

Department of Economics
Statistical Methods for Finance

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Data in the file *home.txt* give the following information on a number of houses

- Selling price
- Size in *feet*²
- Position: North (0), South (1)
- Corner: No (0), Yes (1)
- Annual taxes

- Exercise 1**
- Run a simple linear regression model with the `lm` function in R in order to get parameter estimates and the ANOVA table. Use the selling price as the response and the annual taxes as the explanatory variable
 - Based on the output you have obtained, comment on the statistical significance of parameter estimates
 - Provide a graphical representation of the regression residuals to verify whether model assumptions are violated
 - Compute the least squares estimates of the regression parameters using matrix algebra and check whether results coincide with those obtained via the `lm` function

- Exercise 2**
- Using the selling price as the response and the house size, the annual taxes and the position of the house as explanatory variables, run a multiple linear regression following the same steps as before
 - Compute and comment the coefficient of determination, the adjusted coefficient of determination, the value of the F statistic and the associated p-value
 - Show how the null hypothesis that the regression coefficients are jointly null can be tested on the basis of the F test