# Part 1: Chi-Square & Linear Regression

6.41 Open source textbook.

6.48 Coffee and Depression.

7.17 Correlation, Part I

7.30 Cats, Part I.

7.36 Beer and blood alcohol content.

# Part 2: Assembly Line Fault Investigation

Your facility has been noticing an increased number of shutdowns due to timing errors between device sequencing on two of your four assembly lines. It seems that issues with the command signals may be the source of your production woes. Tests have been conducted to check task confirmation response times to five device types (motor\_controller1, motor\_controller2, sequence\_reader, pressure\_switch, timing\_circuit) on each of the lines. The data can be found on Canvas (lineFaultData.csv). Each line is approximately identical in equipment, layout, and distance from the control center.

1. Conduct an analysis on the response\_time to identify which lines are having the problems and which devices are the culprits. This will require proper choice of analysis tools and analysis sequence. Make sure to confirm analysis tools are appropriate according to required assumptions e.g. normality, homoscedasticity, etc. (don’t forget to visualize your data).
2. Use the analysis tools we have covered in class that you deem appropriate. Justify your choices. (I recommend considering ANOVA and/or Linear Regression. Don’t forget the multiple comparisons and corrections!)
3. Supply your code, a short summary of your findings, and any conclusions you draw from your analysis of the data regarding possible causes for the excess shutdowns (a Markdown file is good for this ☺).