

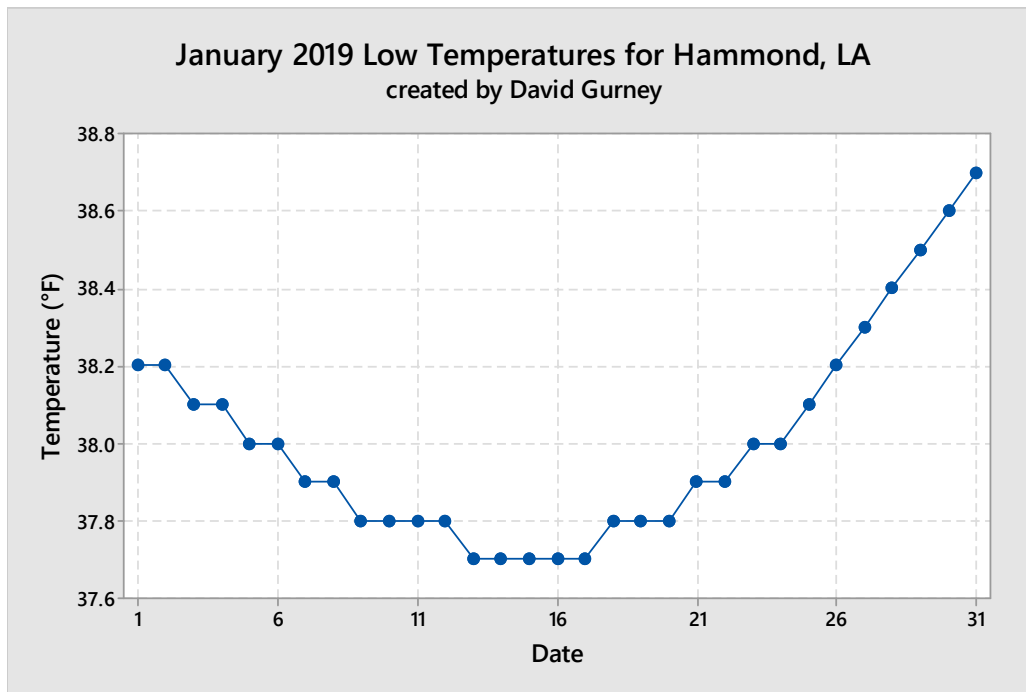
## Time Series Analysis

When analyzing time series, the first thing to note is the general trend of the data. Do the values show a general increasing trend, or a general decreasing trend, or is there no upward or downward trend?

The next thing one should note is the general variability of the data values. Do they show wide variation or do they follow a fairly steady pattern as time progresses?

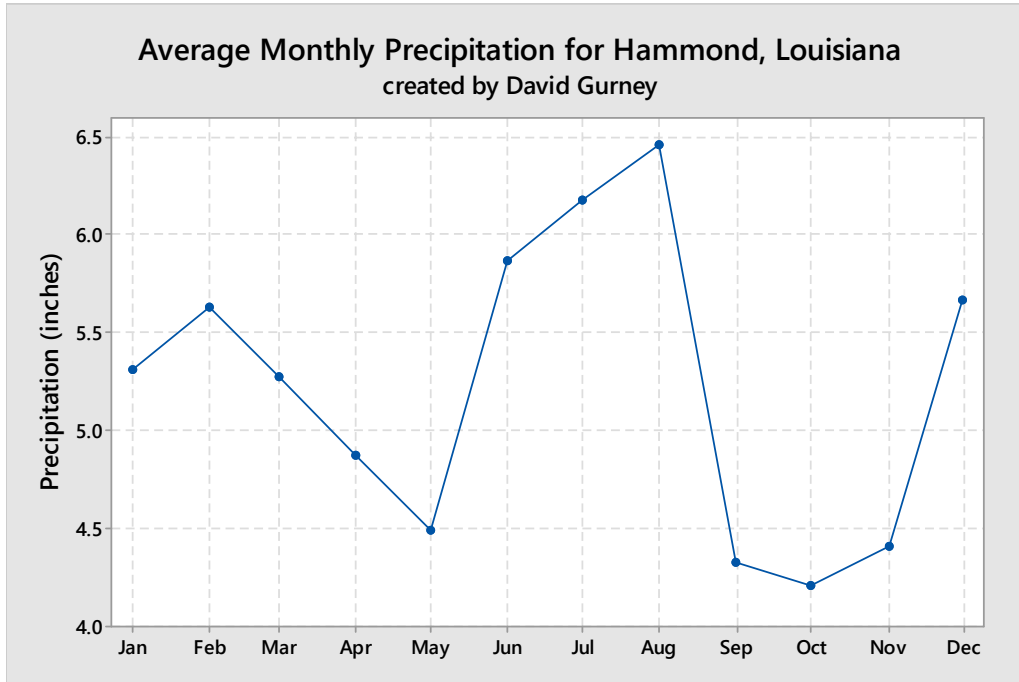
Lastly, one should note when the maximum value occurred and also when the minimum value occurred.

### Example 1



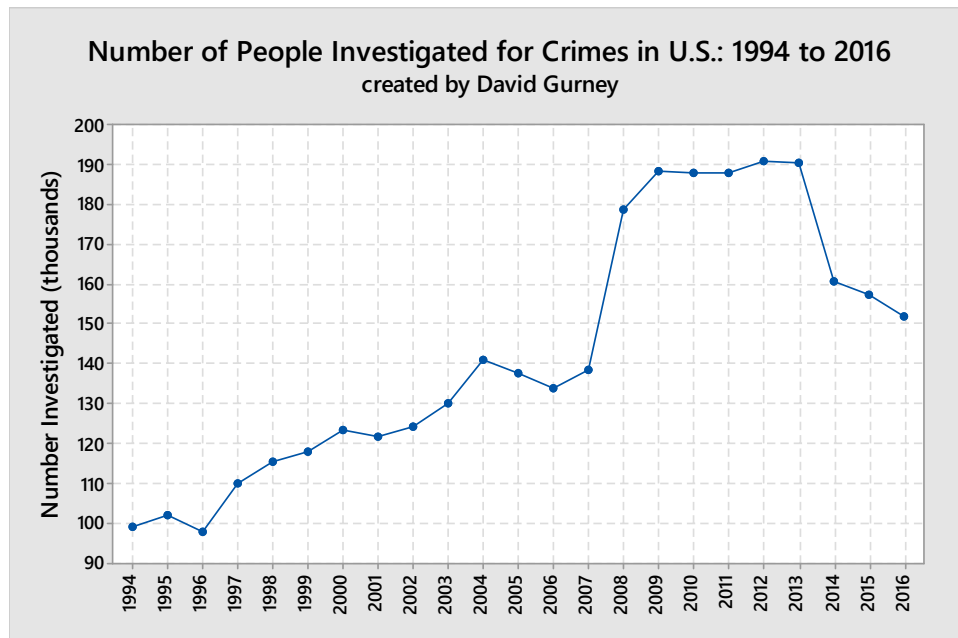
The low temperatures show a downward trend until January 12<sup>th</sup> when they reach their minimum of about 37.5° F. This minimum holds for five days, and then, from January 17<sup>th</sup> onward, the low temperatures show an increasing trend, reaching 38.7° F at the end of the month.

### Example 2



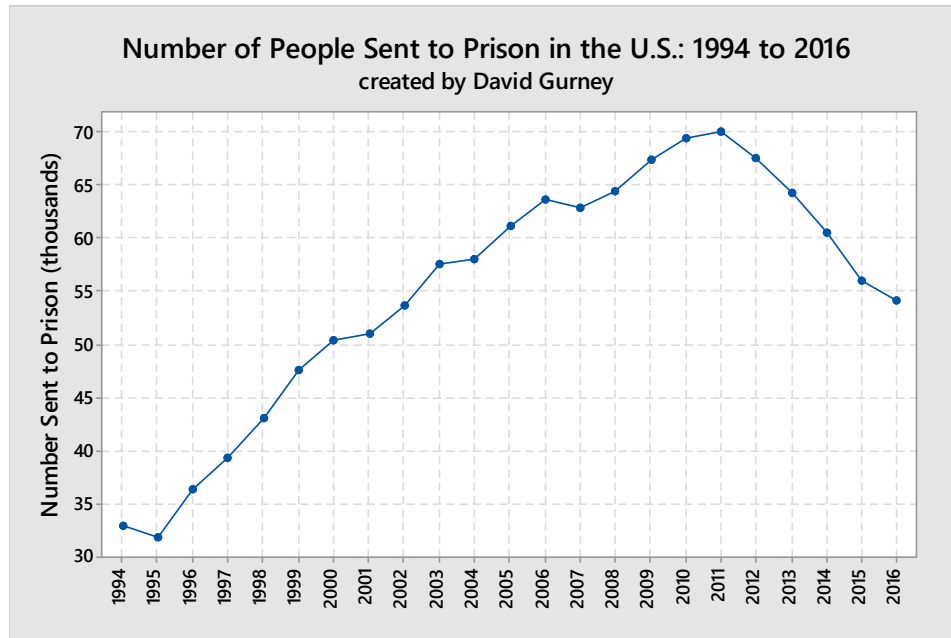
The highest monthly precipitation is during June, July and August, with the maximum being in August at about 6.45 inches. The lowest precipitation is during September, October and November, with the minimum being in October at about 4.2 inches.

### Example 3



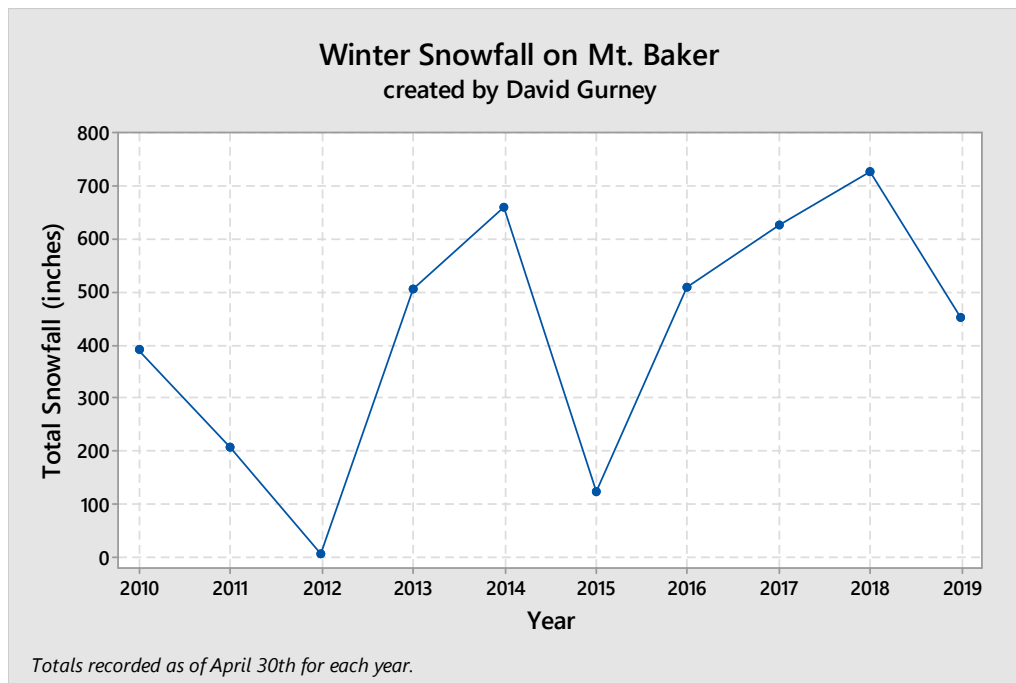
The number of people investigated for crimes rose fairly steadily from 1994 to 2007. Then number jumped by 40 thousand in in 2008. The number investigated remained high until 2014, when they dropped by about 30 thousand and continued to decrease. The minimum is about 98 thousand in 1996, and the maximum is about 190 thousand in 2012 and 2013.

#### Example 4



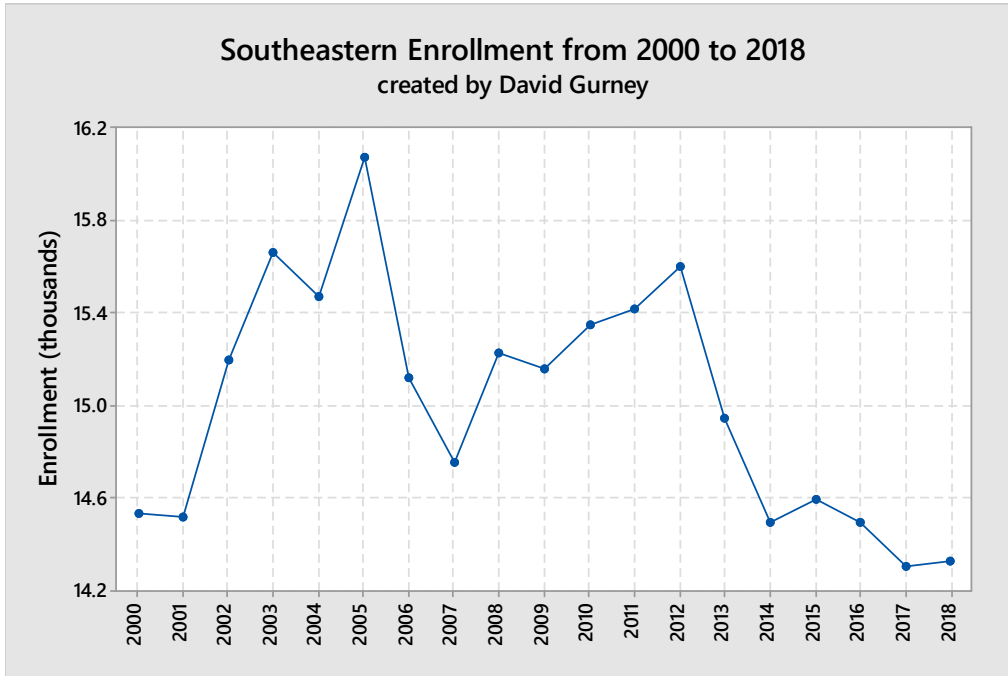
Aside from small dips in 1995 and 2007, the number of people sent to prison shows a fairly steady rise from 1994 until 2011. Then the numbers drop steadily until 2016. The minimum is about 32 thousand in 1995 and the maximum is about 70 thousand in 2011. In 1994, the number sent to prison is about 33 thousand, and in 2016, the number sent to prison is about 54 thousand.

#### Example 5



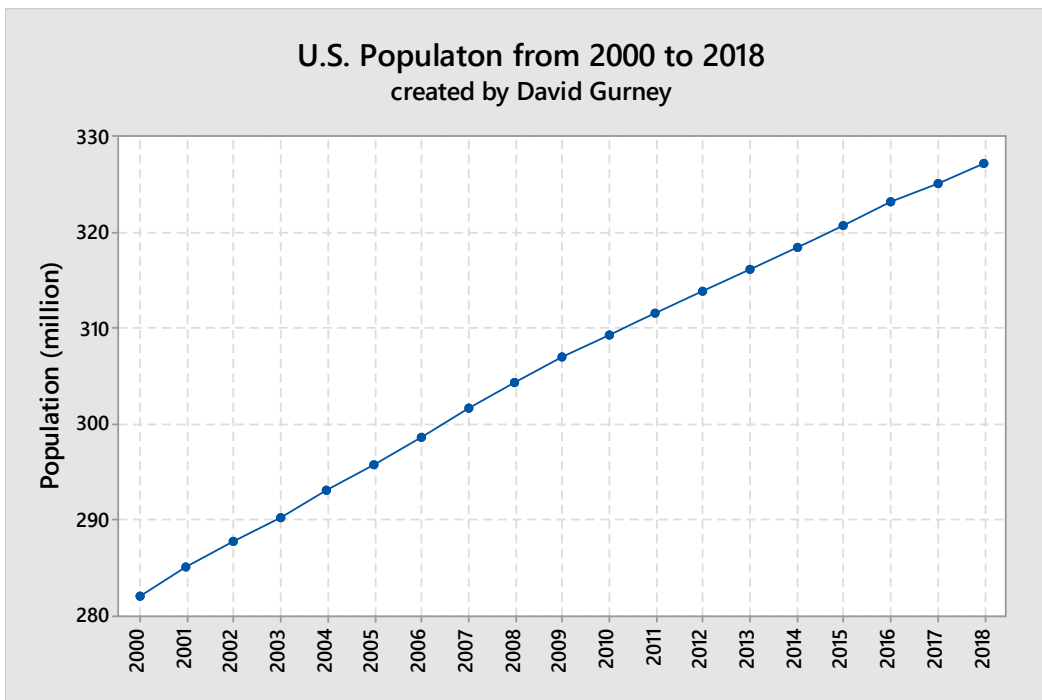
Winter snowfall totals on Mt. Baker in northwest Washington state are fairly erratic. The snowfall total had a minimum of less than 10 inches in 2012, and a maximum of about 720 inches in 2018.

### Example 6



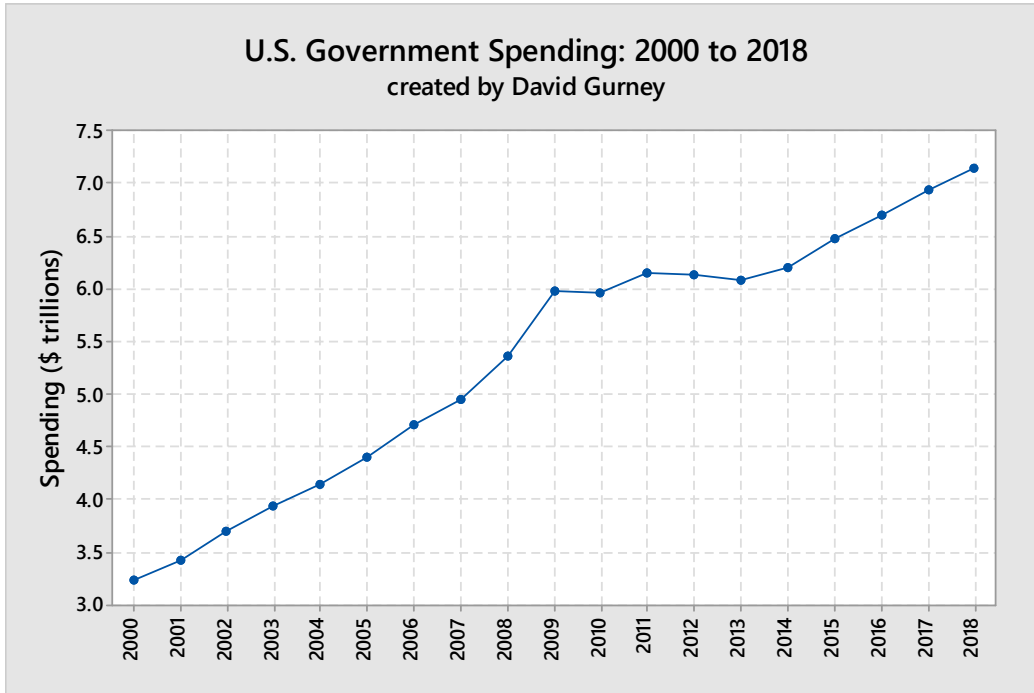
Southeastern enrollment has varied greatly in the years from 2000 to 2018. In 2000, the enrollment was about 14,500. The enrollment reached a maximum of about 16,100 students in 2005. After that the enrollment bounced around until it reached a minimum of 14,300 in 2017. The enrollment in 2018 was only slightly higher than in 2017.

### Example 7



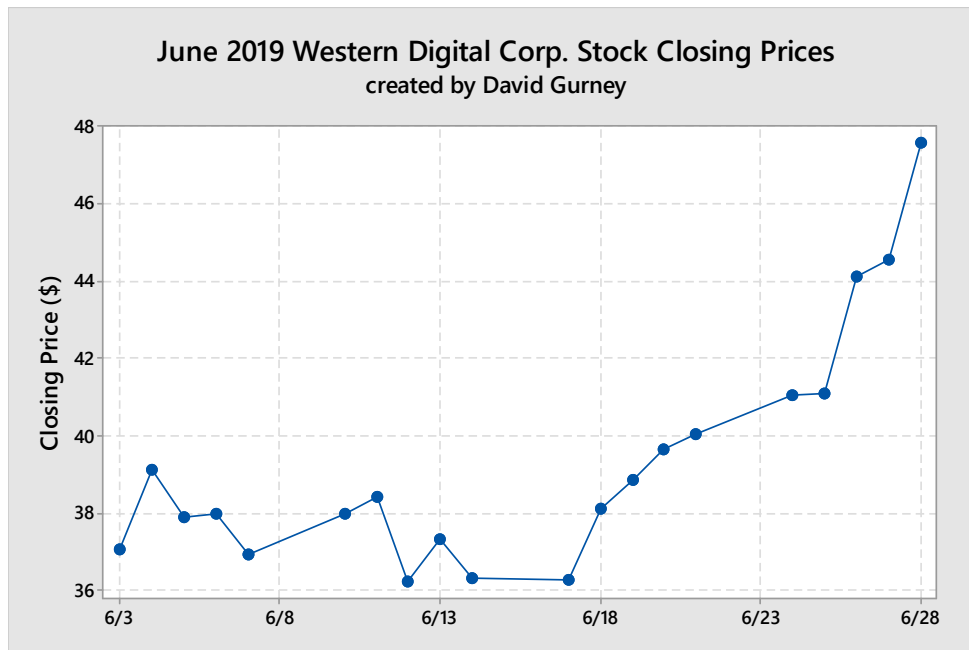
The U.S. Population increased every year from about 282 million in 2000 to about 328 million in 2018. The graph seems to show that the rate of increase has slowed down somewhat over this time period.

### Example 8



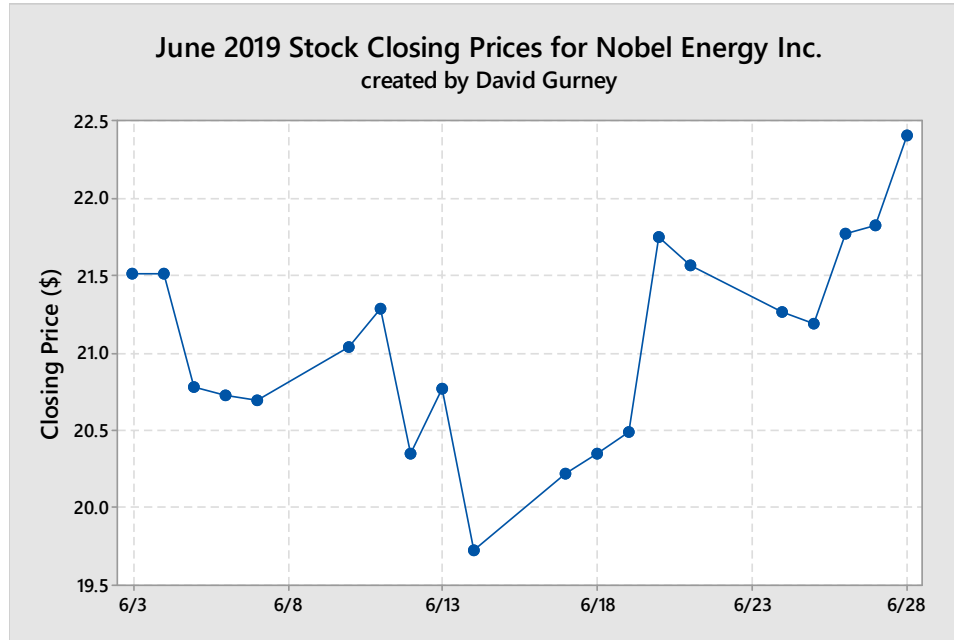
With the exception of the years 2009 to 2013, U.S. Government spending has increased quite steadily from about 3.25 trillion dollars in 2000 to about 7.2 trillion dollars in 2018. There were slight drops in spending in 2010, 2012 and 2013.

### Example 9



The Western Digital stock prices start out around \$37.40. They show quite a bit of variation but not much change until June 17<sup>th</sup> when they start increasing steadily. The minimum for the month is about \$35.20 on June 12<sup>th</sup>. The maximum is about \$47.50 on June 28<sup>th</sup>.

### Example 10



The Nobel Energy stock closing prices are fairly erratic throughout the month. They start at about \$21.50, reach a minimum of about \$19.70 on June 14<sup>th</sup> and reach their maximum of about \$22.40 at the end of the month.