exceptions are Fridays and Sundays. Fridays consistently receive the highest number of CFS; likewise, Sundays receive the lowest numbers of CFS.

**Table 36: Daily Distribution of Citizen-Generated CFS across Seasons January 1, 2014 to December 31, 2014**

Day	Winter	Fall	Spring	Summer	Total
Monday	14.6%	13.8%	14.3%	14.9%	14.4%
Tuesday	14.3%	14.1%	14.1%	14.2%	14.2%
Wednesday	14.2%	14.0%	13.9%	14.7%	14.2%
Thursday	14.1%	14.4%	13.8%	14.6%	14.2%
Friday	15.2%	15.2%	15.1%	15.2%	15.2%
Saturday	14.7%	15.8%	14.7%	13.9%	14.8%
Sunday	12.9%	12.7%	14.2%	12.4%	13.1%
<b>Total</b>	<b>52,540</b>	<b>52,306</b>	<b>55,430</b>	<b>46,442</b>	<b>206,718</b>

### *Nature of Citizen-Generated CFS*

We examined the distribution of the different types of CFS to gauge the various types of requests required of Tulsa PD patrol officers. Table 37 provides summary information for the different categories of citizen-generated CFS. As can be seen below, the vast majority of known CFS were public order violations (23.9%), followed by alarms (17.5%), violent crimes (17.3%) and property crimes (14.7%). Traffic accident CFS comprised roughly 5.2% of all CFS. Roughly 21.4% of CFS were unknown, not coded, or were categorized as other requests for assistance.

**Table 37: Nature of Citizen-Generated CFS by Category Jan 1, 2014 – Dec 31, 2014**

<b>CFS Category</b>	<b>Number of CFS</b>	<b>Total</b>
Public Order	49,348	23.9%
Alarm	36,118	17.5%
Violent Crime	35,684	17.3%
Property Crime	30,342	14.7%
Traffic Accident Requests	10,678	5.2%
Other/Unknown	44,548	21.4%
<b>Total</b>	<b>206,718</b>	<b>100%</b>

### *Heat Times of CFS by Days and Times*

Table 38 displays a distribution plot of citizen generated CFS to Tulsa Police Department by both day and time.<sup>8</sup> The results reveal that citizen-generated CFS are consistently the lowest between midnight and 7am (with an exception for 12:00 midnight to 1am on Saturdays), and the most heavy concentration between 2pm through 10pm across all days.

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<sup>8</sup> There are three color codes in Table 38: Blue (ranging from light to dark), White, and Red (also ranging from light to dark). A Blue coded day-time block equates to a lower number of calls for assistance (darker blue meaning much less than the average); White equates to the approximate average number of calls per day and time; and Red means a higher distribution of citizen-generated CFS (with darker red equating to a much higher distribution). This distribution is based upon standardized (z-scores) to improve statistical accuracy.

**Table 38: Call Distribution Density by Days and Times for January 1, 2014 – December 31, 2014 (N = 206, 718)**

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
0	925	949	1008	1008	1038	1372	1355
1	714	775	735	743	801	1129	1250
2	596	593	630	649	705	1064	1127
3	503	494	502	522	597	848	813
4	428	469	419	498	461	644	645
5	442	463	417	431	443	562	518
6	524	591	607	612	611	530	540
7	1002	982	993	1038	1010	750	606
8	1265	1155	1178	1262	1224	956	801
9	1275	1238	1218	1241	1302	1162	901
10	1268	1276	1250	1289	1291	1215	1103
11	1399	1257	1358	1385	1378	1271	1160
12	1389	1381	1395	1390	1431	1266	1139
13	1128	1104	1140	1106	1152	951	884
14	1938	1716	1831	1797	1940	2030	1862
15	1716	1721	1720	1610	1749	1542	1453
16	1970	1850	2000	1835	2064	1719	1560
17	1936	1931	1946	1829	1984	1629	1454
18	1729	1845	1750	1715	1786	1612	1418
19	1712	1711	1633	1607	1723	1597	1399
20	1375	1398	1417	1412	1491	1490	1212
21	1776	1756	1639	1727	1900	1904	1508
22	1405	1422	1344	1408	1667	1758	1275
23	1286	1224	1217	1232	1576	1592	1123
<b>Total</b>	<b>29,701</b>	<b>29,301</b>	<b>29,347</b>	<b>29,346</b>	<b>31,324</b>	<b>30,593</b>	<b>27,106</b>

***Characteristics of Tulsa PD’s CFS Data***

Our next analysis provides information about the officers needed to address citizen-generated CFS. The data for this analysis, displayed in Table 39, indicates that roughly 37.6% of CFS have one patrol officer respond to calls for service, while 42.5% have two officers respond per call. This means that over 80% of all CFS have either one or two officer’s respond per call. In 11% of CFS requests, three officers respond to CFS, while the remaining 9% of CFS have four or more officers respond.

It is also important to examine the total number of minutes spent by patrol officers for CFS – from call response to call clearance (i.e., the end of police-citizen interaction) as well as from call response to call closure (i.e., the completed filing of the report). In cases where two or more officers respond to a CFS, the difference between call clearance and closure increases (relative to

a single officer responding) because the assisting officer often leaves the scene before the primary officer closes the call. This can be seen in cases where a single officer responds to a CFS (i.e., a difference of 39,143 minutes for all of 2014 for single officer responses) compared with two officers responding (i.e., a difference of 910,258 minutes for calls with two officers)

**Table 39: Number of Assigned Patrol Officers to Citizen-Generated Calls for Service (Jan. 1, 2014 - Dec. 31, 2014)**

<b>Number of Officers</b>	<b>Number of CFS</b>	<b>Percentage of CFS</b>	<b>Total Service Time (in minutes) to Clear</b>	<b>Total Service Time (in minutes) to Close</b>	<b>Time Difference</b>
1	77,754	37.61%	3,826,509	3,865,652	39,143
2	87,791	42.47%	3,697,742	4,608,000	910,258
3	23,991	11.61%	902,283	1,716,681	814,398
4	9,392	4.54%	345,873	846,343	500,470
5+	7,790	3.77%	263,879	122,8825	964,946
<b>Totals and Averages</b>	<b>206,718</b>	<b>100.00%</b>	<b>1,807,257 (Avg)</b>	<b>2,453,100 (Avg)</b>	<b>645,843 (Avg)</b>

Based upon this distribution of citizen requests, it is important to estimate the current workload of Tulsa PD patrol officers in terms of the total time spent for each CFS. Calculation for calls for service handled by one patrol officers is straight forward; therefore, no extra calculations are required. However, the calculation process of calls for service that require more than one patrol officers becomes more complex since each officer may (and most often do) arrive and leave at different times.

In Table 40, we calculate the amount of time spent for calls for service that needed exactly two patrol officers. We classified the CFS data by the time of the day for all calls that occurred in 2014. The column that assesses the amount of time before the first officer left the scene represents the sum of time spent when the first officer cleared himself/herself from the incident. That is, that patrol officer in this instance is available to service the next incoming call for service or any other requirement of TPD.<sup>9</sup> As shown in Table 40, an average of roughly 1.4 hours of total officer time (for two patrol officers combined) was spent on CFS that took place at 12:00am and 1am, and as much as 1.8 hours of total officer time for CFS that took place at 12pm and 1pm. This average per call becomes an important consideration when looking at the hourly

<sup>9</sup> The same calculation is made for the second officer for these calls. In order to calculate total spent time for calls for service that required two patrol officers, we summed “first officer left the scene” and “second officer left the scene” column statistics that equaled the “total minutes” for calls that required two officers. Then, we divided “total time in minutes” column totals to “number of CFS” column numbers to calculate “average minute spent per CFS.” Finally, we calculated “average required hours to clear all CFS at the specific time periods” by multiplying “average hour spend per CFS” column number with “number of CFS” and dividing to 365 for daily averages. Consistent with the distribution of CFS by days and time, CFS that take place in the afternoon and evening hours (12 pm – 9 pm) require more time, on average, to clear such calls than do CFS that take place in the early morning hours (i.e., 3 am – 8 am).

distribution of time spent on CFS (by the hour) for patrol officers.

**Table 40: Total Service Time for Citizen-Generated CFS Requiring Two Patrol Officers**

<b>Time</b>	<b>Number of CFS</b>	<b>Minutes: First Officer Left the Scene</b>	<b>Minutes: Second Officer Left the Scene</b>	<b>Total Time in Minutes</b>	<b>Average Minutes Spent per CFS</b>	<b>Average Hours Spent per CFS</b>	<b>Average Hours Required to Clear All CFS</b>
0	3,565	138,656	170,029	308,685	86.6	1.4	14.1
1	2,908	110,776	131,059	241,835	83.2	1.4	11.0
2	2,561	103,212	125,848	229,060	89.4	1.5	10.5
3	2,110	86,257	102,805	189,062	89.6	1.5	8.6
4	1,761	76,693	91,094	167,787	95.3	1.6	7.7
5	1,652	72,258	81,592	153,850	93.1	1.6	7.0
6	1,754	76,932	91,985	168,917	96.3	1.6	7.7
7	2,299	88,160	117,786	205,946	89.6	1.5	9.4
8	2,546	97,299	124,623	221,922	87.2	1.5	10.1
9	2,940	115,707	153,705	269,412	91.6	1.5	12.3
10	3,042	128,018	170,335	298,353	98.1	1.6	13.6
11	3,113	134,786	179,073	313,859	100.8	1.7	14.3
12	3,314	150,948	206,665	357,613	107.9	1.8	16.3
13	2,537	113,070	156,880	269,950	106.4	1.8	12.3
14	5,827	230,053	273,356	503,409	86.4	1.4	23.0
15	4,845	185,727	225,906	411,633	85.0	1.4	18.8
16	5,734	256,434	318,207	574,641	100.2	1.7	26.2
17	5,518	250,820	312,111	562,931	102.0	1.7	25.7
18	5,078	233,777	295,842	529,619	104.3	1.7	24.2
19	5,025	224,032	282,761	506,793	100.9	1.7	23.1
20	4,299	201,511	249,911	451,422	105.0	1.8	20.6
21	6,076	261,750	308,352	570,102	93.8	1.6	26.0
22	4,879	188,747	226,803	415,550	85.2	1.4	19.0
23	4,408	172,119	211,272	383,391	87.0	1.4	17.5
	87,791	3,697,742	4,608,000	8,305,742	2,264.8	37.7	379.3

Table 41 below shows the average total time spent based on different numbers of patrol officers assigned to CFS throughout the day. The last column “average total time spent” shows the average number of hours spent to clear all calls for service for the various times in the day for all of 2014. For midnight, the average total time spent on calls for service (weighted by the number of responses that required one, two, three, four, five, six, or seven or more patrol officers) was roughly 48.2 patrol-officer hours; the highest demands were placed on TPD officers around 4pm (76.2 patrol officer-hours) with the lowest commitment centering on 5am-6am per day.

**Table 41: Total Time Spent on Citizen-Generated CFS in a Day**

<b>Time</b>	<b>One Officer</b>	<b>Two Officers</b>	<b>Three Officers</b>	<b>Four Officers</b>	<b>Five Officers</b>	<b>Six Officers</b>	<b>Seven or more Officers</b>	<b>Average Total Time Spent</b>
0	3.7	14.1	8.5	5.8	4.3	2.6	9.2	48.2
1	2.5	11.0	7.1	4.7	3.4	2.4	8.2	39.4
2	2.2	10.5	6.5	4.5	2.3	1.8	6.6	34.5
3	2.1	8.6	4.6	3.6	2.7	0.8	4.0	26.5
4	1.9	7.7	4.3	3.1	1.7	1.3	3.2	23.1
5	1.8	7.0	3.0	2.4	1.2	1.0	2.8	19.1
6	4.2	7.7	2.8	1.7	1.0	0.4	3.8	21.6
7	7.3	9.4	4.1	2.3	1.8	0.6	3.6	29.0
8	8.8	10.1	5.3	3.0	2.1	1.5	3.8	34.5
9	9.1	12.3	5.9	3.9	2.2	2.3	4.2	39.9
10	9.9	13.6	7.2	4.4	2.7	1.1	4.6	43.5
11	11.0	14.3	7.2	4.5	3.1	2.2	4.5	46.9
12	11.2	16.3	8.2	4.7	3.5	1.5	5.1	50.5
13	8.1	12.3	7.4	3.5	2.7	2.1	7.1	43.2
14	11.3	23.0	10.6	6.9	4.5	2.6	8.3	67.2
15	9.1	18.8	10.8	7.4	4.3	2.8	6.7	59.8
16	13.4	26.2	13.3	7.6	4.4	2.8	8.5	76.2
17	12.4	25.7	13.6	8.8	4.5	3.3	9.1	77.4
18	10.6	24.2	11.9	9.4	4.5	4.4	11.6	76.6
19	9.3	23.1	12.5	8.2	4.6	3.4	11.9	73.1
20	7.1	20.6	11.3	8.1	5.2	3.4	11.3	67.0
21	8.7	26.0	11.7	7.8	4.6	2.8	9.6	71.3
22	5.9	19.0	10.5	8.1	4.6	3.3	8.8	60.2
23	5.0	17.5	10.0	7.2	5.2	2.9	10.1	57.8
<b>Total</b>	<b>176.5</b>	<b>379.3</b>	<b>198.0</b>	<b>131.7</b>	<b>80.9</b>	<b>53.4</b>	<b>166.6</b>	<b>1,186.3</b>

***Shift Relief Factor***

The next component of our staffing model is the shift relief factor. The shift relief factor shows the relationship between the maximum number of hours that an officer could work, and the number of hours that they actually worked in 2014. If we know the relief factor, we can estimate the number of officers that should be assigned to a shift (at any given hour) in addition to outlined staffing models in order to ensure that the appropriate numbers of patrol officers are available for each working day. We begin by gathering data about benefit time off in the agency. Tulsa PD provided the average vacation/holiday and sick times as appears under the column of “Regular Days off per Year” displayed in Table 42. The calculation of shift relief hours is as follows: Current Number of Patrol Officers=339; Working Time per Officer in a Day = 8 or 10 hours, Average Regular Days off for 339 patrol Officer in a Year = 104 or 156 (depending on

years of service, which is averaged based on 2014 patrol officer experience levels); Total Working Hours of 339 Patrol Officer in a Year= 1,114,710 (based upon 171 patrol officers that worked 10 hr shifts and 168 officers that worked 8 hour shifts in 2014); Total off Hours of 339 Patrol Officers in a Year (based upon both 8 and 10 hr shifts) = 391,768; Thus, the shift relief factor modeled here is for the entire year for patrol is 0.35, which means staffing must have roughly 35% more patrol availability time to compensate for paid patrol days off per shift.

**Table 42: Calculation of Shift Relief Factor (Jan. 1, 2014 - Dec 1, 2014)**

<b>Time</b>	<b>Current Tulsa Patrol Staffing</b>	<b>Regular Days Off Per Year</b>	<b>Working Hours</b>	<b>Shift Relief Hours</b>	<b>Shift Relief Factor</b>
0	17	156	62050	26520	0.43
1	17	156	62050	26520	0.43
2	17	156	62050	26520	0.43
3	10	156	36500	15600	0.43
4	10	156	36500	15600	0.43
5	10	156	36500	15600	0.43
6	20	156	73000	31200	0.43
7	8	104	23360	6656	0.28
8	8	104	23360	6656	0.28
9	8	104	23360	6656	0.28
10	8	104	23360	6656	0.28
11	8	104	23360	6656	0.28
12	8	104	23360	6656	0.28
13	10	104	29200	8320	0.28
14	19	104	55480	15808	0.28
15	11	104	32120	9152	0.28
16	18	104	52560	14976	0.28
17	18	104	52560	14976	0.28
18	18	104	52560	14976	0.28
19	18	104	52560	14976	0.28
20	18	104	52560	14976	0.28
21	28	156	102200	43680	0.43
22	17	156	62050	21216	0.34
23	17	156	62050	21216	0.34
<b>Total</b>	<b>339</b>	<b>3016</b>	<b>1114710</b>	<b>391768</b>	<b>0.35</b>

***Performance Objectives***

In Table 43 we take into account the total number of required patrol officer hours needed to respond to citizen-generated CFS for every working hour (a total of 1,186 hours are needed). If patrol officers commit 50% of their time to responding to citizen-generated CFS, and we take

into account the needed shift relief factor (.35) to address available benefit time for patrol, we see that a total of 400 patrol officers are needed to respond to citizen generated CFS. A more optimal number of patrol officers needed to respond to citizen generated CFS would be 607 patrol officers (where patrol officers would devote no more than 33% of their time to citizen generated CFS, also accounting for shift relief).

**Table 43: Workload and Staffing Analysis for Citizen Initiated CFS (Jan. 1 - Dec 1, 2014)**

Time	Number of CFS in a Year	Average Service Hour in a Year	Required Police Officer Based on 8 Hour Work in Day (100%) <sup>10</sup>	50% Obligated (No Relief Factor)	33% Obligated (No Relief Factor)	With Shift Relief Factor for 50% Obligated	With Shift Relief Factor for 33% Obligated
0	7655	48.2	6.0	12.1	18.3	16.3	24.6
1	6147	39.4	4.9	9.8	14.9	13.3	20.1
2	5364	34.5	4.3	8.6	13.1	11.6	17.6
3	4279	26.5	3.3	6.6	10.0	8.9	13.5
4	3564	23.1	2.9	5.8	8.7	7.8	11.8
5	3276	19.1	2.4	4.8	7.3	6.5	9.8
6	4015	21.6	2.7	5.4	8.2	7.3	11.1
7	6381	29.0	3.6	7.3	11.0	9.8	14.8
8	7841	34.5	4.3	8.6	13.1	11.7	17.7
9	8337	39.9	5.0	10.0	15.1	13.5	20.4
10	8692	43.5	5.4	10.9	16.5	14.7	22.2
11	9208	46.9	5.9	11.7	17.7	15.8	24.0
12	9391	50.5	6.3	12.6	19.1	17.0	25.8
13	7465	43.2	5.4	10.8	16.4	14.6	22.1
14	13114	67.2	8.4	16.8	25.5	22.7	34.4
15	11511	59.8	7.5	15.0	22.7	20.2	30.6
16	12998	76.2	9.5	19.0	28.9	25.7	39.0
17	12709	77.4	9.7	19.3	29.3	26.1	39.6
18	11855	76.6	9.6	19.1	29.0	25.8	39.2
19	11382	73.1	9.1	18.3	27.7	24.7	37.4
20	9795	67.0	8.4	16.8	25.4	22.6	34.3
21	12210	71.3	8.9	17.8	27.0	24.0	36.4
22	10279	60.2	7.5	15.0	22.8	20.3	30.8
23	9250	57.8	7.2	14.5	21.9	19.5	29.6
<b>Total</b>	<b>206,718</b>	<b>1186</b>	<b>148</b>	<b>297</b>	<b>449</b>	<b>400</b>	<b>607</b>

<sup>10</sup> We substituted the number of required police officers based upon 10 hr working days as well since 50.4% of Tulsa patrol operates on 10 hr shifts. However, the results did not alter the findings here since the obligated time commitment changes by a constant factor; thus, for simplicity we present the calculations in Table 43 based upon 8 hr shift distributions.



While calculations displayed in Table 43 are contingent upon citizen-generated CFS (N = 206,718), those displayed in Table 44 are based upon police initiated calls for service (N = 294,007) that occurred between January 1, 2014 and December 31, 2014. Tulsa PD requires 1,648 hours to clear all CFS occurring in a day (Table 44).

At midnight (12am), the required average total time in a year is 65.58 hours for all CFS. If a given patrol officer invests his/her time to these CFS for 100% of the time, then, the required police officers needed to clear CFS occurred at midnight would be 8.2 officers ( $65.58 / 8 = 8.2$ ). As noted earlier, ICMA suggests that a patrol officer should spend at most 60% of his/her time on citizen and police initiated calls for service combined. Therefore, Tulsa PD should have 13.7 police officers to clear all CFS if those patrol officers invest their 60% of their time to citizen initiated CFS. Finally, the last column includes the effect of vacation and sick times. IMCA suggests that police departments should add at least 25% more personnel than the actual number of required personnel to account/tolerate the effect of vacation and sick times.<sup>11</sup> Therefore, when we increase number of required police at the midnight time period, Tulsa PD should have 18.2 police officers to cover all CFS occur at midnight. The sum of each hour will give the total number of required patrol officers, which is 459 patrol officers.

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<sup>11</sup> While we could have substituted the 35% shift-relief factor obtained for citizen-generated CFS, this estimate would potentially overestimate necessary patrol force required to address CFS since both citizen and police-generated CFS are measured here. Thus, we rely on the more conservative ICMA model for this calculation (25% compared with 35%).

**Table 44: Workload and Staffing Analysis based on Citizen and Police Initiated CFS (Jan. 1, 2014 - Dec 1, 2014)**

<b>Time</b>	<b>Number of CFS in a Year</b>	<b>Average Service Hour in a Year</b>	<b>Required Police Officers to Clear All CFS if they invest their 100% time to CFS</b>	<b>60% SI</b>	<b>60% SI with 25% Vacation and Sick Times</b>
0	11807	65.58	8.20	13.66	18.22
1	9388	53.37	6.67	11.12	14.83
2	7344	43.68	5.46	9.10	12.13
3	5549	32.12	4.01	6.69	8.92
4	4529	27.09	3.39	5.64	7.53
5	4237	27.20	3.40	5.67	7.56
6	5065	32.13	4.02	6.69	8.92
7	8922	49.75	6.22	10.36	13.82
8	10942	57.86	7.23	12.05	16.07
9	11339	58.90	7.36	12.27	16.36
10	11756	60.17	7.52	12.54	16.71
11	12416	62.19	7.77	12.96	17.27
12	12941	67.89	8.49	14.14	18.86
13	11011	61.69	7.71	12.85	17.14
14	18704	93.71	11.71	19.52	26.03
15	17467	85.29	10.66	17.77	23.69
16	18684	110.04	13.75	22.92	30.57
17	18484	109.59	13.70	22.83	30.44
18	16192	102.00	12.75	21.25	28.33
19	15494	94.61	11.83	19.71	26.28
20	13987	87.67	10.96	18.26	24.35
21	17597	99.11	12.39	20.65	27.53
22	16042	87.67	10.96	18.26	24.35
23	14110	79.04	9.88	16.47	21.95
<b>Total</b>	<b>294,007</b>	<b>1,648</b>	<b>206</b>	<b>343</b>	<b>459</b>

In summary, the patrol staffing analysis clearly shows the Tulsa Police Department patrol division is operating beyond maximum capacity in terms of responding to citizen generated calls for service. While calls for service are a source of demand on every police department, Tulsa Police Department is particularly strained in terms of responding to citizen needs and demands for assistance. Indeed, our analyses clearly show that 343 patrol officers are consistently needed on any given shift to address average calls for service demands in a given day. While Tulsa PD devoted 339 patrol officers to such needs, this model of staffing would only work to address such citizen commands if no single patrol officer took any vacation or sick leave (an unrealistic expectation). Thus, patrol staffing levels are forced to devote more than 60% of their patrol time

to address citizen needs, which invariably hinders more proactive approaches to crime prevention.

### **Part III: Detective Division Staffing Analysis**

As noted by Bayley (1996: p. 60), specialization of criminal investigation has been widely adopted by police agencies in England and the United States since the 1960s and 1970s, where research showed that patrol officers working with detectives investigating crimes actually reduced clearance rates (see Robinson et al., 1988). These studies indicated a clear need for specialization in terms of identifying the ‘solvability’ of cases in that some cases require specific commitment and specialized skills. The data analyses detailed below provide additional information to better inform TPD staffing plans for their Detective Division.

In this section, we examine the workload of the specialized units within the Detective Division over time to determine if average caseload sizes are increasing or decreasing. For the Detective Division, we measure the number of cases assigned per officer for each specialized unit to determine the overall caseload per unit. We compare these caseloads across two years (2008 and 2013) when both the number of cases and the number of officers assigned per unit was available from the TPD. For caseload calculations, we include reported crimes that may later be classified as unfounded, because unfounded cases still require time for investigation. Note however, that unfounded cases are excluded from the problem analysis section of this report which examines crime patterns and trends.

We also examine changes in clearance rates over time for specialized units. Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100. Clearance rates provides one metric of success, although should not be interpreted as the sole indicators of productive, effectiveness, or efficiency. Further, it is widely recognized that clearance rates vary dramatically across crime categories. What is instructive about examining clearance rates for these organizational units over time is to identify patterns, and perhaps anomalies that may be related to workload and resource allocation.

In 2015, the TPD Detective Division included 14 specialized units, with 114 authorized sworn personnel, but only 103 in actual strength due to unfilled vacancies, light duty, injury leave, and military leave. Of these 14 units, information regarding both caseloads and case closure rates could be calculated for 11 units, including: Homicide, Major Crimes III, Robbery, Burglary, Auto Theft, Financial Crimes, Sex Crimes, Cyber Crimes, Family Violence, Child Crisis, and Exploitation.<sup>12</sup>

#### ***Detective Division Number of Cases***

To determine the average caseload per officer in each specialized unit, the number of cases assigned to each unit was divided by the number of filled non-supervisory positions in those units. The disposition of the case (e.g., suspended, unfounded, inactive, exceptionally cleared, cleared by arrest, or administratively cleared) was not considered in this analysis. All cases

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<sup>12</sup> Caseloads and clearances rates were not readily available or not appropriate measures for the following units with the Detective Division: Major Crimes Unit I (process crime scenes but do not take cases), Fugitive Warrants, and Administration.

initially assigned to the unit were included in the caseload analysis because even if later unfounded, these cases require initial work by the detectives assigned.

Table 45 below documents the number of cases assigned each year from 2004-2014 to units within the Detective Division. Individual charts that graphically display the total number of assigned cases and the number of unfounded cases during this ten-year period for each of the 11 units previously identified are included in Appendix A.

**Table 45: Total Cases Assigned**

Crime Unit	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Auto Theft</b>	7382	5143	4543	4938	3415	2966	3177	3255	3254	3336	3338
<b>Burglary</b>	13207	11963	11596	11939	11940	12544	10716	11527	11777	10315	9182
<b>Child Crisis</b>	1320	1471	1388	1577	1489	1311	1497	1332	1610	1631	1682
<b>Cybercrimes</b>	109	231	322	286	444	464	555	510	476	211	105
<b>Exploitation Unit</b>	1611	2280	1878	1220	1795	1238	1857	2079	2593	2652	2303
<b>Family Violence</b>	7061	7919	4846	6054	6546	6214	6210	7220	7598	7459	7576
<b>Fraud/Forgery</b>	5051	4885	4845	4151	3830	3309	3304	3488	4200	4068	4204
<b>Homicide</b>	2533	2210	2496	2180	2264	1720	1694	2437	2686	2554	2411
<b>Major Crimes 3</b>	848	680	649	940	943	1086	958	641	631	453	516
<b>Robbery</b>	1174	1269	1185	1415	1480	1504	1535	1439	1418	1243	1213
<b>Sex Crimes</b>	1165	1303	1161	1096	1055	828	743	857	950	918	1140

As shown above and in Appendix A, trends in the number of cases investigated each year varied across crime types. Some units have experienced decreases in workload assignments. In particular, the number of cases assigned to the Auto Theft Unit has generally trended downward, ranging from a high of 7,382 cases in 2004 to a low of 2,966 cases in 2009, and an average of 4,068 cases per year across the past decade. Similarly, the number of cases assigned to the Burglary Unit has trended downward since its high of 13,207 cases in 2004, reaching a ten-year low in 2014 with only 9,182 assigned cases. This represents a 20% decrease from the decade long average of 11,519 assigned cases per year. The number of cases assigned to the Cyber Crimes Unit has also decreased after a peak of 555 cases in 2010, steadily decreasing to 105 cases in 2014. Similarly, cases assigned to the Robbery Unit and Major Crimes 3 Unit peaked in the late-2000s and then declined until 2014. Specifically, the Robbery Unit was assigned a high of 1,535 cases in 2010 and only 1,213 cases in 2014, while the Major Crimes 3 Unit was assigned a high of 1,086 cases in 2009 which declined to 516 in 2014.

In contrast, the number of cases assigned to the Child Crisis Unit fluctuated between 2004 and 2014, showing no consistent trend until the past four years when its number of cases has steadily trended upward. Cases assigned to this unit have increased from 1,332 in 2011 to 1,682 in 2014. Likewise, the number of cases assigned to the Exploitation Unit and Homicide Unit also fluctuated from the mid to the late-2000s. Thereafter, they both increased until they reached their highest levels in the past 10 years, and then decreased again until 2014. Specifically, the Exploitation Unit reached a high of 2,652 assigned cases in 2013 and decreased to 2,303 in 2014, and the Homicide Unit reached a high of 2,686 assigned cases in 2012 and decreased to 2,411 in 2014. Note that the Homicide Unit is assigned cases other than homicides, including some types

of assaults, attempted homicides and suicides, kidnappings, missing persons, explosive devices, stalking, and other miscellaneous crimes.

Additional increases in cases have been experienced by the Sex Crimes and Financial Crimes Units, each trended downward in their number of assigned cases from the mid-2000s until 2010, and then increase thereafter. In particular, the Sex Crimes Unit decreased from a high of 1,303 assigned cases in 2005 to 743 assigned cases in 2010, and then increased again to 1,140 assigned cases in 2014. The Financial Crimes Unit decreased from a high of 5,051 assigned cases in 2004 to a low of 3,304 cases in 2010, and then increased once more to 4,204 cases in 2014. Lastly, the Family Violence Unit dropped from a high of 7,919 assigned cases in 2005 to a low of 4,846 assigned cases in 2006, and then generally trended upward until 2014 when it reached 7,576 assigned cases.

### ***Detective Division Caseloads***

Because the number of actual officers assigned to these specialized units and the number of assigned cases is only known for 2008 and 2013, the caseload descriptives that follow are limited to these two years. In Table 46 below, the total number of officers assigned to each unit (including supervisors, but excluding vacancies) is reported in the first column, followed by the number of total cases assigned, and the average number of cases assigned per officer, or their caseload.

A comparison of caseloads across these two years demonstrates that yearly caseloads have increased in five units, and decreased in five others. Specifically, the Auto Theft Unit yearly caseloads increased by an average of 129.2 cases per officer, the Child Crisis Unit increased by an average of 38.5 cases per officer, the Exploitation Unit increased by an average of 231.2 cases per officer, the Financial Crimes Unit increased by an average of 87.6 cases per officer, and the Homicide Unit increased by an average of 19.4 cases per officer.

**Table 46: Total Cases Assigned**

Crime Unit	2008			2013		
	# of Cases	# of Officers	Caseload	# of Cases	# of Officers	Caseload
<b>Auto Theft</b>	3415	8	426.8	3336	6	556.0
<b>Burglary</b>	11940	11	1085.5	10315	11	937.7
<b>Child Crisis</b>	1489	9	165.4	1631	8	203.9
<b>Cyber Crimes</b>	444	4	111.0	211	4	52.8
<b>Exploitation</b>	1795	6	299.2	2652	5	530.4
<b>Family Violence</b>	6546	0	0.0	7459	7	1065.6
<b>Fraud/Forgery</b>	3830	12	319.2	4068	10	406.8
<b>Homicide</b>	2264	15	150.9	2554	15	170.3
<b>Major Crimes 3</b>	943	7	134.7	453	6	75.5
<b>Robbery</b>	1480	8	185.0	1243	7	177.6
<b>Sex Crimes</b>	1055	7	150.7	918	7	131.1

In contrast, the Burglary Unit yearly caseload decreased by an average of 147.8 cases per officer, the Cyber Crimes Unit decreased by an average of 58.2 cases per officer, the Major Crimes 3 Unit decreased by an average of 59.2 cases per officer, the Robbery Unit decreased by an average of 7.4 cases per officer, and lastly, the Sex Crimes Unit decreased by an average of 19.6 cases per officer.<sup>13</sup>

### ***Detective Division Clearance Rates***

As noted previously, clearance rates are simply a measure of the percentage of cases where a suspect is identified and charged with a crime. More specifically, cases are classified as “cleared” if an arrest is made, an arrest warrant is issued but no arrest has yet occurred (administratively cleared), or if the suspect is deceased, or otherwise unable to be arrested (exceptionally cleared). As note that unfounded cases (which were included to determine caseloads) are removed from consideration for these analyses.

As shown in Table 47 below, the cases assigned to these units that were cleared exceptionally, administratively, or by arrest has remained relatively stable across the last five years, and for some units, for the last 10 years. Specifically, the reported clearance rates for six units has been relatively stable across the past ten years: Auto Theft, Burglary, Family Violence, Financial crimes, Robbery, and Sex Crimes.

The Child Crisis Unit nearly doubled their clearance rates after 2008, and the Cyber Crimes Unit has also experienced an increase in clearance rates in 2013 and 2014. In contrast, reductions in clearance rates have been experienced by both the Exploitation Unit and Major Crimes Unit III after 2009, along with the Homicide Unit after 2010.

**Table 47: Clearance Rates (in Percentages)**

<b>Crime Name</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Auto Theft</b>	17.6	19.2	21.4	18.1	19.6	21.0	18.9	15.8	15.0	18.4	17.9
<b>Burglary</b>	5.9	7.3	7.3	8.0	8.1	8.3	7.1	7.8	7.1	6.9	7.9
<b>Child Crisis</b>	22.7	21.7	26.4	30.0	41.9	84.4	80.9	78.6	82.0	77.2	74.8
<b>Cybercrimes</b>	26.9	27.2	23.9	8.8	1.6	4.9	2.2	6.0	3.5	11.2	18.9
<b>Exploitation Unit</b>	96.8	89.8	93.7	96.4	97.7	98.7	65.4	50.0	51.6	61.3	59.4
<b>Family Violence</b>	33.3	31.6	37.4	38.4	37.7	35.0	29.8	36.5	37.2	37.8	37.5
<b>Fraud/Forgery</b>	61.6	36.4	24.4	28.3	26.0	25.6	17.6	18.1	26.1	----	31.3
<b>Homicide</b>	64.8	61.2	66.9	72.7	65.7	68.3	63.5	59.6	45.4	50.3	53.7
<b>Major Crimes Unit 3</b>	52.0	45.7	45.1	43.2	42.2	41.7	25.7	30.0	24.6	37.9	28.3
<b>Robbery</b>	47.6	43.9	48.7	55.1	48.2	49.1	40.4	35.5	35.7	40.4	39.1
<b>Sex Crimes</b>	44.1	47.2	42.0	52.9	57.4	47.4	44.5	46.1	39.7	46.3	46.2

The clearance rates reported in Table 47 are not for specific crimes, but rather cases assigned to particular TPD Units within the Detective Division. Obviously, the different types of crimes each division handles most frequently will correspond with their given clearance rates (since each

<sup>13</sup> No comparison can be made for the Family Violence Unit as it was not staffed in 2008.

offense type has different clearance rate expectations). We next move to an offense-based clearance rate analysis for TPD and compare offenses cleared with broader national averages.

As shown in Table 48 below, the national clearance rates for Part I offenses are provided for police agencies in all U.S. cities as well as those urban settings with 250,000 residents plus (the same category as Tulsa). Here we see that clearance rates for homicides in large U.S. cities between 2004 through 2013 averaged 58.8%; rape clearance rates averaged 41.3%; robbery clearance rates averaged 23.8%; assault clearance rates averaged 48.6%; burglary clearance rates averaged 12.2%; larceny clearance rates averaged 13.0%; and mv theft clearance rates averaged 8.2%.

**Table 48: Total Cases and Annual Clearance Rates by Offense Type (All Units) 2004-2014**

Crime	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Murder</b>	41 (97.5)	46 (100.0)	33 (93.9)	34 (100.0)	60 (100.0)	38 (94.7)	26 (100.0)	59 (100.0)	49 (95.9)	48 (100.0)	46 (100.0)
<b>Rape</b>	405 (62.5)	334 (57.7)	388 (50.0)	332 (57.5)	371 (56.3)	343 (53.0)	381 (52.2)	345 (52.7)	379 (42.4)	335 (35.8)	323 (48.9)
<b>Robbery</b>	284 (33.1)	450 (34.0)	417 (38.8)	381 (38.2)	457 (31.7)	455 (39.1)	474 (29.1)	448 (31.6)	433 (37.6)	521 (36.8)	256 (44.9)
<b>Assault</b>	5306 (37.0)	5298 (43.0)	4794 (42.3)	5351 (45.5)	5131 (41.5)	4956 (47.4)	4404 (39.7)	5206 (41.9)	4583 (44.4)	4768 (51.2)	4636 (47.5)
<b>Burglary</b>	4095 (9.5)	4326 (12.2)	4839 (21.9)	4861 (4.5)	4983 (4.2)	4385 (10.9)	4526 (7.1)	4494 (10.8)	4721 (7.6)	4072 (4.9)	3933 (12.2)
<b>Larceny</b>	9046 (27.5)	8145 (24.6)	7811 (30.6)	7834 (33.5)	7582 (27.2)	7641 (40.8)	7531 (36.8)	8046 (43.6)	7720 (39.5)	8458 (42.4)	9179 (43.5)
<b>MV Theft</b>	3784 (18.4)	3750 (18.5)	3508 (18.8)	3632 (15.7)	2521 (19.4)	2257 (21.3)	2432 (17.3)	2521 (15.9)	2467 (16.4)	2489 (20.3)	2527 (20.2)

(Clearance rate in parenthesis)

Table 49 provides descriptive information for offense clearance rates for TPD between 2004 through 2014. Each crime was aggregated across each detective division (described previously) to provide an offense-based clearance rate for TPD. Table 49 clearly shows that TPD *vastly outperforms* both national and large city clearance rate averages for homicides (98.2 clearance rate average); rapes (clearance rate average 51.7%); robberies (clearance rate average 35.9%); larcenies (clearance rate average 35.4%); and mv thefts (clearance rate average 18.3%). Thus, for five of the seven Part I UCR offenses, TPD clearly exceeds clearance rate national urban averages.

The two exceptions to outperformance on clearance rates by offense type is for assaults and burglaries. The TPD assault clearance rate average of 43.7% over the 11-year period examined here is just slightly lower than the national large city urban average of 48.6%. Likewise, the burglary clearance rate average for TPD is 9.6%, again slightly lower than the large city national average (12.2%).

In terms of a more detailed analysis, roughly 98% of burglaries are handled by the Burglary Division (a handful of burglary cases each year are processed by Major Crimes and Family Violence). Additionally, over 50% of assaults are processed by the Family Violence Division



(the remainder are somewhat evenly distributed across the Robbery and Major Crimes Divisions and less so for Homicide). When considering the workload ratios for Burglary and Family Violence divisions (in particular when compared with the other detective divisions), we see that the divisions with the highest caseloads (over 1,000 cases for each officer in each division) have slightly lower clearance rate averages for their most common crime types.

**Table 49: Annual Clearance Rate Comparisons by Crime Type 2004-2013, All US Cities and Large US Cities (250,000 population or greater)**

Crime	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Murder All Cities</b>	61.2	60.7	59.3	60.6	62.7	65.3	63.9	63.8	60.3	62.9
<b>Murder Cities 250K +</b>	58.0	56.5	53.7	58.4	58.6	62.8	61.1	59.3	57.0	63.0
<b>Rape All Cities</b>	39.8	39.8	39.3	38.6	39.0	39.8	38.6	39.5	38.2	40.0
<b>Rape All Cities 250K +</b>	43.5	39.0	39.8	41.2	42.2	43.5	41.3	42.5	40.7	39.5
<b>Robbery All Cities</b>	27.6	24.9	24.8	25.5	26.4	27.6	27.6	28.1	27.3	29.0
<b>Robbery Cities 250K +</b>	24.4	21.2	21.5	22.5	23.6	24.4	24.5	24.9	23.7	26.8
<b>Assault All Cities</b>	55.4	52.7	52.0	52.5	53.2	55.4	55.1	55.2	54.0	56.2
<b>Assault Cities 250K +</b>	50.8	45.8	45.2	46.4	47.8	50.8	49.8	49.7	47.7	52.4
<b>Burglary All Cities</b>	11.9	12.2	12.1	11.9	17.6	18.7	18.4	18.6	19.1	19.7
<b>Burglary Cities 250K +</b>	9.5	10.2	9.5	9.4	13.2	14.3	13.8	13.7	13.8	14.7
<b>Larceny All Cities</b>	21.9	18.3	17.7	18.9	20.3	11.9	11.9	12.1	22.4	12.7
<b>Larceny Cities 250K +</b>	17.3	14.2	13.8	14.8	15.7	9.5	9.3	9.3	16.8	10.0
<b>MV Theft All Cities</b>	11.2	11.9	11.6	11.5	11.0	11.2	7.5	10.6	10.7	11.3
<b>MV Theft Cities 250K +</b>	8.6	9.4	9.1	9.3	8.6	8.6	5.7	7.4	7.5	8.2

(Clearance rate in parenthesis)

In summary, detective workload analyses clearly shows that certain cases (e.g., Auto Theft, Burglary, Fraud/Forgery, Robberies, and Sex Crimes) have maintained relatively stable caseload ratios among TPD detectives between 2008 and 2013. However, certain divisions such as Exploitation and Family Violence have seen sizeable increases in TPD detective-based caseloads to address such problems.

And, nationally speaking, TPD vastly outperforms large urban settings for Part I offense clearance rate averages among five of seven offense types (homicides, robberies, rapes, larcenies, and mv thefts). The two exceptions to their exceptional offense clearance type involves burglaries and assaults. Additionally, the two divisions that mostly handle these offenses are the two divisions (Family Violence and Burglary) have a far higher caseload distribution per officer than all of the other detective divisions (see Table 46). Thus, we recommend that additional resources be placed in these two detective divisions in order to promote and enhance clearance rates for burglaries and assaults respectively.

## Part IV: Traffic Staffing Analysis

Police agencies operate beyond patrol, detective, and crime investigations. Public safety and traffic related approaches to safety are also a core mission of the Tulsa Police Department. In this section, we assess the citizen-generated calls for service workload for TPD officers. Indeed, many police agencies have traffic units that are separated from traditional 911-call takers. For the traffic unit, we examine two measures of workload: number of accidents and traffic-related calls-for-service. For each of these measures, we divide by the number of officers assigned directly to the traffic unit. Note that some of these traffic-related duties are handled by patrol officers, and conversely, many traffic officer duties are not captured using these measures. Nevertheless, these measures will give an indication if traffic-related work within the TPD is increasing or decreasing over time relative to the number of specialized officers handling at least some of those duties.

**Table 50: Distribution of Traffic Related CFS Across Months**

Hour	1	2	3	4	5	6	7	8	9	10	11	12	Sum
0	18	21	25	22	20	17	19	22	23	17	16	15	235
1	10	18	20	9	12	13	17	11	9	14	14	15	162
2	22	20	26	15	15	9	21	16	22	20	16	15	217
3	5	9	15	10	9	11	6	11	8	8	9	4	105
4	3	11	13	6	7	9	3	4	6	3	4	6	75
5	1	10	12	7	6	12	15	11	7	11	14	4	110
6	17	22	20	15	16	14	12	22	19	23	14	22	216
7	46	48	49	55	47	43	29	55	60	65	67	61	625
8	68	71	68	77	54	40	42	56	73	78	66	61	754
9	62	60	46	40	45	41	44	56	51	53	53	31	582
10	47	56	39	49	50	56	55	67	52	49	50	46	616
11	64	68	63	71	66	71	82	77	73	70	71	84	860
12	62	82	76	79	82	91	73	89	71	89	87	89	970
13	67	84	74	75	82	103	71	73	69	69	69	71	907
14	86	85	88	99	115	88	99	102	84	93	95	79	1113
15	120	111	103	103	123	92	108	110	107	110	97	113	1297
16	118	97	123	121	135	94	108	111	89	120	116	102	1334
17	92	106	96	142	117	105	132	120	134	134	114	137	1429
18	107	64	77	86	86	94	78	88	84	79	92	129	1064
19	63	71	56	49	40	48	49	42	49	43	62	74	646
20	44	43	43	29	34	41	39	48	38	36	42	39	476
21	28	31	49	47	67	55	54	46	39	63	57	41	577
22	21	34	29	37	32	40	44	34	35	42	34	34	416
23	30	29	34	41	26	24	31	22	19	26	28	25	335

Table 50 illustrates that calls for service related to traffic problems are not evenly distributed across work shifts. Indeed, from 12:00am until 7:00am, the workload distribution for traffic

related harms is relatively low. From 7:00am until 10:00am (and likewise from 8:00pm until 11:00pm) the workload distribution is relatively stable and moderate in terms of responding to traffic problems. However, from 11:00am until 6:00pm, TPD officers are heavily saturated with requests for traffic assistance by citizens. These requests impact both traffic divisions and patrol operations.

Table 51 presents the time spent by TPD officers on citizen initiated calls for service requests related to traffic problems. A similar pattern is observed here, where the most number of officer hours devoted to traffic assistance requests are devoted between 11:00am through 6:00pm across the year.

**Table 51: Traffic Related Citizen Initiated CFS**

<b>Time</b>	<b>One Officer Assigned</b>	<b>Two Officers Assigned CFS</b>	<b>Three Officers Assigned</b>	<b>Four Officers Assigned</b>	<b>Five Officers Assigned</b>	<b>Six Officers Assigned</b>	<b>Seven or more Officers Assigned</b>	<b>Average Total Time Spent</b>
0	0.2	0.5	0.7	0.3	0.3	0.2	0.9	3.2
1	0.1	0.3	0.5	0.3	0.3	0.1	0.3	1.9
2	0.2	0.5	0.6	0.7	0.3	0.1	0.6	3.0
3	0.1	0.3	0.1	0.4	0.1	0.1	0.5	1.6
4	0.1	0.2	0.1	0.2	0.2	0.0	0.5	1.4
5	0.1	0.3	0.2	0.2	0.1	0.1	1.0	1.9
6	0.2	0.4	0.4	0.3	0.2	0.1	0.6	2.3
7	0.9	1.6	1.1	0.8	0.3	0.1	0.3	5.1
8	1.3	1.5	1.4	0.7	0.5	0.1	0.3	5.8
9	1.1	1.7	1.0	0.8	0.3	0.6	0.7	6.1
10	1.2	1.4	1.0	0.6	0.5	0.0	0.4	5.1
11	1.8	1.7	1.2	0.7	0.3	0.3	0.7	6.7
12	2.0	2.0	1.6	0.6	0.4	0.0	0.8	7.4
13	1.8	1.6	1.3	0.7	0.3	0.2	0.4	6.3
14	1.8	1.9	1.3	0.8	0.4	0.4	0.6	7.2
15	2.3	2.1	1.8	0.8	0.6	0.3	0.4	8.3
16	2.7	2.5	2.2	1.0	0.5	0.3	0.8	10.0
17	2.5	3.0	2.0	1.4	0.7	0.2	0.8	10.6
18	1.7	2.2	1.7	1.5	0.6	0.8	1.3	9.8
19	1.0	1.3	1.3	0.9	0.4	0.3	1.2	6.4
20	0.6	1.1	1.2	0.8	0.7	0.4	0.5	5.3
21	0.8	1.1	1.0	1.1	0.4	0.4	0.8	5.6
22	0.4	0.7	1.1	0.9	0.4	0.2	1.2	4.8
23	0.3	0.7	0.7	0.5	0.8	0.2	13.0	16.2
<b>Total</b>	<b>25.1</b>	<b>30.6</b>	<b>25.5</b>	<b>17.1</b>	<b>9.7</b>	<b>5.6</b>	<b>28.6</b>	<b>142.2</b>

In summary, addressing traffic related problems from an organizational perspective is contingent upon the time of day and work shift. Our analyses indicate that traffic requests by citizens are much more likely to occur in the late morning to early evening hours. Patrol operations and traffic divisions are forced to address these consistent requests at these specific times in the day.

## **Part V: Overall Staffing Objectives and Recommendations**

Based upon the combined findings, there is consistent evidence that shows the Tulsa Police Department (and in particular the patrol division) has operated at an organizational deficiency for an extended period of time. Cities that are of comparable size with Tulsa and that are situated in similar geographic contexts (highly populated urban Southern and Midwestern cities) have a higher number of sworn police officers (2.42 sworn officers per 1,000 residents in large Southern cities and 2.51 sworn officers per 1,000 residents in large Midwestern cities compared with Tulsa's 1.97 per 1,000 residents); additionally, cities within the fourth trajectory group average 6.58 violent crimes per 1,000 residents, which is considerably lower than Tulsa's 9.81 violent crimes per 1,000 residents. This disproportionate sworn police officer underrepresentation and heightened violent crime level for Tulsa held when examining national urban trend analysis from 1990-2013 through rigorous methodological approaches. Additionally, the citizen-demands for TPD patrol officers (in terms of citizen-generated calls for service requests) highlight the stresses placed on TPD sworn officers throughout the various work shifts.

The detective workload analyses indicate that TPD detectives have been clearly outperforming at a national standard in terms of clearance rates for homicide, robbery, rape, larceny, and mv theft. While close to national averages for burglary and assault, these two offense types are slightly lower than national average clearance rates. Additionally, our analysis indicates that the Burglary and Family Violence divisions (which mostly handle burglary and assault offenses) suffer from disproportionately high caseload distributions when compared with other detective divisions. Thus, our combined findings indicate that the detective divisions are operating at a capacity and standard that makes their clearance rates exceptionally high. The lone exceptions to this performance are in the divisions with the highest caseloads, and thus we recommend some additional staffing in Burglary and Family Violence detective divisions once standard patrol staffing is addressed (more detail to follow).

The traffic divisions and patrol operations are consistently called upon by citizens at specific times of the day (i.e., late morning through early evening hours). Our analyses indicate that these patterns are persistent and somewhat predictable.

Parts 1-4 of this section of the report examined the following:

- Number of sworn police officers for the City of Tulsa,
- Number of patrol officers per 100,000 residents,
- Number of offenses (particularly violent crimes) per 100,000 residents,
- Relative patrol officer to citizen ratios between the City of Tulsa and other urban settings over time,
- A series of workload analyses based on both citizen-generated as well as citizen + police generated calls for services
- An examination of the workload of detective units

- A series of comparisons of case closure rates to national rates
- Examination of traffic-related CFS and comparisons of accident rates to national rates

There are two possible ranges of patrol and sworn police force size that we present in Table 52 herein. The first estimate is the *standard minimum* patrol (and sworn police allocation), which is based upon 60% of patrol time to be devoted to citizen + police generated CFS and the shift relief factor; and the second column is the *preferred minimum* number of patrol and sworn officers, which is based upon the 33% service response rule for citizen-generated CFS only (and the shift relief factor). Finally, given that we are proposing an increase in patrol operations, we also propose a relative increase in non-patrol operations (i.e., detectives, investigations, supervisors, and administrators) to maintain standard preference between 45-55% patrol-to-non-patrol ratio that is standard practice in large urban police agencies (LEMAS, 2007).<sup>14</sup>

**Table 52: Recommended Workforce Size for Tulsa PD**

<b>Officer Distribution</b>	<b>Standard Minimum</b>	<b>Preferred Minimum</b>
Number of Sworn Patrol Officers	459	607
Number of Sworn Non-Patrol Officers	499	657
Total Number of Sworn Police Officers	958	1,264

Based upon these combined results, **we recommend the standard minimum number of officers** in order for Tulsa PD to operate within the boundary of national urban police averages and best-practices proposed by both COPS and ICMA. Thus, we recommend the following staffing levels for Tulsa:

- A total of 958 sworn police officers (2015 staffing levels are 752 sworn police officers), a total increase of 206 sworn officers
- 459 (of 958 sworn officers) to be assigned as directly to the patrol function (2015 staffing levels are 312 patrol officers), an increase of 147 patrol officers

Drawing upon January 2015 staffing summaries, this would equate to a 47% increase in current patrol staffing levels, and a 13% increase among other units within the department (i.e., investigations, traffic enforcement, supervisors, and administrators). Our estimate of 459 patrol officers is based upon the total required time needed by patrol officers to collectively respond to citizen-generated CFS. We note that our proposed estimates is more likely to be conservative in nature because we do not take into account police-generated CFS in these calculations.

Following the recommendation by ICMA that patrol officers should devote roughly 60% of their responsibilities to handling CFS, and taking into account the benefit-time shift relief factor needed per hour to respond to CFS, we estimate the number of patrol officers needed in TPD to be 459 patrol officers. Additionally, following ICMA organizational model that 40% of sworn police officers be assigned to patrol, an additional number of investigators, supervisors, and

<sup>14</sup> In our calculations for an increase in non-patrol operations, we take the midpoint (47.5% devoted to patrol, and 52.5% devoted to non-patrol).

administrators will be required to manage such an increase in patrol operations. If patrol operations equals an allotment of 459 officers (312 current patrol officers + 147 new patrol officers) an additional 59 officers will be needed to maintain a 40% patrol / 60% administrative staffing level (Tulsa PD currently operates at 41.4% patrol level, or 312 / 752 officers). Thus, we propose Tulsa staffing levels should equate to roughly 958 sworn police officers in order to manage current staffing requirements.

In this instance, an increase to 958 sworn officers for the City of Tulsa would likewise place the city on average with other large urban Midwestern and Southern settings. Specifically, 958 officers for a city with 394,498 inhabitants (as of 2013) would equate to 2.42 sworn officers per 1,000 residents. As seen in Table 31, this would place Tulsa on the same national average as other Southern cities with 250,000 plus inhabitants, and slightly lower than other Midwestern cities. However, other analyses suggest that staffing levels should even be higher. Indeed, as seen in the trajectory analyses (Tables 32 and 33), the violent crime and murder rates in Tulsa are more consistent with cities that have 2.9 to 3.7 officers per 1,000 residents (which would require roughly 1,175 sworn police officers for Tulsa). However, we also believe that with, additional patrol operations would correspond with an increase in organizational capacity to take on more proactive problem-solving and evidence-based crime prevention approaches.<sup>15</sup> These approaches could have a significant impact on violent crime.

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<sup>15</sup> A recent comprehensive examination by Chalfin and McCrary's (2012) found that the inconsistencies between police force size and violent crime rates have been biased downwards due to measurement error. In their study, they analyzed 242 cities with populations over 50,000 between 1960 and 2010, and found staffing levels to be associated with reductions in crime, with the largest effects being found for murder, robbery, burglary, and motor vehicle theft, respectively. Furthermore, their cost-benefit analysis found that each additional dollar spent on police staffing resulted in a \$1.60 economic benefit in reduced crime. Thus, we do not make any suggestions based upon property crime rates for similar urban settings because there is no consistent evidence that an increase in police corresponds with a change in property crimes.

## **SECTION III: EVIDENCE BASED PRACTICES AND RECOMMENDATIONS**

In the Section III of this report we make several recommendations of evidence based practices that have been shown to effectively reduce the crime problems consistent with those identified in Tulsa. We include both general strategies, which can be used to address more than one type of crime, and strategies specific to the problem crime types identified in Sections I-II of this report. Finally, we conclude with a series of recommendations for the City of Tulsa to consider when potentially addressing the needs of law enforcement to combat crime with an increase in staffing levels.

It is important to note that our analysis did not make it possible to glean some of the pertinent details required to address each of these crimes, including the common mechanisms through which crimes are being perpetrated. As such, for each of the problems we identified in Section II of this report, we recommend first taking a problem oriented policing approach to analyze and determine the exact nature of the crime problem before adopting any of the suggested solutions below. Problem oriented policing was introduced by Herman Goldstein (1979; 1990) as a means of examining individual crime problems and developing solutions specifically tailored to them. This strategy acknowledges that crime problems, although seemingly similar across places, are not identical, and as such require thorough analysis and individually crafted responses<sup>16</sup>. These responses are often drawn from evidence based practices that have been demonstrated to work in other cities, but are modified to fit the unique needs of the city implementing them.

### **Situational Crime Prevention**

Many of the recommended evidence practice below are rooted in the Situational Crime Prevention theoretical perspective (Cornish & Clarke, 2003). Fundamental to Situational Crime Prevention is the idea that offenders make rational choices when deciding to engage in criminal activity (Clarke & Cornish, 1985). Furthermore, their engagement in crime is largely guided by the situation directly preceding their criminal act. Although some individuals may be predisposed to crime, it is situational cues that are more proximate to the crime event, and thus more salient to the decision to commit crime (Clarke, 2005). Offenders are less likely to engage in crime if the perceived risk and effort is high, the reward is low, and provocations and excuses for engaging in criminal activity have been removed (Wortley, 2001). As such, situational cues can be manipulated to discourage crime.

Like Problem Oriented Policing, Situational Crime Prevention advocates assessing the specific crime problem at a particular place, and choosing crime prevention tactics that are suited to addressing that particular problem. Accordingly, Situational Crime Prevention scholars have developed a table of useful crime prevention techniques to be used in a variety of situations. This tables has gone through a series of evolutions (e.g. Clarke, 1992; Clarke & Homel, 1997), and

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<sup>16</sup> To conduct a problem oriented policing analysis, agencies typically follow the SARA (Scanning, Analysis, Response and Assessment) model. We recommend consulting the Problem Oriented Policing Guide entitled "Crime Analysis for Problem Solvers in 60 Steps" (available at <http://www.popcenter.org/learning/60steps/>) for a thorough guide to this process.

now summarizes twenty-five different techniques that can be used to block opportunities to commit crime (Cornish & Clarke, 2003). A copy of this table is included in Appendix E, at the end of this report.

## **General Strategies**

In the following sections of the report we overview a series of general strategies that can be used to reduce several types of crime. With the exception of increased street lighting, these strategies can be used to target all of the problem crime types identified in Section II of this report.

### ***Targeting Repeat Places and Victims***

One strategy that has worked in a variety of situations and on a broad range of crime types is the targeting of repeat places and/or repeat victims for intervention. Eck & Guerette (2012) argue that places are important for four reasons. First, crime is concentrated in a small number of places. Second, implementing crime prevention programs at places is not likely to displace crime elsewhere. Third, more likely than displacement is the diffusion of crime prevention benefits. In other words, not only is it not likely that crime will be moved, but the benefits of crime prevention may actually extend to non-targeted places. Finally, the fact that all places have an owner and place manager means that there is always someone who can be held accountable for crime at their place, and can be mobilized to prevent crime. Additionally, places are easier to target because they are stationary (unlike offenders and targets, which tend to rove), and research has indicated that crime may be more concentrated at places than it is in offenders, victims, or products (Spelman & Eck, 1989), meaning that place-based interventions need to target a lesser number of things to achieve the same crime reduction objective. Because specificity is important for prevention” (Eck & Madensen, 2012, pg 555), places offer a particularly useful means through which to analyze the opportunity structures and mechanisms of a given crime problem, and to implement relevant crime prevention techniques (Eck & Madensen, 2012).

A large body of empirical research has demonstrated that crime concentrates at places. One of the first to study crime at individual places, Sherman, Gartin and Buerger (1989) examined 323,979 calls for service to the police over 115,000 individual street addresses in Minneapolis, Minnesota over a one year period. They found that a small minority of addresses were responsible for a vast majority of the calls for service. Specifically, a mere 3% of addresses made 50% of the calls. This concentration was even more apparent for predatory crimes, where 100% of robbery and rape calls were made by 2.2% and 1.2% of addresses, respectively.

Similarly, Weisburd, Groff & Yang (2012) examined the spatial distribution of crime at street segments in Seattle, Washington between 1989 and 2004. They found that less than 6% of street segments were responsible for 50% of the city’s crime incident reports, and all crimes occurred on 60% to 66% of streets segments each year. The authors put forth that this suggests a “law of crime concentrations” (pg 50), as crime is consistently and unrelentingly concentrated in a small number of places year to year, even after a city-wide crime decline of over 20%. Importantly, the spatial concentration of crime at places is highly varied - it is not as simple as some neighborhoods or street segments being “bad” and others “good”. Indeed, even the worst neighborhoods contain both highly criminal and non-criminal places (Sherman, Gartin &



Buerger, 1989).

An analysis of Tulsa's calls for service data from 2014 mirrors these findings. Specifically, we found that 1% of all the street segments in Tulsa (i.e., 71 street segments of 7,129 total segments) accounted for 21.7% of all Part I UCR offenses within the city. Moreover, 5% of all street segments in Tulsa accounted for 40% of all serious crime. Thus, as in urban contexts serious violent crime in Tulsa is heavily concentrated in a small number of places within the city.

Not only is crime highly concentrated in particular locations, but this concentration typically remains relatively stable over time (Weisburd, Bernasco, & Bruinsma, 2009; Weisburd, Groff, & Yang, 2012). For instance, in the Weisburd, Groff and Yang (2012) study mentioned above, the authors did a trajectory analysis to determine how persistently criminal the street segments in their sample were. They found that crime was stable at places over the 16 years studied, and 1% of street segments fell into a chronically high crime trajectory that were responsible for 20% of the Seattle's crime throughout the study timeframe.

Importantly, it is not a single type of facility (e.g. bars) that is responsible for generating crime - there are a small number of places within each type of facility that crime concentrates within. Additionally, concentrations of crime at place occur when considering specific crimes. For instance, research has shown that drug dealing (Weisburd, Green & Ross, 1994), burglaries (Polvi et al, 1990), and shootings (Sherman & Rogan, 1995), all concentrate within a small number of places.

Equally important to note however is the fact that high and low crime places do not always remain as such, indicating that troublesome places can be created, but also that crime prevention initiatives can be successful at crime ridden places. Clarke and Bichler-Robertson (1998), for instance, found that arrests rose drastically in buildings in Santa Barbara, California purchased by a slumlord. Additionally, calls for service in his buildings rose to almost two and half times the rate of nearby controls, indicating the increase in crime was a result of poor management, not a neighborhood wide increase in crime. In another case study of buildings managed by a slumlord in San Diego, California, the authors found that crime was greatly reduced following a change in management (Clarke & Bichler-Robertson, 1998), thus indicating that place managers can also have a beneficial impact on crime.

Place-based crime prevention strategies are designed to make places unattractive to offenders (Eck & Guerette, 2012). Many of these strategies use a Situational Crime Prevention (Clarke, 1980) or Problem Oriented Policing (Goldstein, 1979) approach. In particular, they use five major techniques: 1) increasing the risk of committing a crime, 2) decreasing the rewards associated with offending, 3) making it more difficult to complete an offense, 4) reducing situational provocations that might encourage an offender to commit an offense, and 5) making it more difficult to make excuses for engaging in crime (Cornish & Clarke, 2003).

Eck (2002) conducted a review of 89 studies involving 109 different opportunity blocking interventions at places using the above techniques. He found that over 90% of studies reported some form of crime reduction, and concluded that place based intervention provided a promising avenue through which to prevent crime. A more recent analysis of 149 place-based crime

prevention program evaluations (including those targeting residential, public, retail, transportation, and recreational places) found that the effectiveness of place-based interventions varied by type of place, but importantly was an effective means of reducing crime in all types of places (Eck & Guerette, 2012). Other reviews have echoed this finding (e.g. Welsh & Farrington, 2009).

Importantly, place based crime interventions are not likely to lead to the displacement of crime. No less than 8 reviews of displacement research have been conducted to date (e.g. in chronological order - Clarke, 1987; Barr & Pease, 1990; Eck, 1993; Hesselning, 1994; Guerette & Bowers, 2009; Bowers et al, 2011; Johnson et al, 2012; Telep et al, 2014), all finding beneficial effects. The most extensive of these, conducted by Guerette and Bowers (2009), included 102 studies covering 574 findings. They found that displacement occurred in only 26% of the findings, while the diffusion of crime prevention benefits occurred in 27%. This review, like all that came before and after it, concluded that displacement was not ubiquitous and inevitable as is sometimes claimed by critics of this strategy. Indeed, although displacement is possible, it is unlikely to occur, and when it does it is usually less in magnitude than the crimes prevented, resulting in a net crime reduction benefit. This indicates that crime prevention programs can be implemented at places, without risk of simply displacing the crime elsewhere.

The overlap of repeat victims, offenders, and places is not uncommon - repeat victimization often contributes to the creation of a place based crime hot spot (Grove & Farrell, 2012). However, because victims and offenders are nonstationary, it is easier to reduce crime by targeting places. This is how the Kirkholt Burglary Prevention Project was able to reduce burglary victimization (Forrester, Chatterton & Pease, 1988). The Kirkholt public housing area in Rochdale, England had a high rate of utility meter burglaries with a large proportion of repeat victims and targets. The prevention project involved replacing utility meters in the homes of repeat burglary victims and improving security in their home (Polvi et al, 1990). An analysis of the program showed that, within five months of program implementation, the burglary rate in the Kirkholt housing project fell by 60%, and repeat victimization was entirely eliminated (Forrester et al, 1990).

Crime can also be reduced by targeting place managers directly. The aforementioned slumlord intervention studied by Clarke and Bichler-Robertson (1998) is one good example. Another example involves intervening with place managers at motels in Chula Vista, California (Madensen & Eck, 2012). The Chula Vista police department was having issues with repeated calls for service to a small proportion of the city's motels. A program was thus implemented which required motel owners to obtain a permit in order to operate. Motels with too many calls for service were threatened with having their permits withheld. Following the implementation of this program, motel crime dropped to a mere 30% of its former level.

Taken together, the above findings suggest that crime can be targeted for prevention via repeat places and repeat victims. Specifically, because crime is both non-randomly distributed at places and relatively stable, it is predictable. Furthermore, there is likely a set of place-based precursors to crime that can be targeted for intervention. Importantly, these types of strategies can be implemented by both law enforcement and community organizations.

## *Hot Spots Policing*

Prior to the introduction of hot spots policing, it was theorized that randomized high-visibility police patrols were most effective crime prevention, and citizen satisfaction. Theoretically, this strategy was thought to instill the belief that police could be anywhere at any time, and the fear of the unknown was thought to desist offenders (Kelling, Pate, Dieckman, and Brown, 1974). The Kansas City Preventive Patrol experiment deunked this commonly held assumption, however, when it found that random patrol did not lessen crime (Kelling et al, 1974).

Nearly ten years later, researcher on the geography of crime found crime incidents were not evenly distributed. On the contrary, they were highly concentrated in small number of places and also committed by a disproportionately small number of people (Sherman, Gartin, and Buerger, 1989; Spelman and Eck, 1989). Crime hot spots, as they were termed, referred to small geographic areas that contained large shares of total reported crime or calls for service. For example, Sherman et al (1989) found over 50% of police calls for service where made for only 3% of Minneapolis's places. Similarly, Weisburd, Groff, and Yang (2012) found that over 50 % of juvenile crime concentrated in just 1% of Seattle's places.

With the Kansas City findings and the discovery of crime hot spots, academics and police practitioners focused on hot spots areas in an attempt to achieve more efficient reductions in crime. Hot Spot policing is broad term that refers to any increase in police presence in crime hot spots. Hot spot neighborhoods, blocks, or addresses are patrolled more often and have more police officer saturation, and research has shown that these patrols can result in reduction of calls for service, crime incidents, and/or disorder (Barthe and Stitt, 2011; Di Tella and Schargrodsy, 2004; Hegarty, Williams, Stanton, and Chernoff, 2014; Sherman and Weisburd, 1995; Telep, Mitchell, and Weisburd, 2012; Koper, 1995). Furthermore, officers only need to spend between 14 and 15 minutes in each area for peak crime prevention benefits, which allows for deployment strategies that better utilize officer time (Koper, 1995; Telep et al, 2012).

In addition to increasing police saturation in crime hot spots, many police agencies pair this strategy with other problem-oriented policing strategies (see Braga, Papachristos, and Hureau, 2012; 2014 for full reviews). Often times hot spots policing is paired with situational crime prevention, such as cleaning vacant lots, adding CCTVs, and inspecting disorderly bars (Braga and Bond, 2008; Bichler, Schmerler and Enriquez, 2013). Another common pairing is with programs that address drug use, drug markets, or gangs, and these are typically associated with increases in violent and street crime (Fritsch, Caeti, & Taylor, 1999; Hope, 1994; Lawton, Taylor, and Luongo, 2005, see Braga et al, 2012 for a review).

Braga et al (2012; 2014) offer a systematic reviews and meta-analysis of research on hot spot policing. Studies included in the meta-analysis varied in city size (half of which were medium-sized cities with between 200,000 and 500,000 residents), evaluation type, intervention type, and whether they measured displacement and diffusion of benefits (Braga et al, 2014). Of the twenty tests included in the analysis, thirteen found statistically significant reductions in their outcome measure (either crime incidents or calls for service). Overall, the authors suggest that hot spot policing is an effective strategy to reduce crime. Furthermore, they assert that crime

displacement is rarely found and areas immediately surrounding targeted areas receive similar crime reduction benefits.

When Braga et al (2012; 2014) broke down characteristics of effective hot spot policing, a number of trends emerged. First, the studies that combined increased police saturating with some sort of problem-oriented strategy were generally more successful in reducing crime. In addition, studies with the strongest effect sizes were those that focused on reducing drug offenses and violence, respectively. Lastly, Braga et al (2014:654-655) found that nine of the 13 tests that were available to examine crime displacement/diffusion, showed results favorable to diffusion of benefits. The other four reported small, yet significant levels of displacement.

Critics of hot spot policing question the effect this strategy has of community satisfaction, fear of crime, and/or police legitimacy (Rosenbaum, 2006, Tonry, 2011). It theorized that hot spot policing can be seen as overly aggressive, unfair, and even discriminatory in some cases. The few studies that examine community reactions found no significant harmful effects as a result of these strategies. Additionally, a common finding was that citizens rarely realized patrols had increased in their area (Weisburd, Hinkle, Famega, and Ready, 2010). However, supporters of hot spot policing, like Braga et al (2014), contend that further research is greatly needed to rule out potential negative influences.

### ***Patrol Operations***

Prior to the introduction of hot spots policing, it was theorized that randomized high-visibility police patrols were most effective crime prevention, and citizen satisfaction. Theoretically, this strategy was thought to instill the belief that police could be anywhere at any time, and the fear of the unknown was thought to desist offenders (Kelling, Pate, Dieckman, and Brown, 1974). The Kansas City Preventive Patrol experiment deunked this commonly held assumption, however, when it found that random patrol did not lessen crime (Kelling et al, 1974).

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### ***Directed Patrol***

Directed police patrol is different from the standard type of policing in that officers proactively patrol specific areas (McGarrell, Chermak, Weiss & Wilson, 2001). To explain further, the officers involved in directed police patrol do not respond to 911 calls. Instead, they receive

special training that helps improve interactions with citizens. These officers work closely with citizens to foster support from the community and understand the issues that are of greatest concern to residents (NIJ, 2013). The most common tactic used in directed police patrol is the traffic stop (McGarrell et. al, 2001). This increases contact between officers and citizens, which is one of the main goals of this policing strategy.

The first department to test the effects of directed police patrol, the Kansas City Police Department in the early 1990s, found great success in this strategy. There was an increase in seizures of illegally obtained firearms and a reduction in gun-related crime (McGarrell et. al, 2001). A 90-day directed patrol project was implemented in Indianapolis in the late 1990s, attempting to replicate findings from the original study. The Indianapolis study, as with the one in Kansas, produced findings suggesting that targeting hot spots could reduce gun-related crime (NIJ, 2013). Specifically, the Indianapolis study found that a focused directed patrol style of policing reduced gun crime, homicide, aggravated assault with a gun, and armed robbery (NIJ, 2013). The scholars involved in this research suggested that crime was not prevented solely by the increased number of guns seized in an area. Rather, increased police visibility and contact with potential offenders in the small geographic areas targeted also likely contributed to the positive effects of the strategy (Braga, 2003). An additional study in St. Louis also found that directed patrol reduced nondomestic firearm assaults (Rosenfeld, Deckard & Blackburn, 2014). There is an abundance of evidence suggesting directed police patrol is effective at reducing gun-related offenses.

In addition to preventing gun-related offenses, directed police patrol has been used to address a variety of other crime types. For instance, directed police patrol has been used as a policing strategy to prevent street robbery. Police patrol robbery hot spots during hot times, making themselves visible to potential offenders (Monk, Heinonen & Eck, 2010). Research suggests that these types of directed police patrols are effective at reducing robbery. One study found a 16% decrease in robbery in the treatment area, while non-treated areas had a 5% increase in robbery (Jones & Tilley, 2004). However, an additional study conducted in St. Louis failed to find an effect of directed patrol on firearm robberies, possibly as a result the fact that robbery was already declining in the city prior to the intervention (Rosenfeld et. al, 2014). Thus, additional research is needed to determine the effects of directed police patrol on specific types of crime.

Directed police patrol can also be used in combination with other situational crime prevention strategies. For instance, a body of research has now looked in to the effects of CCTV surveillance used in conjunction with directed police patrol. Findings from a study of this approach in Newark, New Jersey, suggest that this combination of intervention strategies is associated with reductions in violent crime and disorder (Piza, Caplan, Kennedy & Gilchrist, 2014). Importantly, this study did not find reductions in narcotics-related offenses, even though officers spent a great deal of time addressing narcotics-related incidents (Piza et. al, 2014).

### ***Street Lighting***

An additional strategy for reducing a wide variety of crimes, including burglary, robbery and assault, involves increasing street lighting. Theoretically, Situational Crime Prevention predicts that increased street lighting should reduce crime by increasing the visibility in an area and as

such increasing the likelihood that an offender will be caught (Pease, 1999). Additionally, it is thought that improved lighting may result in increased public space use by citizens, thus enhancing informal surveillance by increasing social interactions and levels of informal social control.

A Campbell Collaboration systematic review of the effects of increased street lighting on crime (Welsh & Farrington, 2008) found that increased lighting significantly reduces crime. A meta-analysis of 13 studies mirrored these results, finding that increased street lighting significantly reduced crime in targeted areas by an average of approximately 21% (Welsh & Farrington, 2007). Empirically, increased lighting appears to have the largest effect on high-crime neighborhoods, and the effects may interact with other environmental prevention strategies, such as CCTV and neighborhood cleanup, to reduce crime (Clarke, 2008).

### *CCTV*

Closed circuit television surveillance, or CCTV, is a crime prevention strategy used to stop both personal and property crimes from occurring. CCTV works by installing video cameras in specific targeted areas and remotely monitoring the recordings. This type of crime prevention strategy can be utilized in several different types of locations, including parking garages, apartment buildings, public parks, commercial buildings, and private homes.

There are two distinct types of CCTV systems - active and passive. An active system is monitored in real time. In contrast, a passive system records the video feed and is viewed later only if a crime is reported (Ratcliffe, 2006). It is theorized that CCTV technology is effective because it deters potential offenders from engaging in crime by increasing the likelihood that they will be caught.

The deterrence effect of CCTV surveillance is explained by rational choice theory. This perspective suggests that potential offenders make decisions based on the costs and benefits of engaging in a behavior (Clarke & Cornish, 1985). Thus, for CCTV to effectively prevent crime, it must be known that the cameras are present and increase the risk of an offender being detected. This risk of being caught will prevent the crime if it outweighs the potential rewards of the crime (Ratcliffe, 2006).

Closed circuit television surveillance can also be beneficial after a crime has been perpetrated. Specifically, this technology allows offenders to be more easily identified, leading to a faster arrest (Ratcliffe, 2006). It is suggested that there are also additional benefits to this crime prevention strategy, including a reduced fear of crime in treated areas and the diffusion of crime prevention benefits to surrounding unmonitored areas (Ratcliffe, 2006).

A number of studies have been conducted evaluating CCTV's impact on crime. Welsh and Farrington (2008) conducted a meta-analysis of these, and their results indicated that CCTV effectively reduces crime. Overall the research on CCTV's impact suggests that it is most effective at preventing property offenses. There is inconclusive evidence regarding the effects on personal crime and public order crimes. Additionally, CCTV is more effective when used in small, well-defined spaces (Ratcliffe, 2006).

### ***Center for Employment Opportunities***

Tulsa's Center for Employment Opportunities (CEO) offers employment services to individuals on probation and parole who are returning from incarceration (CEO, 2015). In this program, participants are first given job readiness training and a transitional job on a supervised work crew. Participants continue working in this transitional job until they are able to find permanent employment. They are assisted in their job search by CEO employment specialists who identify positions where employer needs match the participant's skills (CEO, 2015). Participants are also able to attend mock interview sessions and resume workshops. Once the participant is hired in a permanent position, CEO continues offering support for a year through work-related counseling and long-term career planning, and crisis management (CEO, 2015).

An external evaluation of CEO followed 977 individuals who were randomly assigned to either the CEO treatment group, and thus eligible to use all of CEO's programming, or to a control group, which received a shorter pre-employment class and access to a resource room with computers to use for job searches (Redcross et al, 2012). For those who enrolled in the CEO program within three months of release from incarceration (i.e. for those whom the program targets), CEO was found to significantly reduce recidivism, including rearrest, conviction, and reincarceration, by 16% to 22%. These effects appeared to be strongest for those individuals at a high risk of recidivism when they entered the program. Importantly, this evaluation also found that the benefits of running CEO greatly outweighed the costs. Specifically, they found that the total net benefit to the taxpayer was \$4100 per program participant. This jumped to \$8300 if the program includes only those who have recently been released from prison, for which it has the greatest impact. Thus, the benefits of CEO were found to range from \$1.26 to \$3.85 per dollar of cost.

For Tulsa, this program has the potential to be doubly beneficial with respect to crime prevention. Specifically, the parolees and probationers who participate are less likely to recidivate, but also the work hours generated by the program can be used to implement or install situational crime prevention techniques recommended elsewhere in this report that will prevent additional crimes. For example, CEO's work crews could be used to install additional lighting in high crime areas, thereby decreasing the likelihood that offenders will commit crime there or in the surrounding areas.

### ***Women in Recovery (Building on Tulsa Capacity)***

The Women in Recovery (WIR) program is a Tulsa incarceration alternative program for non-violent female offenders with alcohol and drug addictions run by Family and Children's Services in partnership with the George Kaiser Family Foundation (FCSOK, 2015). Program participants undergo 12 to 18 months of evidence based programming, including mental health and substance abuse treatment, education, job readiness training, and family reunification (GKFF, 2014). There are also offered a number of supportive services, including court assistance, transitional housing, family and child therapy, caregiver support, and health and wellness training (FCSOK, 2013).



Program staff are working with The University of Tulsa Institute of Trauma, Adversity, and Injustice to conduct an evaluation of the WIR program. The findings of this have not yet been released.

## **Crime Specific Strategies**

In the next section of the report we discuss crime specific strategies that can be used to target the five problem crimes identified in Section II of this report. As was mentioned above, we recommend first conducting a more comprehensive problem analysis using a problem oriented policing approach before adopting any of these strategies.

### ***Focused Deterrence to Reduce Homicide and Aggravated Assault***

Additional analyses are required to determine what proportion, if any, of Tulsa's homicides and aggravated assaults are driven by gang violence. If it is sizable amount, focused deterrence is one approach that can be used to reduce this type of crime. Originating in Boston's Operation Ceasefire (Braga et al, 2001), the underlying principle of focused deterrence is that a small proportion of active chronic offenders commit the majority of violence. Furthermore, these individuals are loosely organized in groups/gangs, and most violence perpetrated by them is based on disrespect, norms, and narratives of the street. As such, violence can be impacted through group pressure and support.

To implement a focused deterrence program, law enforcement agencies must coordinate to create meaningful and predictable consequences for groups who engage in violence, and to pull every lever legally possible following a violent incident. To implement this "pulling levers" approach, criminal justice agencies must prioritize responses to gang violence, share information, and develop comprehensive group-focused enforcement strategies so that they can respond to violent groups in a swift and predictable manner. Direct and accurate communication of the strategy to gang members is of central importance to increase compliance. This is done during offender notification meetings (i.e., "call-ins" or "forums"), during which gang members are warned that if any member of their gang commits an act of violence, the entire gang will become the priority of law enforcement. Assistance is made available for those who want to transition out of the violent lifestyle in the form of access to streamlined social and job services. Finally, key neighborhood leaders assist in the development of community engagement activities and strive to create a "moral voice" in the community by delivering a clear message of nonviolence and rejecting the norms and narratives of the street that promote violence.

There is consistent evidence in scholarly literature that focused deterrence offers considerable promise as a mechanism to reduce group and gang related violence. The Boston intervention mentioned above (Braga et al, 2008) was associated with a citywide 63% reduction in youth homicides, 25% reduction in gun assaults, and 32% reduction in shots-fired calls for service. While the exact magnitude of impact of Boston's Ceasefire has been a matter of scholarly debate (see Rosenfeld, Fornango, and Baumer, 2005), the National Academy of Sciences report on gun violence concluded that the Boston intervention had suggestive and compelling evidence of

impact (National Research Council, 2005). Other broad replications of the Boston initiative have taken place in cities such as Los Angeles, California; Stockton, California Indianapolis, Indiana; and Cincinnati, Ohio. In Los Angeles, significant reductions in total violent, gang, and gun crimes were observed during the suppression periods within the targeted communities (Tita et al., 2004). Indianapolis experienced an immediate, significant, and unique (relative to other Midwestern cities) 34% decline in homicides that was consistent with a ‘light switch’ impact (McGarrell, Chermak, Wilson, and Corsaro., 2006: p. 227). A supplemental analysis of Indianapolis homicides indicates that the overall significant decline in total homicides was driven specifically by a reduction in group and gang affiliated homicides following intervention implementation (Corsaro and McGarrell, 2009). Operation Peacekeeper in Stockton, California focused intensive efforts on chronically violent street gangs, and was associated with a statistically significant 42% reduction in citywide gun homicides (Braga, 2008). Likewise, an evaluation of the Cincinnati Initiative to Reduce Violence, implemented in Cincinnati, Ohio, reported a statistically significant drop in both homicides and shootings following the implementation of the program. Specifically, a 41.2% reduction in gang-member involved homicides was achieved, as was a 22.3% reduction in shootings (Engel et al, 2013). As such this strategy provides a promising avenue through which to address gang member involved violence.

### ***Bystander Intervention to Reduce Rape and Sexual Assault***

The “bystander effect” is a social phenomenon that refers to group situations where witnesses fail to intervene when someone else is in danger because they shift responsibility to other present parties (Fischer, Greitemeyer, Kastenmuller, Krueger, Vogrincic, Frey, Heene, Wicher, and Kainbacher, 2011). Although this phenomenon is not present in situations which are unambiguously dangerous, sexual assault is often an ambiguous to outside observers as it is mostly perpetrated by acquaintances and those known to the victim (Fischer et al, 2011:533; Fisher, Cullen, and Turner, 2000). Additionally, a culture of rape acceptance, rape myths, and victim-blaming contributes to the reduced likelihood of bystanders recognizing and acting in these situations (Schewe, 2006). Bystander Intervention strategies address these two facts by educating about the early warning signs of sexual assault in order to reduce the likelihood of this crime occurring.

Bystander Intervention programs are typically implemented in college and high school settings by professional facilitators or trained peer facilitators as these are two settings in which sexual assault is a prevalent and pressing problem (Fisher et al, 2000; Fisher, Daigle, and Cullen, 2010). Notably, one of Tulsa’s rape hotspots in 2014 was located near Tulsa Community College Northeast, suggesting this may be the case in Tulsa as well.

Bystander Intervention training involves educating participants about sexual violence and recognizing warning signs for themselves and their peers. In training sessions, facilitators discuss the prevalence of sexual violence, address rape myths (i.e. the general belief that rape victims are to be blamed for their victimization), examine the risks of drugs and alcohol, and challenge the stigma and culture surrounding sexual and intimate partner violence (Benner, 2013). The second part of the training involves teaching how to effectively intervene if a potential victimization

arises. Participants practice verbally acknowledging rape-myth and victim-blaming conversations as well as stepping in during worrisome situations. This step is designed to instill a sense of responsibility, confidence, and skills to confront aggressors and the culture surrounding sexual violence (Benner, 2013).

Because Bystander Intervention is a relatively new program, research on its effectiveness is limited. However, preliminary research is encouraging. Because of the multi-faceted nature of sexual violence, research on intervention programs use a wide variety of outcomes to measure effectiveness. These includes: perceptions of the likelihood to intervene, changes in rape myth acceptance and levels of sexually-aggressive behavior, and the amount of active bystander actions and behaviors (e.g. Gidycz, Orchowski, and Berkowitz, 2011; Coker, Cook-Craig, Williams, Fisher, Clear, Garcia, and Hegge, 2011).

The most salient finding among Bystander Intervention program effectiveness literature is that these training sessions positively impact the “rape culture” and acceptance of rape myths (Gidycz et al, 2011; Coker et al, 2011; Banyard and Moynihan, 2011; Banyard, Moynihan, and Plante, 2007; Ahrens, Rich and Ullman, 2011). For instance, Coker et al (2011) examined the effectiveness of three different bystander programs and found students who received the training scored lower on the scale of rape and dating violence myths than those that did not receive any training. This same study found that students receiving training reported more self-reported bystander actions (e.g. speaking up when a peer said somebody “deserved to be raped”, expressing concern over partying habits, or assisting someone in getting home safely) and more observed bystander actions by their peers. One caveat of this research is that study samples have typically been limited to university students self-selecting into the program. As sexual assault is usually perpetrated by a small number of individuals, and their participation in the program has not been directly tested, it is not known what effects the program might have on them.

### ***Safe Dates to Reduce Rape and Sexual Assault***

The Safe Dates Project attempts to alter cognitive processing and acceptance of underlying social factors that associate with dating violence among youth in order to prevent rape and sexual assault (Foshee & Langwick, 2010). The project relies on early intervention and teaching youth what physical, psychological and other forms of dating abuse looks like in order to stop both current victimization and perpetration, and also prevent future victimization and perpetration before it has begun. It involves a series of nine sessions where facilitators (typically health teachers) teach and discuss a variety of issues associated with dating violence, like gender stereotypes, signs of abuse, effective communication, conflict resolution, preventing sexual assault and helping others. The project also encourages parent and teacher involvement in each of these steps to open healthy dialog with adults in the students’ lives. After the program has finished, each student receives is followed up with for the following four years. These follow-ups include newsletters, worksheets and telephone calls from a health educator.

Empirical research on the Safe Dates Project has shown short- and long-term reductions in victimization and perpetration of sexual and dating violence and weapon carrying (Foshee,

Linder, Langwick, Arriaga, Heath, McMahon, and Bangdiwala, 1996; Foshee, Bauman, Ennett, Linder, Benefield, and Suchindran, 2004; Foshee, Bauman, Ennett, Suchindran, Benefield, and Linder, 2005; Foshee, McNaughton Reyes, Agnew-Brune, Simon, Vagi, Lee, and Suchindran, 2014). Four years after program completion these effects appear to decay to some extent, but participants still show overall reductions in self-reported perpetration and sexual victimization (Foshee et al, 2004). Indeed, those receiving the Safe Dates training reported 56% to 92% less dating violence victimization and perpetration than those in the control group (Foshee et al, 2004: 623).

### ***Alley Gating to Reduce Burglary***

Alley-gating is a relatively new crime prevention technique that is gaining popularity, especially in the United Kingdom (Bowers, Johnson & Hirschfield, 2004). This strategy involves installing security gates across alleyways and footpaths that lead to residential areas, which are then kept locked at all times. Only the residents who live in homes in the areas protected by gates have keys to those gates (Johnson & Loxley, 2001). The purpose of these gates is to block access to paths and alleys near the rear and sides of homes where burglars can enter undetected. It is suggested that there are several benefits of alley-gating, including reducing fear of crime, reducing arson attempts, increasing community involvement, and improving the environment. However, the main goal of this crime prevention strategy is to reduce burglary (Johnson & Loxley, 2001). Situational Crime Prevention theory predicts that alley-gating reduces the likelihood of crime occurring by requiring offenders to use more effort to gain access to homes, and thereby reducing property vulnerability (Haywood, Kautt, Whitaker, 2009).

There has been limited research on this crime prevention strategy. However, the studies that have been conducted suggest that alley-gating is an effective crime prevention technique. Between 1996 and 2005, thirteen studies evaluated alley-gating as a crime prevention strategy. The findings from these studies revealed reductions in burglary, ranging from 3% to 65% (Armitage, 2006). In addition to reducing burglary in target areas, research suggests that a diffusion of benefits occurs whereby areas neighboring those that have been alley gated also see reduced crime, despite not having alley gates themselves (Armitage, 2006). One study in particular sought to examine potential displacement effects of alley-gating, and found that there was limited to no displacement as a result of the technique (Haywood, Kautt & Whitaker, 2009).

### ***Duluth Model to Reduce Domestic Violence***

One strategy for addressing domestic that has been empirically supported is the Duluth Model. The model is based on the theory that male-on-female domestic abuse is the result of male's feeling ownership and entitlement to control in a relationship (Miller, 2010). Supporters of the Duluth Model believe that domestic abuses have been socialized to believe men and women deserve different levels of respect and status, and justify abuse using these beliefs. More specifically, the Duluth Model puts forth that physical violence is the last method of control used by abusers and is preceded by nonviolent control. The Duluth Model attempts to alter these instilled patriarchal beliefs by using the cognitive-behavioral approaches common among

psychological and correctional treatments. They stress replacing the nonviolent components of control with prosocial behaviors that instill equality and nonviolence in relationships.

The Duluth Model is targeted primarily at educating male perpetrators, but also can include female victims. It uses group classes made up of domestic violence arrestees which are led by trained facilitators for 28 weeks. Typically, a partnership with local law enforcement, court systems, and victim advocacy occurs and the program is required as part of the perpetrator's sentence or probation.

Video vignettes of various couples are used to initiate dialog about problem behaviors and dangerous relationship dynamics, which are then paralleled with participant behavior. In addition to this, facilitators directly confront perpetrators about their behavior, encouraging them to take responsibility for their actions, and discuss the causes of their behaviors.

Research has found significant improvements in relationship violence among those receiving Duluth Model based treatment (Babcock, Green, and Robie, 2004). In a meta-analytic review of domestic violence programming, including 12 studies conducted on the Duluth Model, Babcock et al (2004) found that the program had a significant effects on victimization and/or reported-perpetration. These effect sizes are similar to other cognitive-behavioral treatments commonly used to address domestic violence. Importantly, these effects appear to nullify over time, as one study found no differences in recidivism rates between those treated via the Duluth Model and those not treated nine years after program completion (Herman, Rotunda, Williamson, and Vodanovich, 2014).

Additionally, it is important to note that the Duluth Model does not address all precursors to domestic violence. For instance, it does not address the psychological and biological contributors to domestic violence (Dutton & Corvo, 2006), including substance abuse and mental health conditions (Corvo, Dutton & Wan-Yi, 2009). As such, if this program were to be implemented in Tulsa, it would likely need to be modified or supplemented with other treatment to address these needs.

### **Final Recommendations**

This report provides two primary recommendations to enhance public safety in Tulsa. First, we suggest that the police force increase its overall size by roughly 27% for the Tulsa Police Department patrol division to have sufficient personnel resources to address both citizen needs (calls for service) as well as engage in proactive (data-driven) policing strategies based on Tulsa's violent crime levels. In this report, we provide suggestions regarding police administrative (supervisor to patrol ratios) and investigative strategies to support crime prevention efforts. Second, we outline a number of promising evidence-based, police-led strategies that should be systematically implemented by the City of Tulsa criminal justice working groups to address persistent crime patterns within the city (e.g., directed patrol, hot spots policing with sufficient dosage, and offender-based interventions).

Regarding the intersection of these recommendations (i.e., an increase in police force size along with development of crime prevention approaches), we outline a model of accountability that we believe should be employed by the City of Tulsa. Although studies that examine the direct

relationship between police force size and crime provide an inconsistent narrative (Skogan and Frydl, 2004), a large number of strategies used by police to combat crime (and evaluated by researchers) have been at least partially attributed to reductions in violence in selected cities (Braga, 2015).

The primary goals for increasing the police force size in Tulsa is to combat the city's historical violent crime trajectory, reduce minor crimes and disorders, and provide increased levels of customer service. Enhancing law enforcement capacity should provide a vehicle to achieve these goals. Therefore we recommend the City of Tulsa:

- Form a committee to monitor police strategies and to provide oversight in an effort to assess and promote the systematic use of evidence based police-led strategies
- Develop a system for auditing strategic crime prevention efforts (i.e., capturing programmatic processes and dosage of strategic policing efforts)
- Include in an annual report to city officials a summary of the measured efforts taken by police patrol to proactively address the city's crime problems

Ideally, violent crime rates in Tulsa will decline relative to its historic violent crime trajectory, and further minor crimes and incivilities will decrease while customer satisfaction will increase. While it becomes difficult to expect declines in violent offenses due to circumstances that are beyond the police departments control (e.g., a general overall change in violent crime could be observed in urban cities across the country), we believe it is reasonable to ensure systematic proactive crime prevention efforts that involve multiple stakeholders are being driven by the police department once they have sufficient resources to engage in more proactive crime control. A joint-committee that provides oversight and accountability related to these efforts is warranted in our view.

### **Summary**

The bulk of the comparative analyses presented in this report show that the number of serious violent crimes in Tulsa is disproportionately high relative to comparable urban settings. In this section, we recommended a number of evidence-based, promising crime prevention approaches that we believe are worth exploring, adopting, and implementing to address specific crime problems. We also call for more detailed and precise incident-as well as offender-based analyses of crimes involving domestic offenders as well as chronic violent offenders within the city. The preliminary analyses presented here suggest the city would benefit from evidence-based practices such as place-based strategies (i.e., hot spots policing, directed patrol, the use of closed circuit television, and situational crime prevention strategies) as well as offender-based interventions (such as focused deterrence group and gang violence strategies as well as domestic violence and sexual assault prevention strategies).

Finally, it is evident through the various collaborative approaches currently implemented in Tulsa that there exists a robust external capacity to assist with crime problems beyond the law enforcement community. For example, the George Kaiser Family Foundation, the Family and Children Services, social service providers, and local neighborhoods leaders involved in current

safety projects within Tulsa can complement and support the evidence-based strategies suggested here-in. In summary, the promotion, coordination, and use of collaborative and integrative practices that have a strong foundation based in research provide the most promising framework to adopt in order to improve citizen quality of life and safety in Tulsa.

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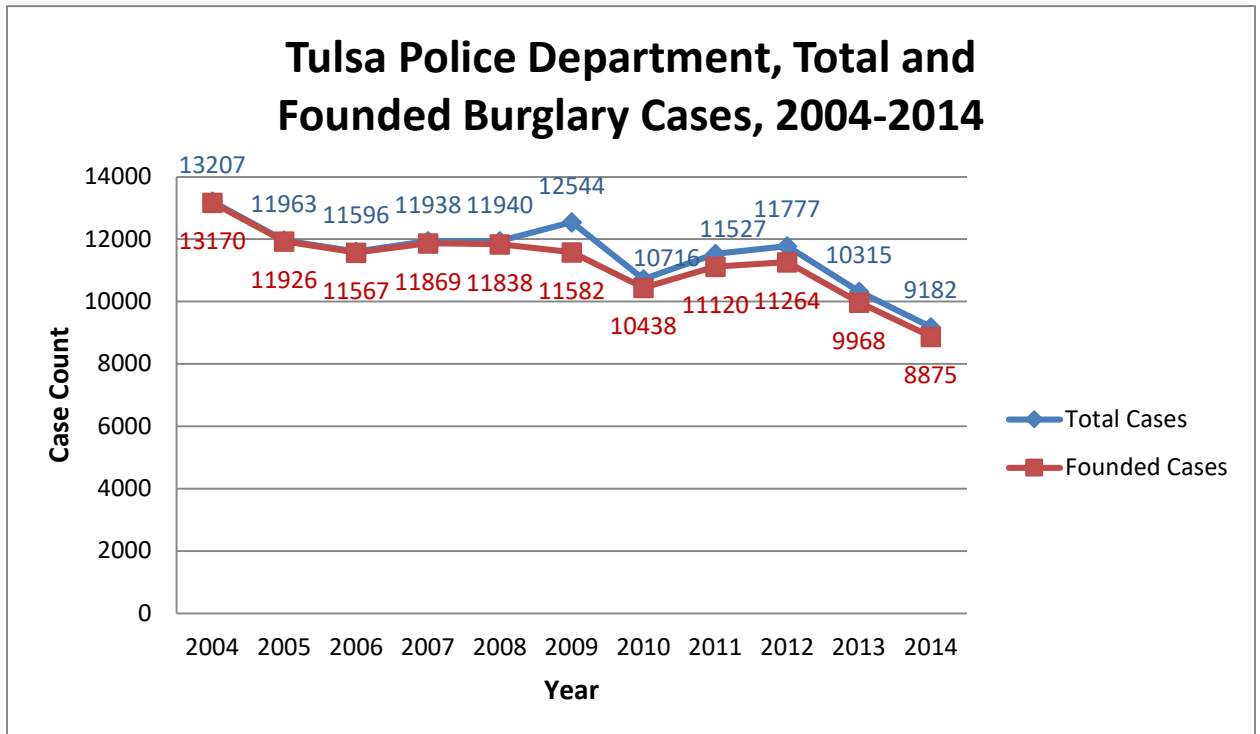
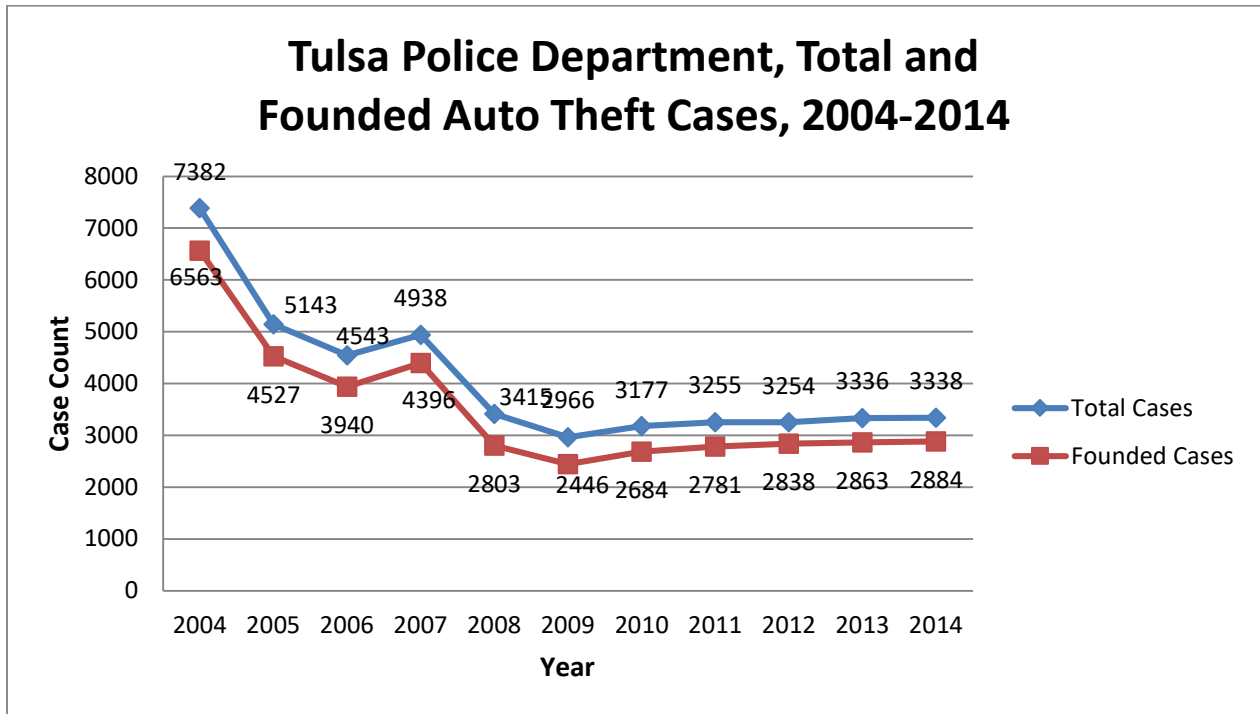


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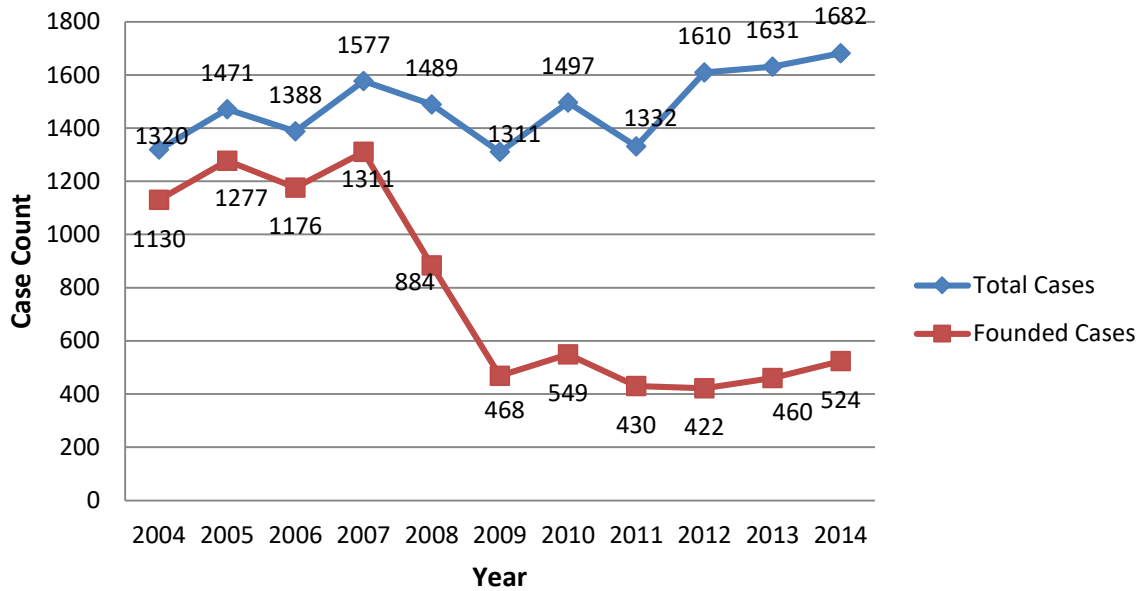
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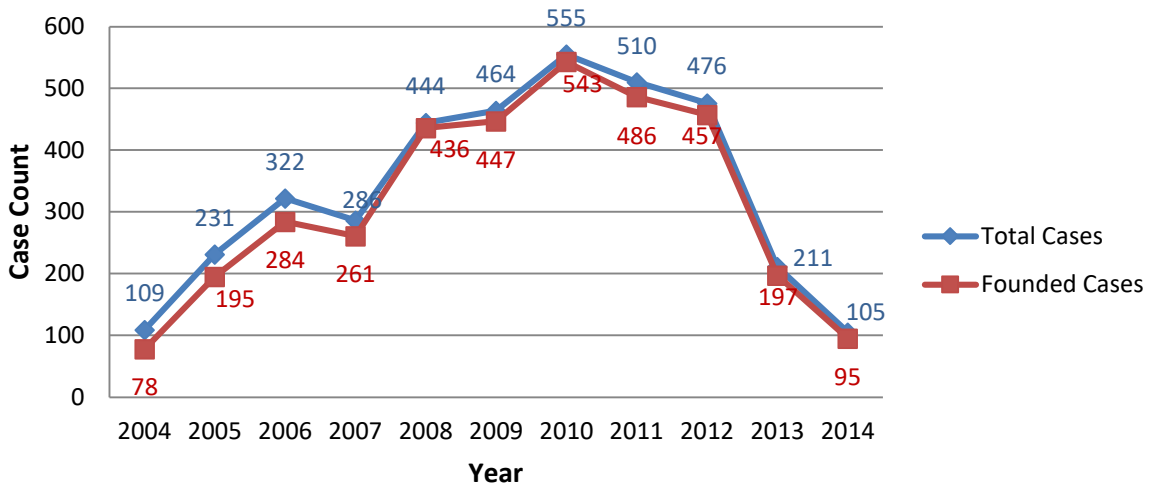
**APPENDIX A: TULSA POLICE DEPARTMENT TOTAL AND FOUNDED CASES**



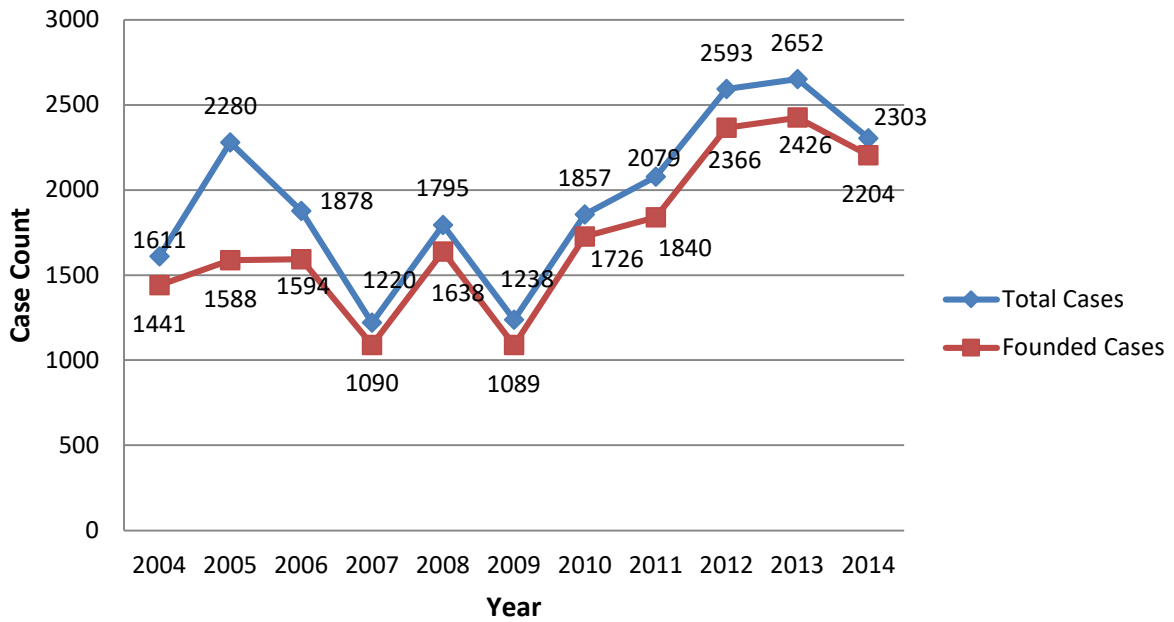
### Tulsa Police Department, Total and Founded Child Crisis Cases, 2004-2014



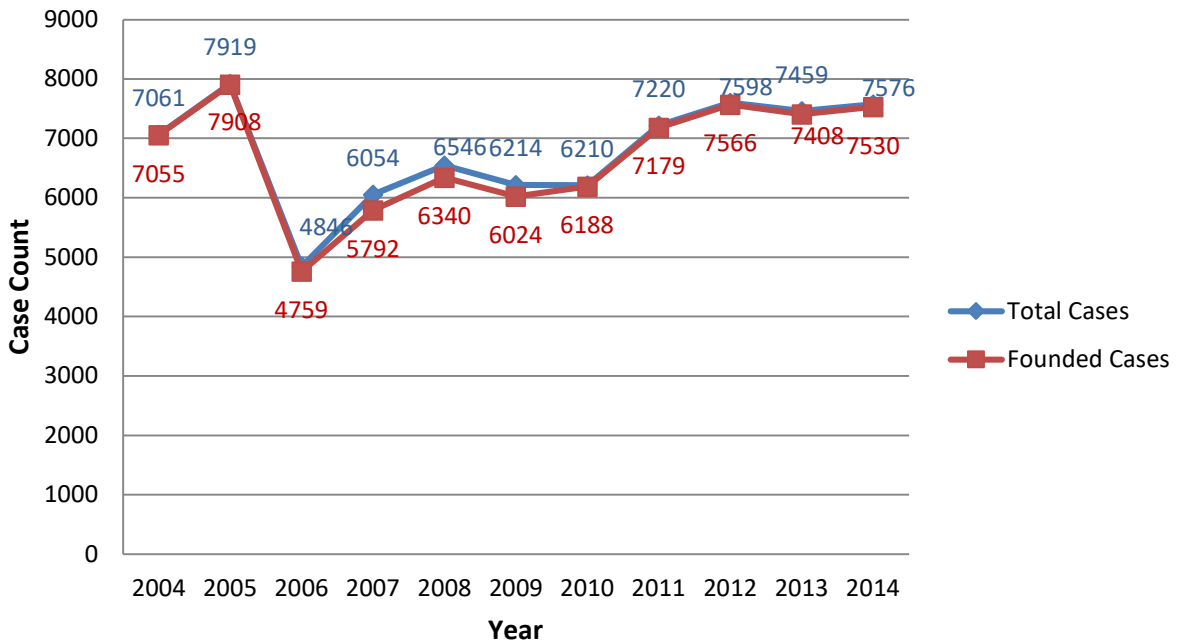
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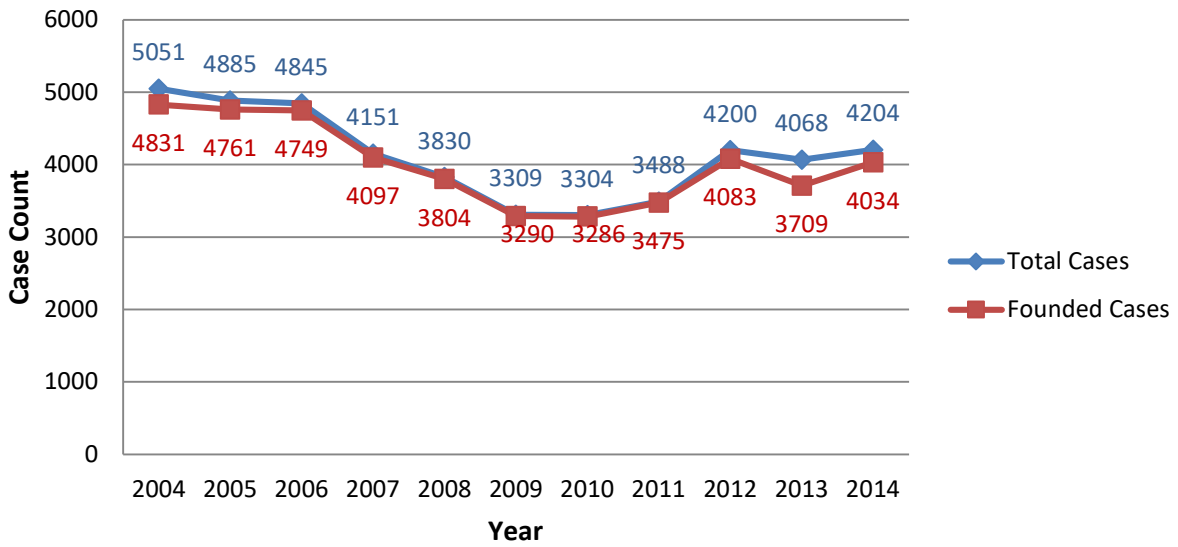
### Tulsa Police Department, Total and Founded Exploitation Unit Cases, 2004-2014



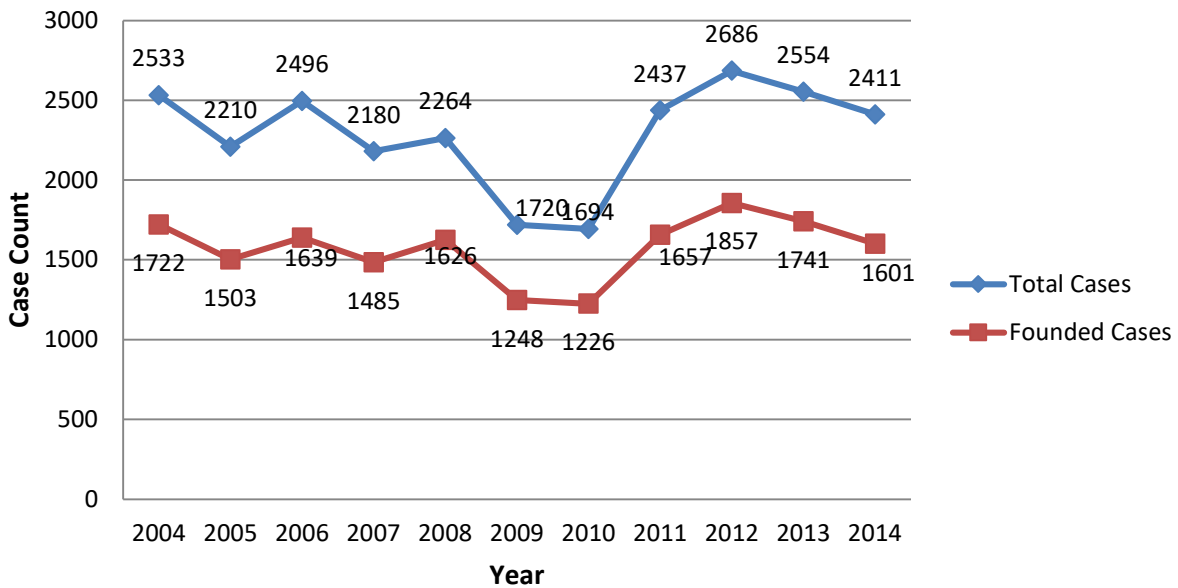
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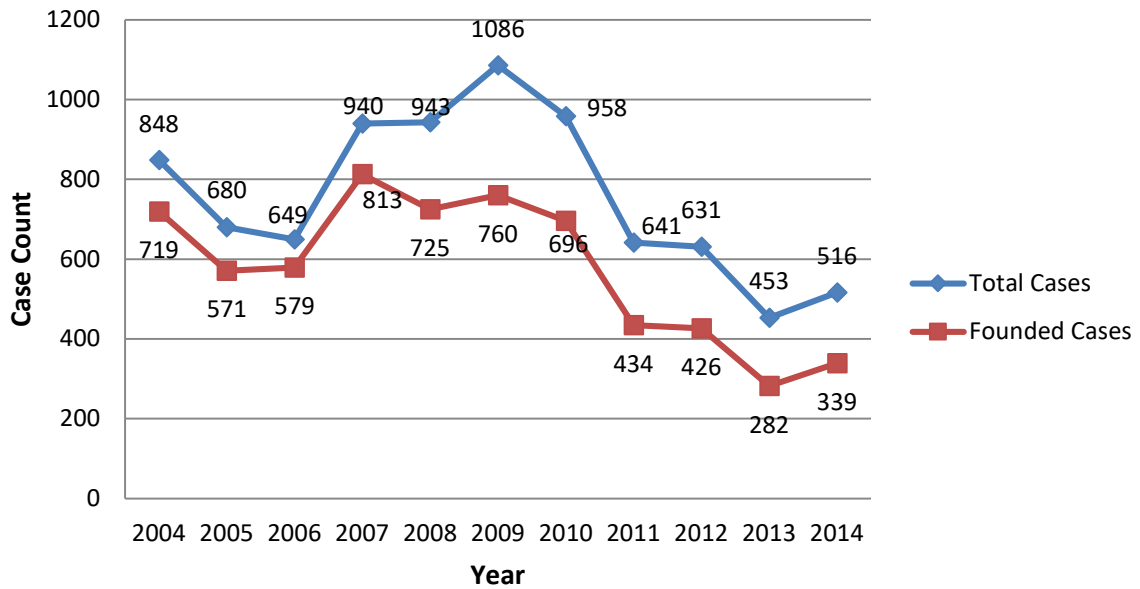
### Tulsa Police Department, Total and Founded Fraud/Forgery Cases, 2004-2014



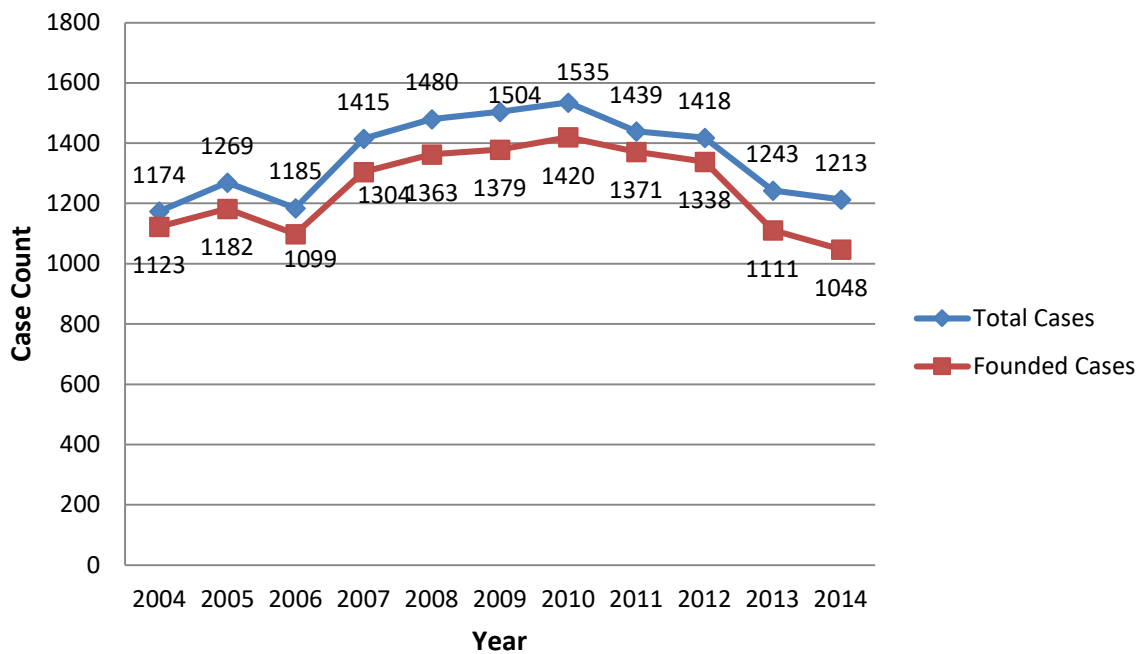
### Tulsa Police Department, Total and Founded Homicide Cases, 2004-2014



### Tulsa Police Department, Total and Founded Major Crimes Unit 3 Cases, 2004-2014

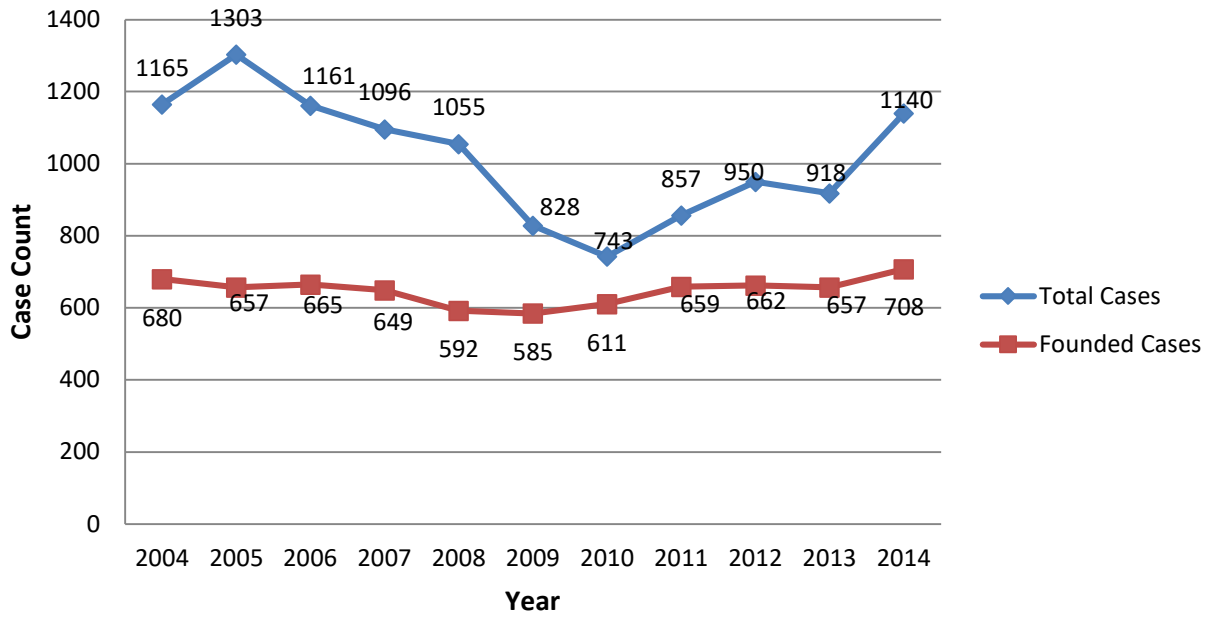


### Tulsa Police Department, Total and Founded Robbery Cases, 2004-2014



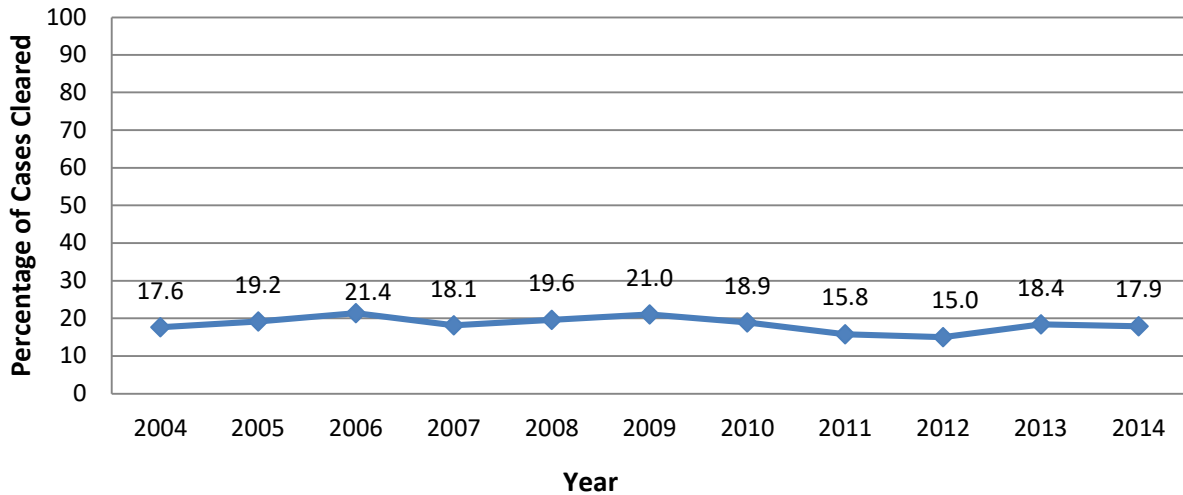


## Tulsa Police Department, Total and Founded Sex Crimes Cases, 2004-2014



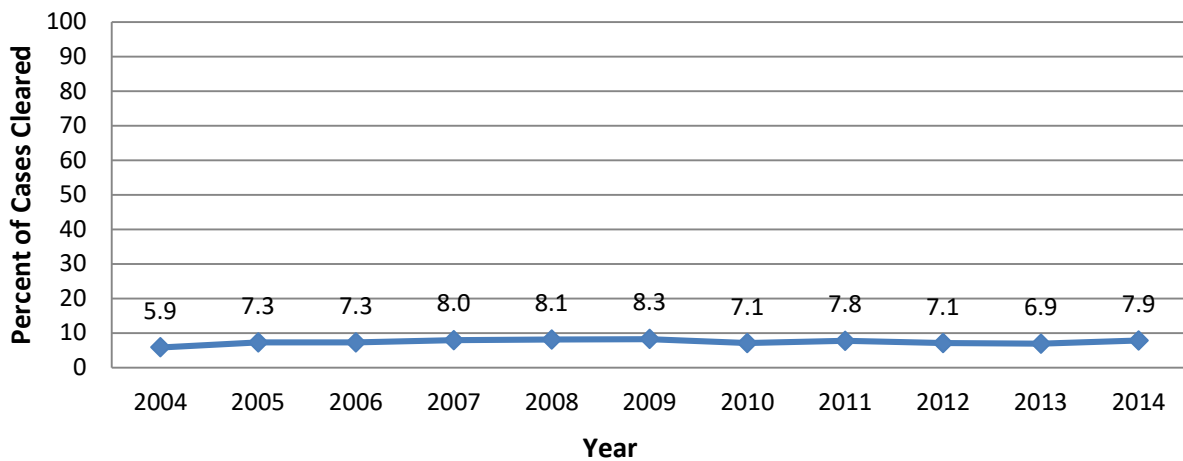
## APPENDIX B: TULSA POLICE DEPARTMENT CLEARANCE RATES

### Tulsa Police Department Auto Theft Clearance Rates, 2004-2014



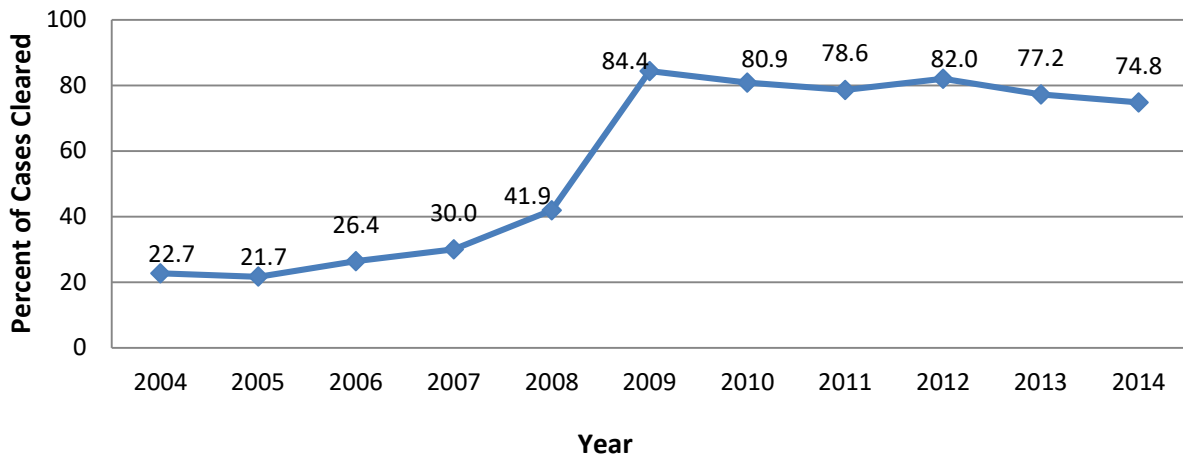
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

### Tulsa Police Department Burglary Clearance Rates, 2004-2014



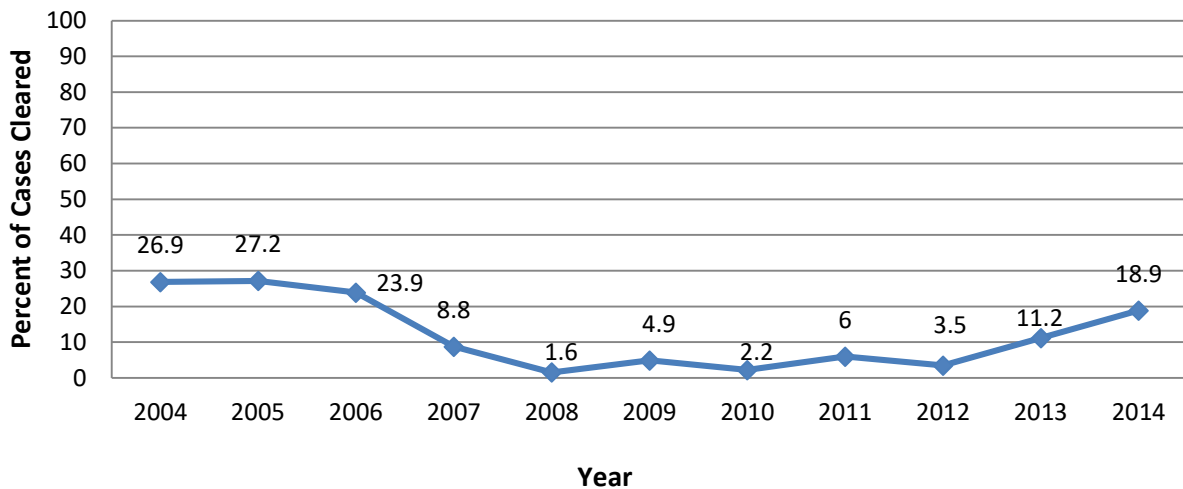
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Child Crisis Clearance Rates, 2004-2014



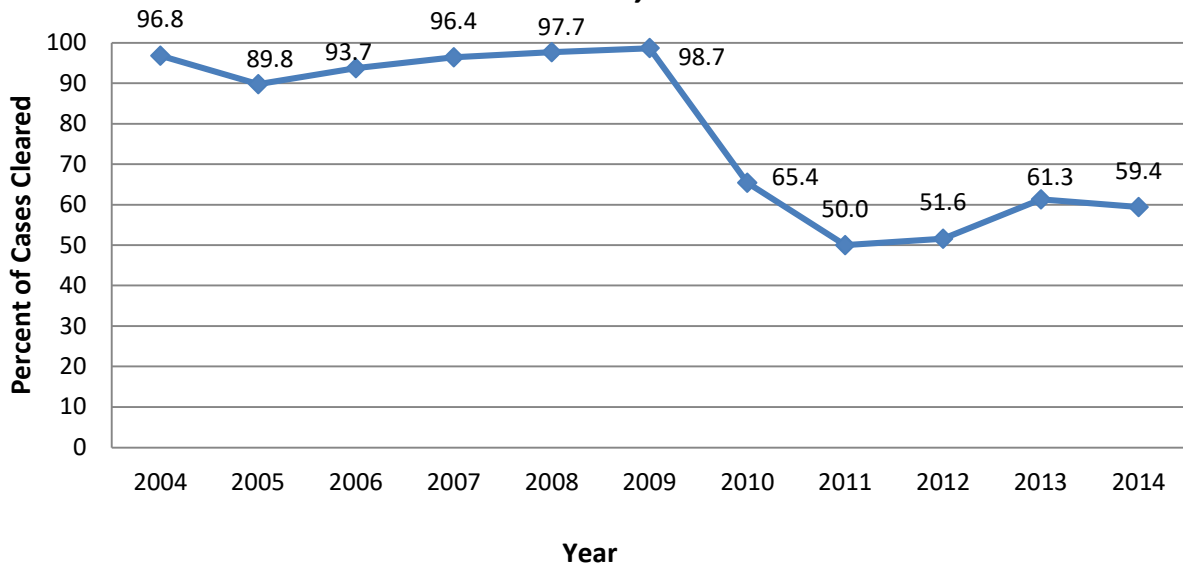
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Cybercrime Clearance Rates, 2004-2014



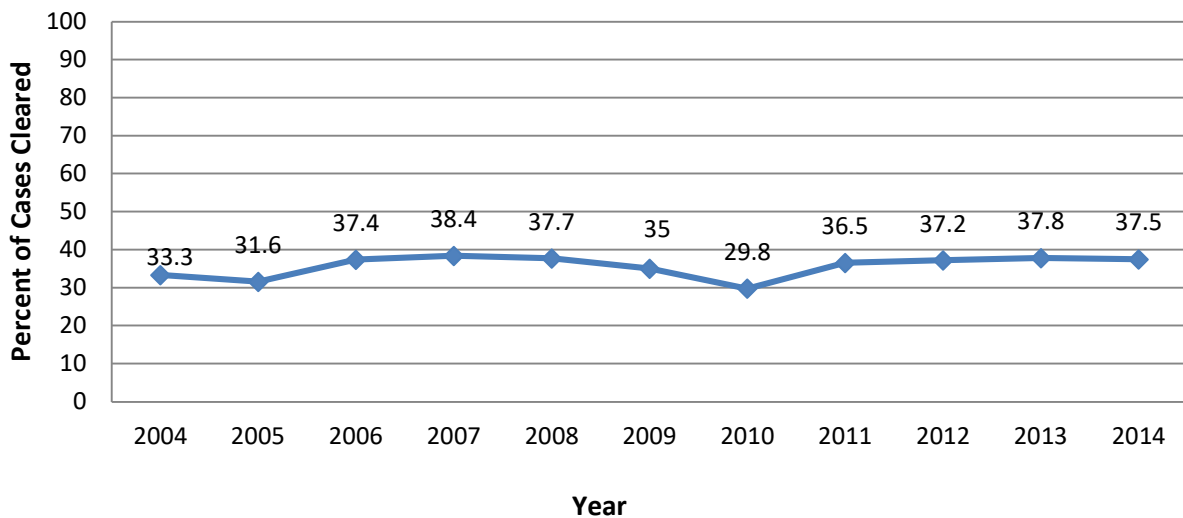
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Exploitation Unit Clearance Rates, 2004-2014



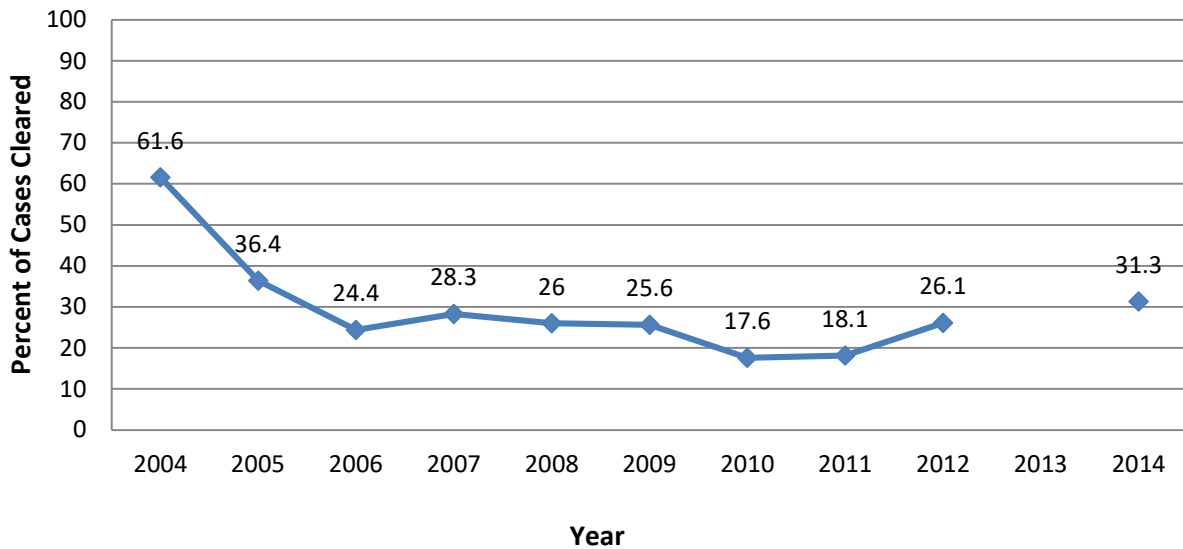
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Family Violence Clearance Rates, 2004-2014



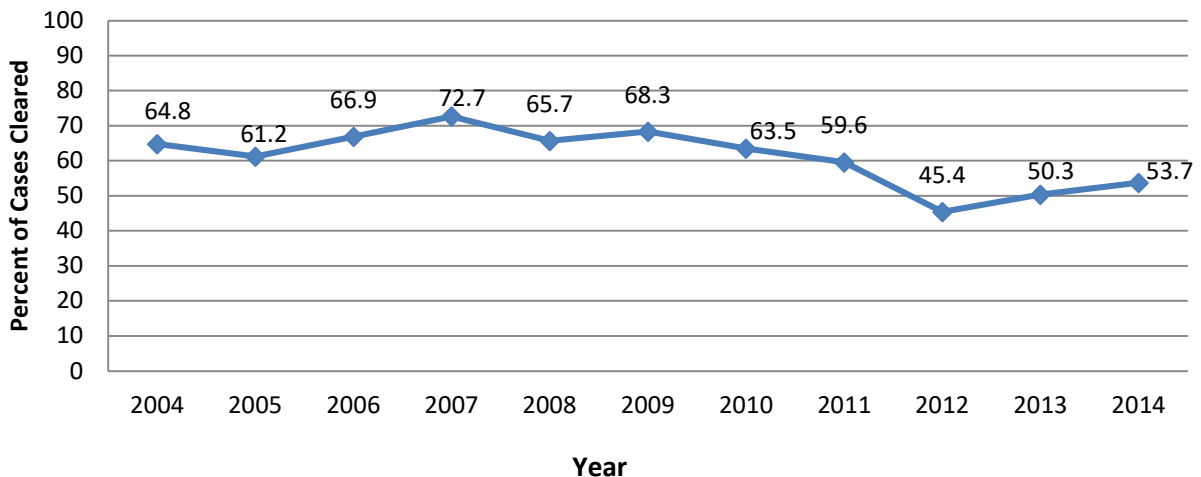
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Fraud/Forgery Clearance Rates, 2004-2014



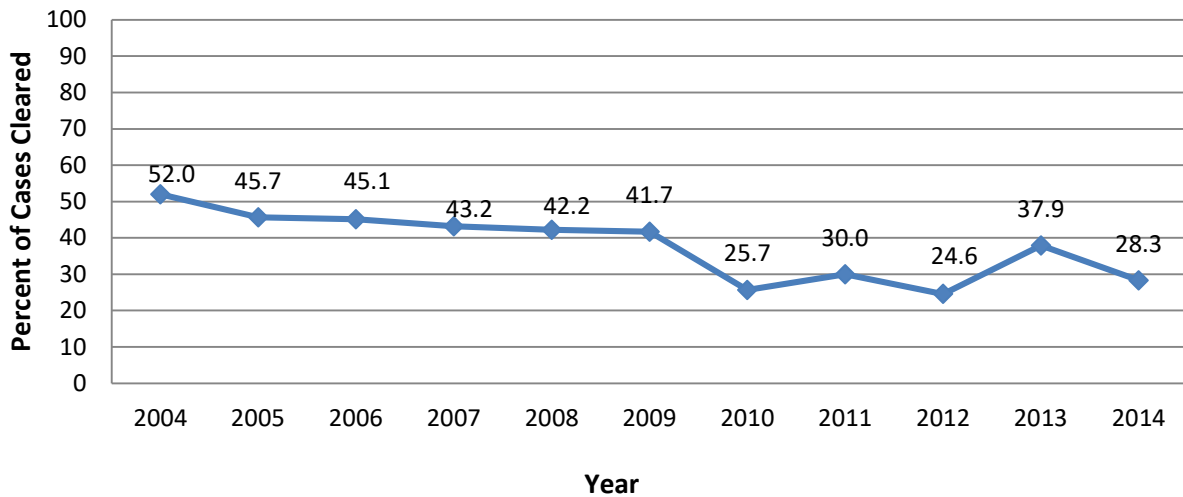
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Homicide Clearance Rates, 2004-2014



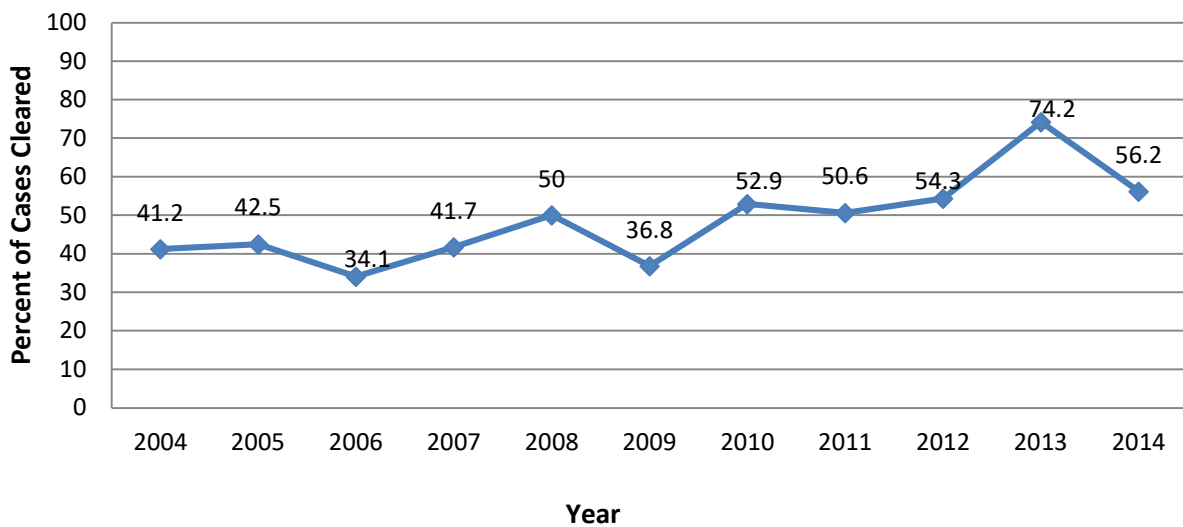
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Major Crimes Unit 3 Clearance Rates, 2004-2014



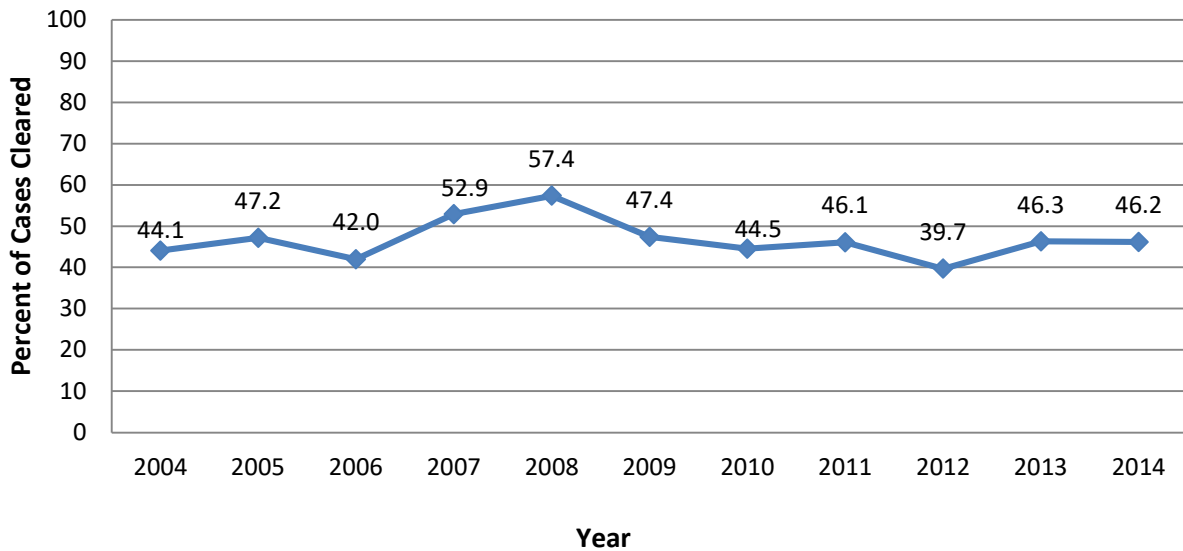
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Organized Gangs Clearance Rates, 2004-2014



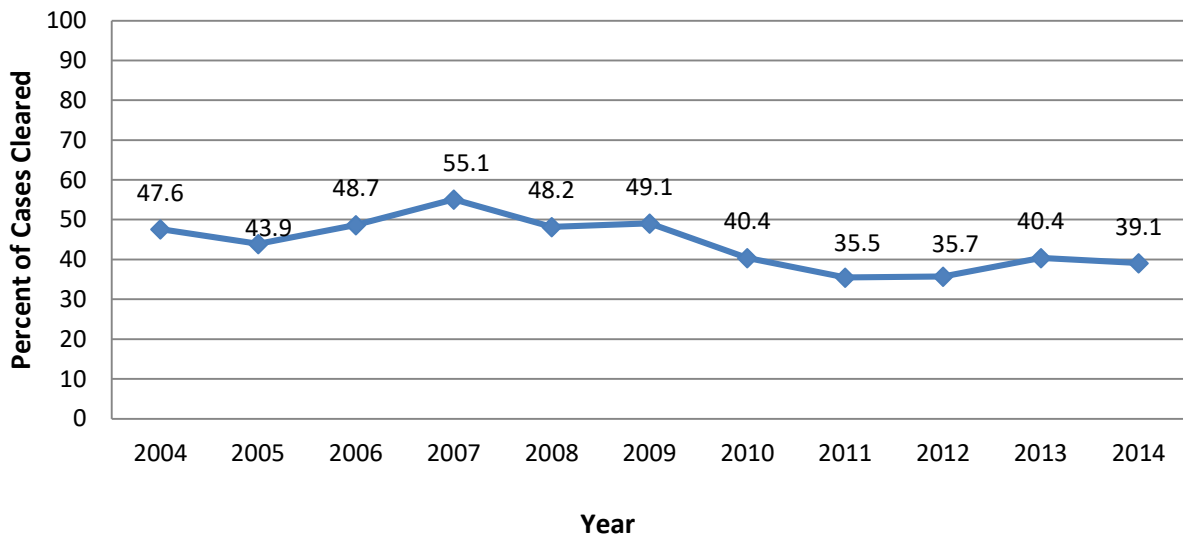
\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Sex Crimes Clearance Rates, 2004-2014



\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

## Tulsa Police Department Robbery Clearance Rates, 2004-2014



\*Clearance rates are calculated by taking the sum of cases cleared by arrest, exceptionally cleared, and administratively cleared. This sum is then divided by the total number of cases (excluding those that are unfounded) and multiplied by 100.

**APPENDIX C: TULSA CRIME RATE PERCENTILE RANKINGS**

**Table 53: Tulsa Crime Rate Percentile Rankings as Compared to All US Cities, 2004-2013**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Violent Crime</b>	88.6	90.4	90.0	89.3	92.5	90.0	90.2	88.8	87.0	87.9
<b>Homicide</b>	81.9	86.4	83.6	84.3	83.6	91.0	87.7	85.3	80.7	89.3
<b>Rape</b>	91.8	91.8	91.1	93.9	86.8	88.2	88.8	93.3	96.1	95.7
<b>Robbery</b>	68.7	71.1	62.1	64.6	68.6	72.4	85.3	78.9	78.6	77.9
<b>Aggravated Assault</b>	93.2	93.6	95.0	93.2	96.8	92.5	90.5	92.3	89.8	89.7
<b>Property Crime</b>	84.3	82.9	81.8	85.0	83.2	88.9	83.2	87.7	83.5	86.8
<b>Burglary</b>	91.5	91.8	89.3	92.9	91.1	91.4	94.0	94.4	91.6	92.2
<b>Larceny</b>	77.2	71.4	73.9	71.4	75.7	83.5	67.7	69.1	70.2	76.2
<b>Auto Theft</b>	75.1	75.4	70.7	84.6	66.1	70.6	83.5	84.2	84.2	84.7
<b>All Part I Crime</b>	86.5	85.7	82.9	86.4	87.5	91.0	86.3	87.7	84.6	87.9

**Table 54: Tulsa Crime Rate Percentile Rankings as Compared to Cities 100,000 or Greater, 2004-2013**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Violent Crime</b>	88.7	90.5	89.5	88.8	92.6	89.5	89.7	88.7	86.9	87.9
<b>Homicide</b>	79.4	85	82.2	83.1	83	90.9	87.1	84.8	80.3	89.4
<b>Rape</b>	91.5	92.1	91.5	93.8	87.5	88.4	88.6	93.3	96.2	96.1
<b>Robbery</b>	65.7	68.4	59.7	61.5	67.2	71.3	84.2	78	78.2	77.7
<b>Aggravated Assault</b>	92.7	93.7	94.6	92.7	96.3	92	90.1	92.2	89.6	89.7
<b>Property Crime</b>	83.5	82.6	82.2	85	83	89.1	82.7	87.9	83.7	86.9
<b>Burglary</b>	91.5	92.1	88.8	92.7	90.8	90.9	93.4	94	91.3	92.2
<b>Theft</b>	75	70.4	73.3	71.2	75.6	84	68	69.9	70.6	76.2
<b>Auto Theft</b>	74.2	75.5	70.5	85	66.1	71.3	82.4	84	84.1	84.8
<b>All Part I Crime</b>	86.3	86.2	83.3	86.5	87.8	91.6	86	87.6	84.8	87.9



**Table 55: Tulsa Crime Rate Percentile Rankings as Compared to Cities 250,000 or Greater, 2004-2013**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Violent Crime</b>	74.3	73.9	74.3	74.6	81.1	76.7	77.8	76.4	74.0	75.7
<b>Homicide</b>	62.9	72.5	65.7	71.8	71.6	83.6	76.4	73.6	68.5	79.7
<b>Rape</b>	90.0	91.3	90.0	90.1	83.8	84.9	87.5	93.1	94.5	94.6
<b>Robbery</b>	42.9	47.8	40.0	46.5	51.4	54.8	68.1	62.5	64.4	63.5
<b>Aggravated Assault</b>	84.3	84.1	87.1	87.3	93.2	87.7	83.3	86.1	82.2	81.1
<b>Property Crime</b>	78.6	79.7	72.9	80.3	81.1	87.7	76.4	83.3	79.5	79.7
<b>Burglary</b>	87.1	88.4	84.3	88.7	87.8	87.7	90.3	91.7	90.4	93.2
<b>Larceny</b>	68.6	69.6	70.0	63.4	73.0	86.3	59.7	59.7	63.0	70.3
<b>Auto Theft</b>	54.3	55.1	47.1	76.1	48.6	53.4	70.8	72.2	72.6	75.7
<b>All Part I Crime</b>	81.4	78.3	75.7	78.9	83.8	90.4	80.6	80.6	79.5	81.1

**Table 56: Tulsa Crime Rate Percentile Rankings as Compared to Cities 250,000 to 500,000, 2004-2013**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Violent Crime</b>	71.1	70.3	73.7	74.4	82.9	80.0	77.5	74.4	75.0	76.2
<b>Homicide</b>	65.8	73.0	68.4	71.8	75.6	82.5	70.0	66.7	67.5	78.6
<b>Rape</b>	86.8	83.8	84.2	84.6	78.0	75.0	82.5	89.7	90.0	90.5
<b>Robbery</b>	47.4	54.1	44.7	53.8	58.5	65.0	70.0	64.1	65.0	66.7
<b>Aggravated Assault</b>	81.6	81.1	86.8	87.2	95.1	87.5	82.5	84.6	85.0	81.0
<b>Property Crime</b>	81.6	81.1	73.7	87.2	87.8	92.5	80.0	84.6	80.0	83.3
<b>Burglary</b>	86.8	89.2	86.8	89.7	90.2	90.0	90.0	92.3	92.5	95.2
<b>Larceny</b>	71.1	73.0	73.7	71.8	80.5	90.0	65.0	64.1	65.0	73.8
<b>Auto Theft</b>	63.2	64.9	52.6	79.5	58.5	65.0	67.5	69.2	67.5	78.6
<b>All Part I Crime</b>	84.2	81.1	73.7	79.5	87.8	95.0	82.5	76.9	77.5	83.3

**Table 57: Tulsa Crime Rate Percentile Rankings as Compared to Cities 250,000 to 1,000,000, 2004-2013**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Violent Crime</b>	73.8	71.7	72.1	72.6	80.0	76.6	76.2	74.6	73.4	73.8
<b>Homicide</b>	65.6	73.3	67.2	72.6	72.3	82.8	74.6	71.4	67.2	78.5
<b>Rape</b>	88.5	90.0	88.5	88.7	83.1	82.8	85.7	92.1	93.8	93.8
<b>Robbery</b>	44.3	50.0	42.6	48.4	53.8	56.3	68.3	61.9	64.1	64.6
<b>Aggravated Assault</b>	82.0	81.7	85.2	85.5	92.3	85.9	81.0	84.1	79.7	78.5
<b>Property Crime</b>	77.0	78.3	70.5	80.6	80.0	87.5	76.2	82.5	78.1	78.5
<b>Burglary</b>	86.9	88.3	83.6	88.7	86.2	85.9	88.9	90.5	89.1	92.3
<b>Larceny</b>	67.2	68.3	68.9	61.3	70.8	85.9	57.1	57.1	60.9	69.2
<b>Auto Theft</b>	55.7	56.7	47.5	79.0	50.8	54.7	69.8	69.8	68.8	73.8
<b>All Part I Crime</b>	80.3	76.7	73.8	77.4	83.1	90.6	81.0	77.8	78.1	80.0

## APPENDIX D: YEARLY TRAFFIC COLLISIONS

**Table 58: Yearly Traffic Collisions, 2004 to 2014**

Ucc Desc	Incident Count										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
TRAFFIC COLLISION	8543	8485	8084	7983	7859	7582	6928	6730	7112	7067	6885
TRAFFIC COLLISION W/FATALITY	43	49	41	39	42	40	37	40	40	46	44
TRAFFIC COLLISION W/INJURY	4707	4480	4456	4070	4302	4437	4292	4227	4394	3890	3699
TRAFFIC COLLISION-HIT AND RUN	2860	3003	2967	3024	2855	2927	2936	2841	3147	3036	2760
<b>Grand Total</b>	<b>16153</b>	<b>16017</b>	<b>15548</b>	<b>15116</b>	<b>15058</b>	<b>14986</b>	<b>14193</b>	<b>13838</b>	<b>14693</b>	<b>14039</b>	<b>13388</b>

Source: CitiSource

Data obtained: 4/17/2015

Data subject to change

Data is raw data from RMS and may not match official collision statistics.

## APPENDIX E: SITUATIONAL CRIME PREVENTION TECHNIQUES<sup>17</sup>

### TWENTY FIVE TECHNIQUES OF SITUATIONAL PREVENTION

Increase the Effort	Increase the Risks	Reduce the Rewards	Reduce Provocations	Remove Excuses
<b>1. Target harden</b> <ul style="list-style-type: none"> <li>▪ Steering column locks and immobilisers</li> <li>▪ Anti-robbery screens</li> <li>▪ Tamper-proof packaging</li> </ul>	<b>6. Extend guardianship</b> <ul style="list-style-type: none"> <li>▪ Take routine precautions: go out in group at night, leave signs of occupancy, carry phone</li> <li>▪ “Cocoon” neighborhood watch</li> </ul>	<b>11. Conceal targets</b> <ul style="list-style-type: none"> <li>▪ Off-street parking</li> <li>▪ Gender-neutral phone directories</li> <li>▪ Unmarked bullion trucks</li> </ul>	<b>16. Reduce frustrations and stress</b> <ul style="list-style-type: none"> <li>▪ Efficient queues and polite service</li> <li>▪ Expanded seating</li> <li>▪ Soothing music/muted lights</li> </ul>	<b>21. Set rules</b> <ul style="list-style-type: none"> <li>▪ Rental agreements</li> <li>▪ Harassment codes</li> <li>▪ Hotel registration</li> </ul>
<b>2. Control access to facilities</b> <ul style="list-style-type: none"> <li>▪ Entry phones</li> <li>▪ Electronic card access</li> <li>▪ Baggage screening</li> </ul>	<b>7. Assist natural surveillance</b> <ul style="list-style-type: none"> <li>▪ Improved street lighting</li> <li>▪ Defensible space design</li> <li>▪ Support whistleblowers</li> </ul>	<b>12. Remove targets</b> <ul style="list-style-type: none"> <li>▪ Removable car radio</li> <li>▪ Women’s refuges</li> <li>▪ Pre-paid cards for pay phones</li> </ul>	<b>17. Avoid disputes</b> <ul style="list-style-type: none"> <li>▪ Separate enclosures for rival soccer fans</li> <li>▪ Reduce crowding in pubs</li> <li>▪ Fixed cab fares</li> </ul>	<b>22. Post instructions</b> <ul style="list-style-type: none"> <li>▪ “No Parking”</li> <li>▪ “Private Property”</li> <li>▪ “Extinguish camp fires”</li> </ul>
<b>3. Screen exits</b> <ul style="list-style-type: none"> <li>• Ticket needed for exit</li> <li>▪ Export documents</li> <li>▪ Electronic merchandise tags</li> </ul>	<b>8. Reduce anonymity</b> <ul style="list-style-type: none"> <li>▪ Taxi driver IDs</li> <li>▪ “How’s my driving?” decals</li> <li>▪ School uniforms</li> </ul>	<b>13. Identify property</b> <ul style="list-style-type: none"> <li>▪ Property marking</li> <li>▪ Vehicle licensing and parts marking</li> <li>▪ Cattle branding</li> </ul>	<b>18. Reduce emotional arousal</b> <ul style="list-style-type: none"> <li>▪ Controls on violent pornography</li> <li>▪ Enforce good behavior on soccer field</li> <li>▪ Prohibit racial slurs</li> </ul>	<b>23. Alert conscience</b> <ul style="list-style-type: none"> <li>▪ Roadside speed display boards</li> <li>▪ Signatures for customs declarations</li> <li>▪ “Shoplifting is stealing”</li> </ul>
<b>4. Deflect offenders</b> <ul style="list-style-type: none"> <li>▪ Street closures</li> <li>▪ Separate bathrooms for women</li> <li>▪ Disperse pubs</li> </ul>	<b>9. Utilize place managers</b> <ul style="list-style-type: none"> <li>▪ CCTV for double-deck buses</li> <li>▪ Two clerks for convenience stores</li> <li>▪ Reward vigilance</li> </ul>	<b>14. Disrupt markets</b> <ul style="list-style-type: none"> <li>▪ Monitor pawn shops</li> <li>▪ Controls on classified ads.</li> <li>▪ License street vendors</li> </ul>	<b>19. Neutralize peer pressure</b> <ul style="list-style-type: none"> <li>▪ “Idiots drink and drive”</li> <li>▪ “It’s OK to say No”</li> <li>▪ Disperse troublemakers at school</li> </ul>	<b>24. Assist compliance</b> <ul style="list-style-type: none"> <li>▪ Easy library checkout</li> <li>▪ Public lavatories</li> <li>▪ Litter bins</li> </ul>
<b>5. Control tools/ weapons</b> <ul style="list-style-type: none"> <li>▪ “Smart” guns</li> <li>▪ Disabling stolen cell phones</li> <li>▪ Restrict spray paint sales to juveniles</li> </ul>	<b>10. Strengthen formal surveillance</b> <ul style="list-style-type: none"> <li>▪ Red light cameras</li> <li>▪ Burglar alarms</li> <li>▪ Security guards</li> </ul>	<b>15. Deny benefits</b> <ul style="list-style-type: none"> <li>▪ Ink merchandise tags</li> <li>▪ Graffiti cleaning</li> <li>▪ Speed humps</li> </ul>	<b>20. Discourage imitation</b> <ul style="list-style-type: none"> <li>▪ Rapid repair of vandalism</li> <li>▪ V-chips in TVs</li> <li>▪ Censor details of modus operandi</li> </ul>	<b>25. Control drugs and alcohol</b> <ul style="list-style-type: none"> <li>▪ Breathalyzers in pubs</li> <li>▪ Server intervention</li> <li>▪ Alcohol-free events</li> </ul>

<sup>17</sup> Table obtained from <http://www.popcenter.org/25techniques/>

