CHE384 Data to Decisions
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Homework #5 – Weighted and Total Regression

Turn in your solution with the answers to the questions below. Also, email to me the supporting spreadsheet and/or R script that you used to perform the analysis. (Please name the file using this format: HW5_yourname.xlsx or HW5_yourname.R).

1. Using the Chirps data set from Data_Sets_4.xlsx, generate a straight-line linear regression fit to the data using OLS. Assuming that the standard deviation of the measured chirps/s is 5% of the measured value, generate a weighted least-squares fit to the data. Compare the two regression results. What do you notice?

2. Using the Ozone meter calibration data set from Data_Sets_4.xlsx, generate straight-line linear regression fits to the data using OLS and using orthogonal regression. Compare the two regression results and plot the residuals for each fit. What do you notice?

3. Using the Load Cell data set from Data_Sets_4.xlsx, generate a straight-line linear regression fits using OLS and a Deming regression. Assume that the standard deviation for the x-value measurement uncertainty is 1000 and the standard deviation for the y-value measurement uncertainty is 0.001. Compare the two regression results and plot the residuals for the Deming regression fit. What do you notice?