Use the data set bus580_ps1 and Microsoft Excel (or equivalent) to answer the following questions.

Your typed answers are due at the beginning of the next class.

1. Examining the trend in sales
   a. Show graphically unit sales (i.e., total cases sold) by period for the duration of the data set.
   b. When does the data set start? When does the data set end?
   c. Describe any long term trend in unit sales?
   d. Calculate the compound annual growth rate (cagr) of unit sales.
   e. Describe any seasonal variations in the data?
   f. Do these seasonal variations affect your calculation of the growth rate? Explain.
   g. Recalculate your cagr using the same months as the first period used in the data.
   h. Recalculate your cagr using the same months as the last period used in the data.

2. Consider the last full year of the data (i.e., the last 13 four-week ending periods).
   a. Show unit sales graphically for this period. Use a bar graph.

   We want to construct a benchmark which we can use to compare the final 13 four-week ending periods. Let’s start with the simple mean. Calculate the mean 4-week ending unit sales for the periods prior to the last year.

   b. Construct a table showing actual and mean sales for the final 13 four-week ending periods.
   c. Show graphically using a bar chart.
   d. In which periods were unit sales above or below your benchmark?

   A simple mean ignores the fact that sales are growing. Calculate a three-period moving average (one period before, the current period and one period after) of unit sales for the periods prior to the final year.

   e. Construct a table showing mean three-period moving average of unit sales by month along with actual unit sales for the final 13 four-week ending periods.
   f. Show graphically using a bar chart.
   g. In which periods were unit sales above or below your benchmark?

   A moving average of reduces the effects of seasonality. Calculate average unit sales by month for the periods prior to the final year.

   h. Construct a table showing average monthly of unit sales along with actual unit sales for the final 13 four-week ending periods.
   i. Show graphically using a bar chart.
   j. In which periods were unit sales above or below your benchmark?