

# In class activity 3

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1. Using the blood pressure, data find the OLS estimators of  $\beta_0$ ,  $\beta_1$  and  $\sigma^2$  for the model:

$$\text{blood pressure}_i = \beta_0 + \beta_1 \text{height}_i + \epsilon_i$$

2. Using the OLS from 1, calculate the expected blood pressure  $\hat{\mu}_i$  for each participant.
3. Use the expected value found in 2 ( $\hat{\mu}_i$ ) to obtain the model residuals  $\hat{\epsilon}_i$ .
4. What is the mean and variance of the residuals you found in 3?
5. Draw a histogram of the residuals
6. Draw a quantile-quantile plot of the residuals.
7. Draw a scatter plot of the residuals and stratify them using the sex variable. What can you see in the figure?
8. Draw an auto-correlation plot of the residuals, what can you see in the auto-correlation function.