STAT 485/685 Lecture 7
Fall 2017
28 September 2017

- I discussed residuals.
- Use `lm` to get estimates of the intercept and slope.
- Call these estimate $\hat{\beta}_0, \hat{\beta}_1, \ldots$.
- The fitted values are

$$\hat{\mu}_t = \hat{\beta}_0 + D_{t1}\hat{\beta}_1 + \cdots .$$

- The residuals are

$$\hat{X}_t = Y_t - \hat{\mu}_t$$

- If $Y_t = \mu_t + X_t$ and we have specified μ_t correctly then X_t is a stationary mean 0 series.
- $\hat{X}_t$ is nearly the same series so we analyse it as a time series.
- I showed another example using the `co2` data in `R`.
- I discussed Q-Q plots to check for normality.
- I discussed what to look for in residual plots.
- I showed the use of transformation.
- I introduced the sample auto-correlation function

$$\hat{\rho}_k = \frac{\sum_{t=1}^{T-k}(Y_t - \bar{T})(Y_{t+k} - \bar{Y})}{\sum_{t=1}^{T}(Y_t - \bar{T})^2}.$$

- The code is here.
- In the text I am doing Chapter 3.5 to 3.6.
- You should be Reading all of Chapters 1, 2, 3, and 4.
- Next class I will start Chapter 4 on time series models
- Handwritten slides.