# Guided Workshop 6: Real-Time Multilinear Regression Calculator

***Instructions:*** Download the file “Guided Workshop 6 – STARTER.xlsx”. I would recommend setting aside about an hour for this activity. When you are ready to start the workshop, open and begin the video “Guided Workshop 6: Real-Time Multilinear Regression Calculator”.

The video will have optional in-video questions to help teach you and guide you along. You won’t submit this document, but it will be a good template/guide for the activity.

At the end, after you have completed the Excel file above, you will open the “Guided Workshop 6 Submission” quiz, where you will enter the answers to the questions at the end of this document.

***Background/Objective***

In this guided workshop, you will use the matrix approach to multiple linear regression to create a calculator that will output model coefficients, 95% confidence intervals on model parameters, P-values of model parameters, and the adjusted R-squared value of the model in real time. In other words, the Regression tool does not need to be run each time new model data is imported or created. Finally, you’ll use your model to make a prediction on a future observation.

The best way to learn the matrix approach to multilinear regression is to get in there and use the matrix equations, so that’s what you’ll be doing in this workshop. You’ll want to have the Week 6 Cheat Sheet readily available for this workshop.

When you are done putting together your Excel file, answer the following questions in the “Guided Workshop 6 Submission Quiz” on Coursera (the text fields below are only for your benefit – you won’t be submitting this document).

1. What is the upper left-most value of XtXinv? Click here to enter text.
2. What is beta1 () (the coefficient to x1)? Click here to enter text.
3. What is the standard error ()? Click here to enter text.
4. What is se\_beta3 ()? Click here to enter text.
5. What is upper end of a 95% confidence interval on beta5 () (the coefficient to x5)? Click here to enter text.
6. What is the adjusted R-squared value? Click here to enter text.
7. What is the upper left-most value of XtX for the Additional Data (see “Data” tab)? As a hint, just type into any cell “=XtX” to output the XtX array. Click here to enter text.

**That’s all! 😊**