

## *City Crime Rankings 2010-2011*

### **Distribution Analysis**

The charts in this section depict the distributions of the comparison scores as well as the individual and collective reported crime rates shown in *City Crime Rankings* to provide a mechanism of comparison beyond the rankings included in each analysis. The histograms in this section illustrate the distribution of values for the comparison score analyses as well as the overall, violent, and property crime rate analyses. Along with each histogram, measures of central tendency, such as median, mean, standard deviation, and minimum and maximum values, are reported to provide further description of each distribution.

In each histogram (formatted as area charts for easier viewing), the values of the scores or rates are shown along the bottom (x-axis) and the frequency of cases (that is, metro areas or cities) are shown along the left (y-axis). The values along the bottom are ranges for which the frequency of cases is totaled. These ranges and frequencies are different for each distribution, in this case, each histogram. The median indicates the middle value of the distribution, which means that 50 percent of the metro areas or cities have scores or rates above that value, and 50 percent have scores or rates below it. The mean is the average value of the distribution, and the standard deviation, described generally, is the measure of spread of all the values from the mean. The minimum and maximum values are the lowest and highest values of the distribution, respectively.

These statistics are based on a normal curve, so one standard deviation above and below the mean contains 68 percent of the distribution, two standard deviations above and below the mean contain 95 percent of the distribution, and three standard deviations above and below the mean contain 99.7 percent of the distribution. The use of these statistics is purely descriptive, but it does help the reader assess the distribution as a whole as well as illustrate where an individual value sits in terms of all the other values. For example, if a score is two or three standard deviations above or below the mean, it may be considered an outlier because it falls with only 5 percent or .3 percent of the values, respectively.

Figure 1 depicts the comparison scores for metro areas in 2009. The median is  $-9.0$ , the mean is  $-4.5$ , the standard deviation is  $37.9$ , the minimum value is  $-78.0$ , and the maximum value is  $169.7$ . These statistics are interpreted as follows:

- The lowest comparison score for metro areas is  $-78.0$ .
- The highest comparison score for metro areas is  $169.7$ .

- The range of scores (maximum minus minimum) is 247.7.
- 50 percent of the metro areas have comparison scores lower than  $-9.0$ , and 50 percent have scores higher than  $-9.0$ .
- The average comparison score for metro areas is  $-4.5$  and the standard deviation is 37.9.
- 68 percent of the metro areas have scores between  $-42.4$  and 33.4.
- 95 percent of the metro areas have scores between  $-80.3$  and 71.3.
- 99.7 percent of the metro areas have scores between  $-118.2$  and 109.2. (The fact that the lower end of this range ( $-118.2$ ) and the previous range ( $-80.3$ ) are less than the minimum value of the distribution ( $-78.0$ ) indicates the distribution is skewed.)

Assessing the score of  $-34.54$  for San Marcos, CA, for example, reveals that it is in the lower 50 percent of all the scores (below the median) and falls within the first standard deviation of the mean with 68 percent of the other scores (between  $-42.4$  and 33.4).

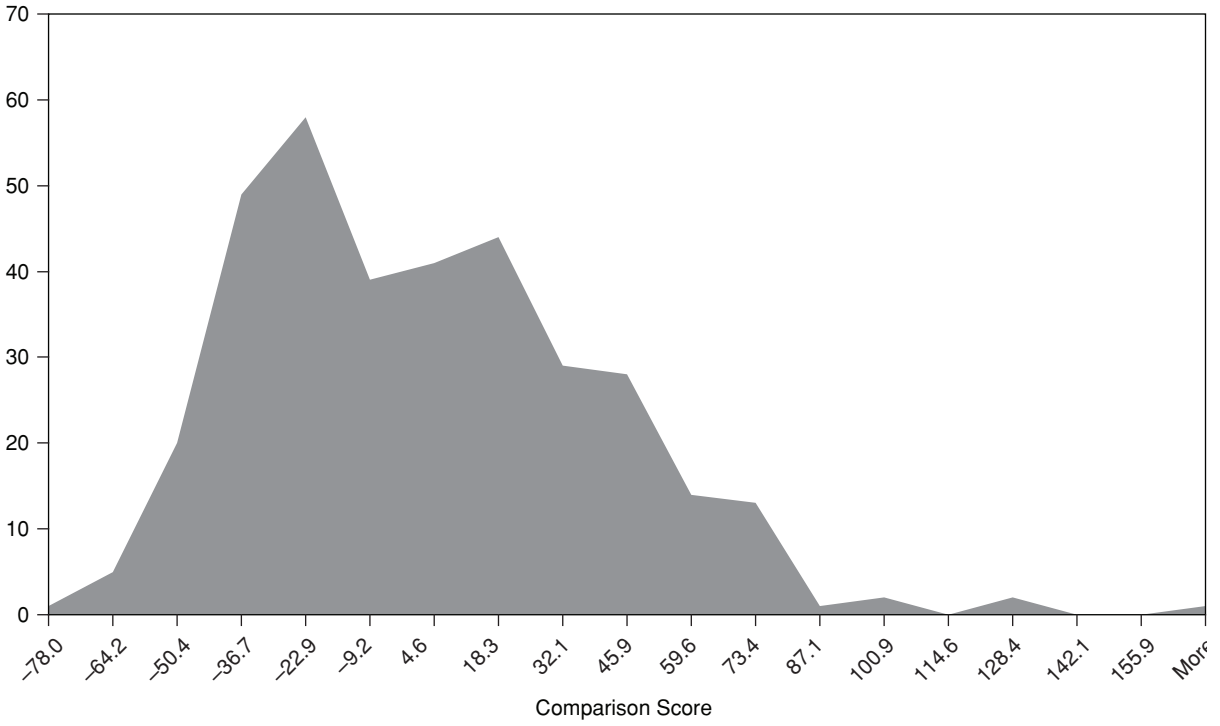
The remainder of this section presents charts and statistics for both metropolitan areas and cities in the categories listed here:

1. Comparison Score
2. Overall Crime
3. Violent Crime
4. Property Crime

A word of caution: these distribution analysis charts and statistics are provided to help the reader understand the nature of the values within each analysis, but the analyses are still based on data that must be interpreted within the constraints noted earlier. These charts are only descriptions of the data and do not provide predictions or explanations of why these values are different.

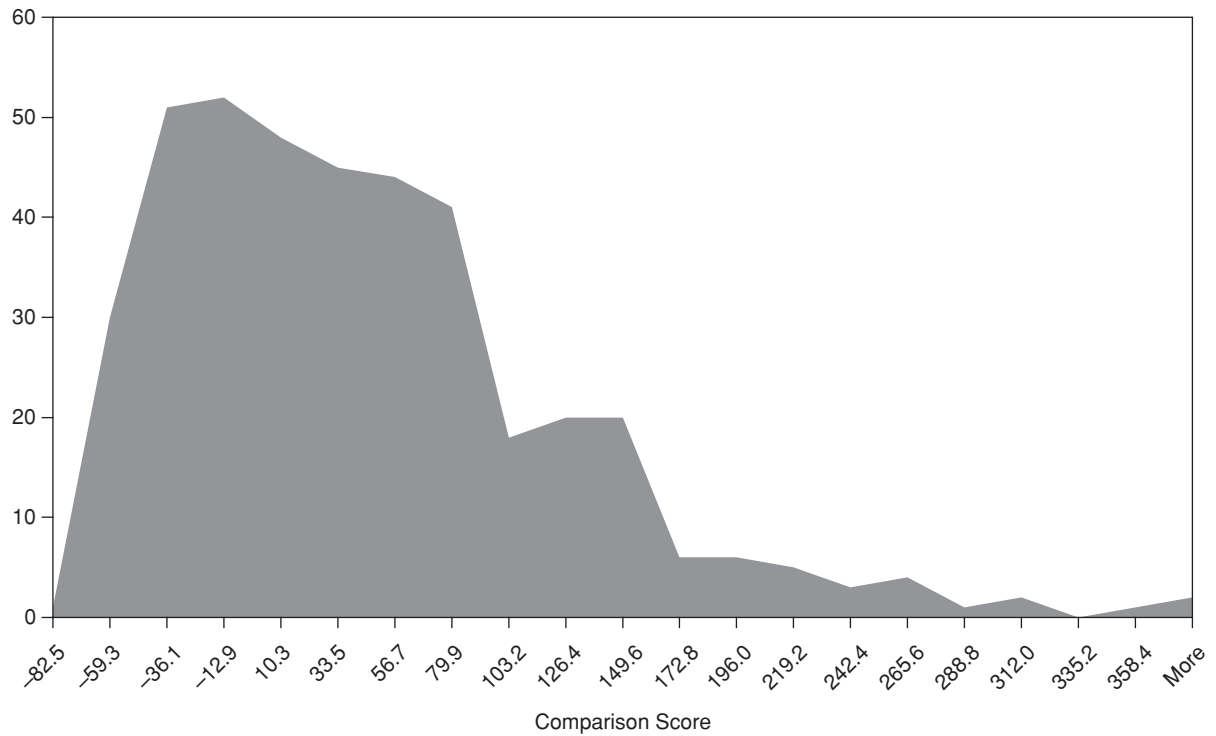
**Figure 1 Metropolitan Areas Comparison Score Distribution Analysis for 2009**

Frequency of MSAs



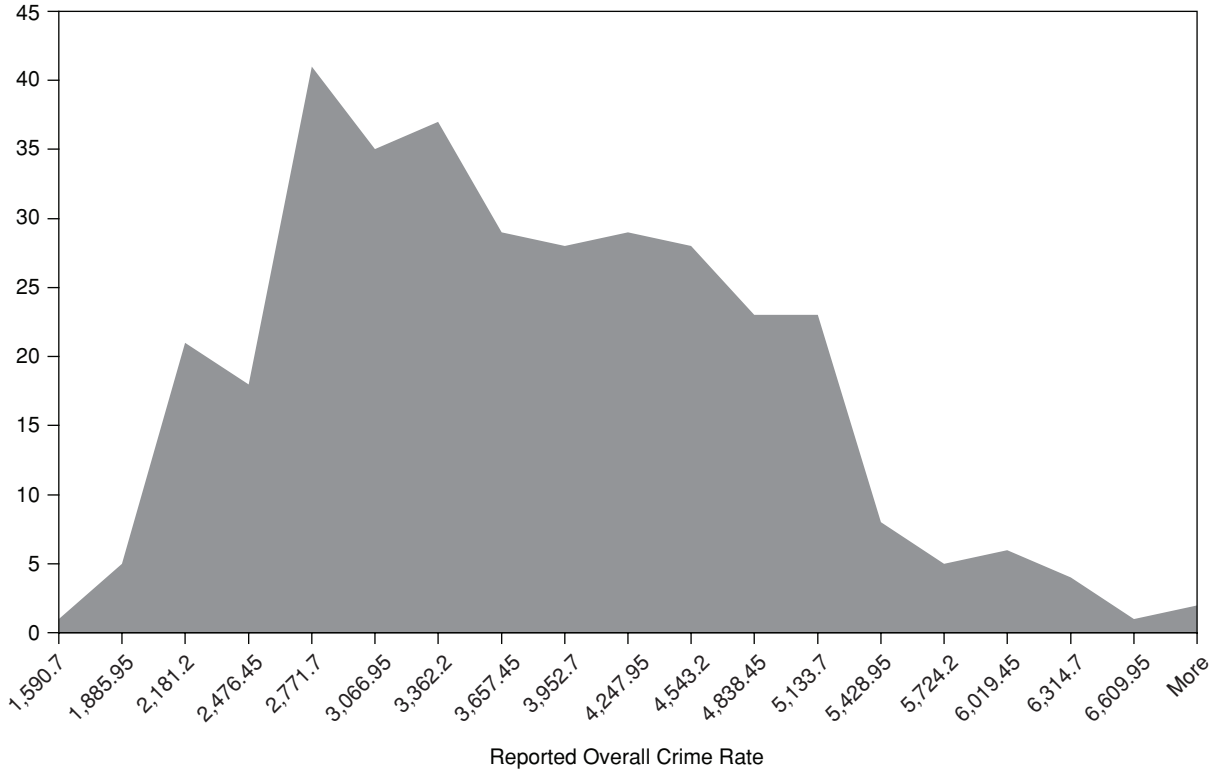
**Figure 2 Cities Areas Comparison Score Distribution Analysis for 2009**

Frequency of Cities



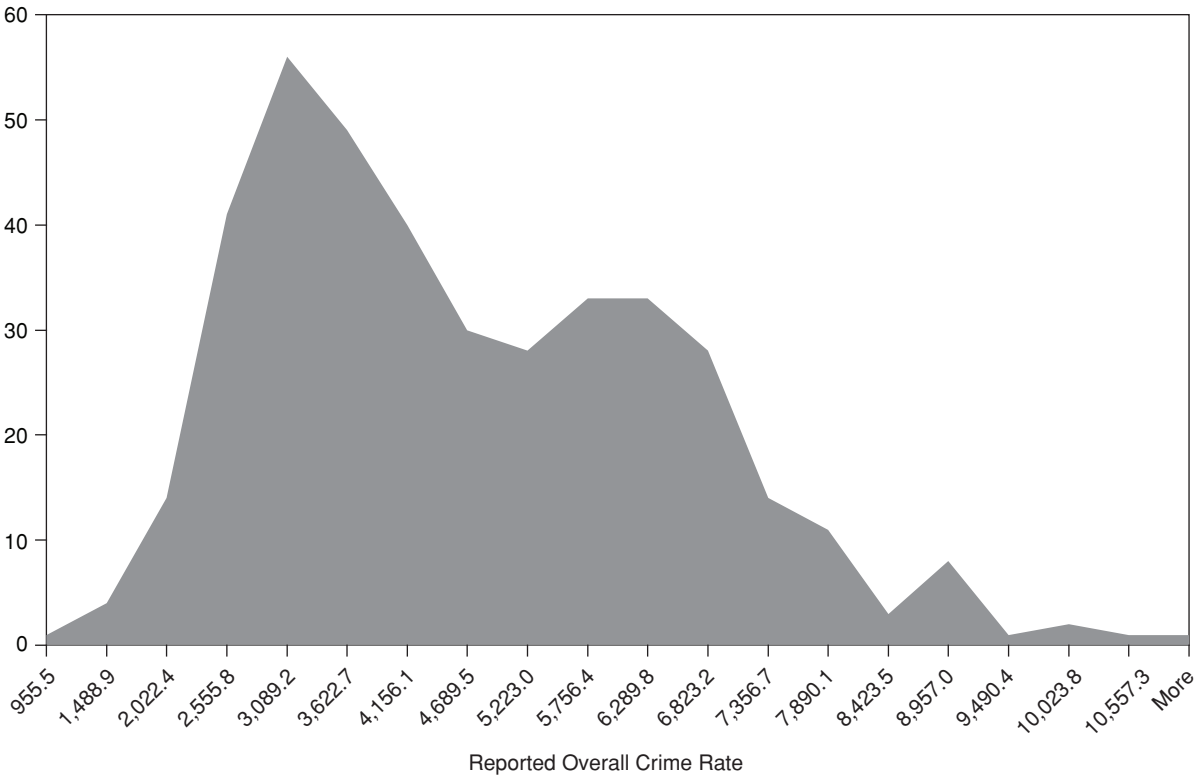
**Figure 3 Metropolitan Areas Overall Reported Crime Rate Distribution Analysis for 2009**

Frequency of MSAs



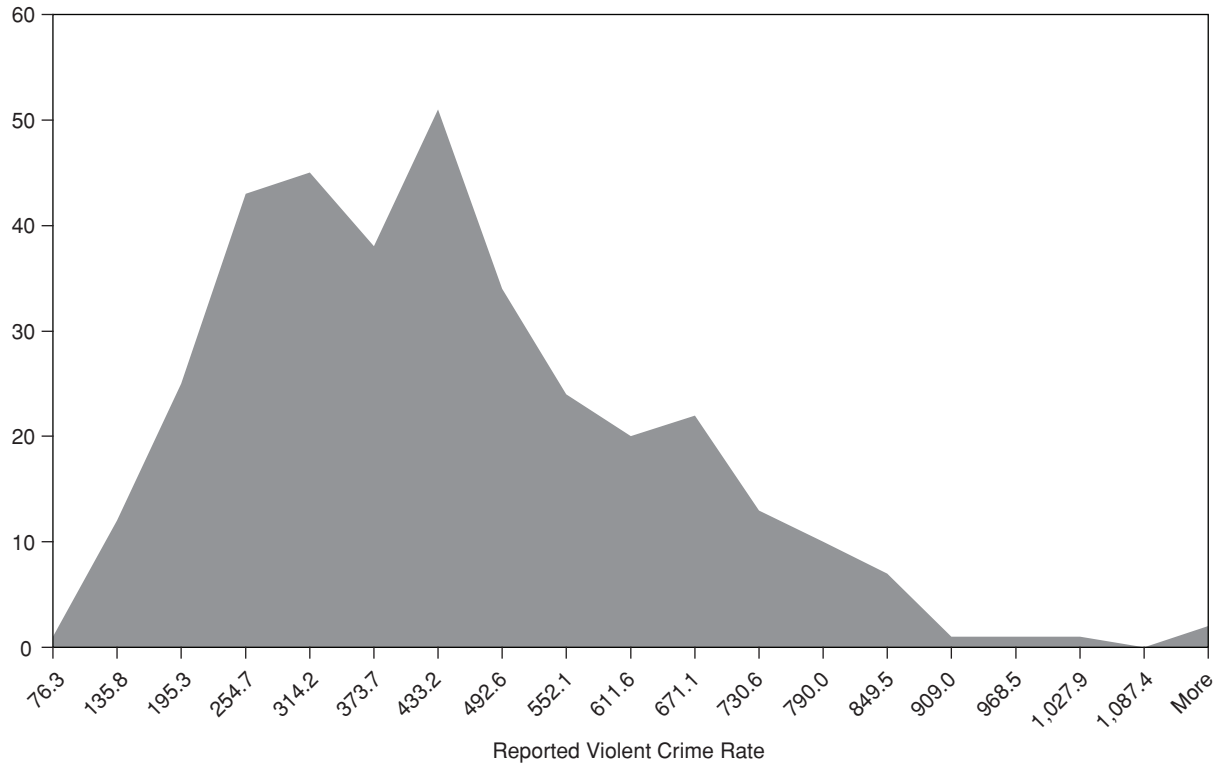
**Figure 4 Cities Overall Reported Crime Rate Distribution Analysis for 2009**

Frequency of Cities



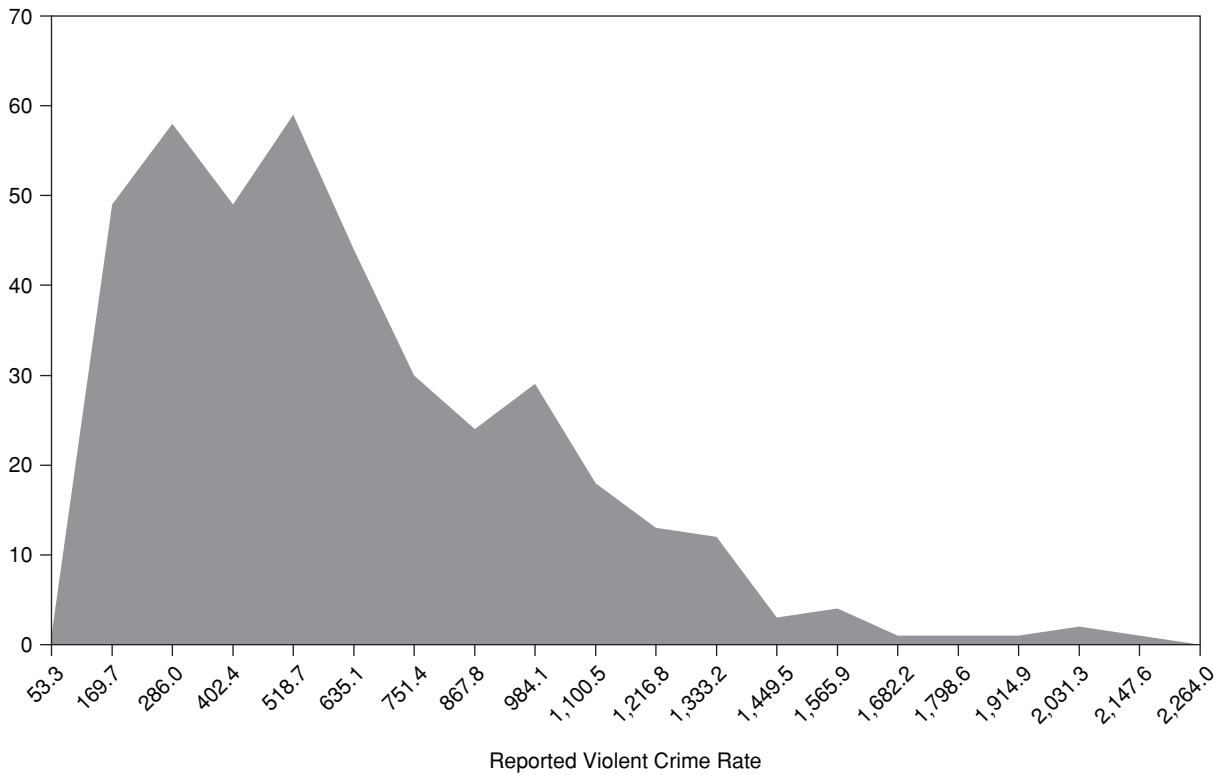
**Figure 5 Metropolitan Areas Reported Violent Crime Rate Distribution Analysis for 2009**

Frequency of MSAs



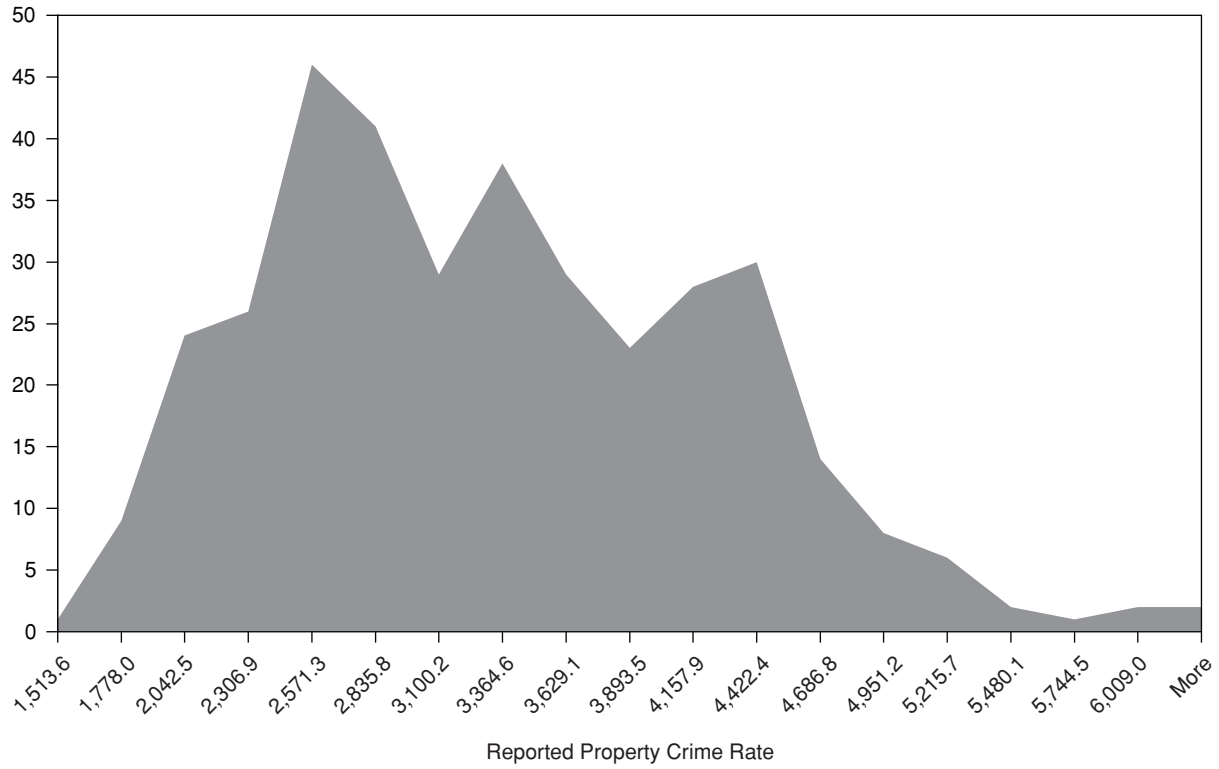
**Figure 6 Cities Reported Violent Crime Rate Distribution Analysis for 2009**

Frequency of Cities



**Figure 7 Metropolitan Areas Reported Property Crime Rate Distribution Analysis for 2009**

Frequency of MSAs



**Figure 8 Cities Reported Property Crime Rate Distribution Analysis for 2009**

Frequency of Cities

