

Math 191: Probability & Statistics Assignment

Week #13

Title: Control Chart Analysis of Company Stock

Objectives:

- To practice constructing an X-chart using Excel.
- To review the various ways a chart indicates that a process is “out of control”.

Directions:

- Review section 7.4 in your textbook and the beginning of Chapter 10 in Middleton for assistance with this assignment.
- Beyond basic arithmetic, you will need to use the following Excel formulas: AVERAGE, STDEV, and possibly IF
- Supply all of your answers to this lab on an Excel spreadsheet that includes your name, course number and section, and data set letter.

Instructions:

- (1) Determine a publicly traded company whose stock price you would like to analyze. Post your choice of stock within the weekly threads. No two students may choose the same stock.
- (2) Download a list of the stock’s closing prices for the period from April 1, 2004 until June 4, 2004. (That’s 45 days.) You can locate this information as follows:
 - Go to <http://finance.yahoo.com> and type in the ticker symbol to go to your company’s stock page.
 - On the right side you will see a set of links. Follow the one entitled **historical prices**.
 - Near the bottom of the page click on the link entitled **Download To Spreadsheet**.
 - Save the file under any name you wish. Open it within Excel, remove all data from before April 1, 2004 as well as all data other than the **dates** and the **closing prices**.
- (3) Calculate the average \bar{X} and standard deviation S of the stock prices.
- (4) Use these values to determine upper and lower control limits using the formulas
$$LCL = \bar{X} - 3S, \text{ and } UCL = \bar{X} + 3S.$$
- (5) Check each of the closing stock prices to see if they exceed the listed control limits.
- (6) Also check for any of the following run patterns:
 - 12 out of 13 consecutive values to one side of the center line. ($p = 0.32\%$)
 - 14 out of 16 consecutive values to one side of the center line. ($p = 0.37\%$)
 - 16 out of 19 consecutive values to one side of the center line. ($p = 0.37\%$)
- (7) Use the chart wizard to draw an x-chart showing each closing price, the center line, and the two upper control limits.
- (8) For a basic example showing stock prices see <http://www.nj.devry.edu/~dchelst/math191/redhat-1.html>