

Question 5.1

Using crime data from the file `uscrime.txt` (<http://www.statsci.org/data/general/uscrime.txt>, description at <http://www.statsci.org/data/general/uscrime.html>), test to see whether there are any outliers in the last column (number of crimes per 100,000 people). Use the `grubbs.test` function in the `outliers` package in R.

Question 6.1

Describe a situation or problem from your job, everyday life, current events, etc., for which a Change Detection model would be appropriate. Applying the CUSUM technique, how would you choose the critical value and the threshold?

Question 6.2

1. Using July through October daily-high-temperature data for Atlanta for 1996 through 2015, use a CUSUM approach to identify when unofficial summer ends (i.e., when the weather starts cooling off) each year. You can get the data that you need from the file `temps.txt` or online, for example at <http://www.iweather.net/atlanta-weather-records> or <https://www.wunderground.com/history/airport/KFTY/2015/7/1/CustomHistory.html>. You can use R if you'd like, but it's straightforward enough that an Excel spreadsheet can easily do the job too.
2. Use a CUSUM approach to make a judgment of whether Atlanta's summer climate has gotten warmer in that time (and if so, when).