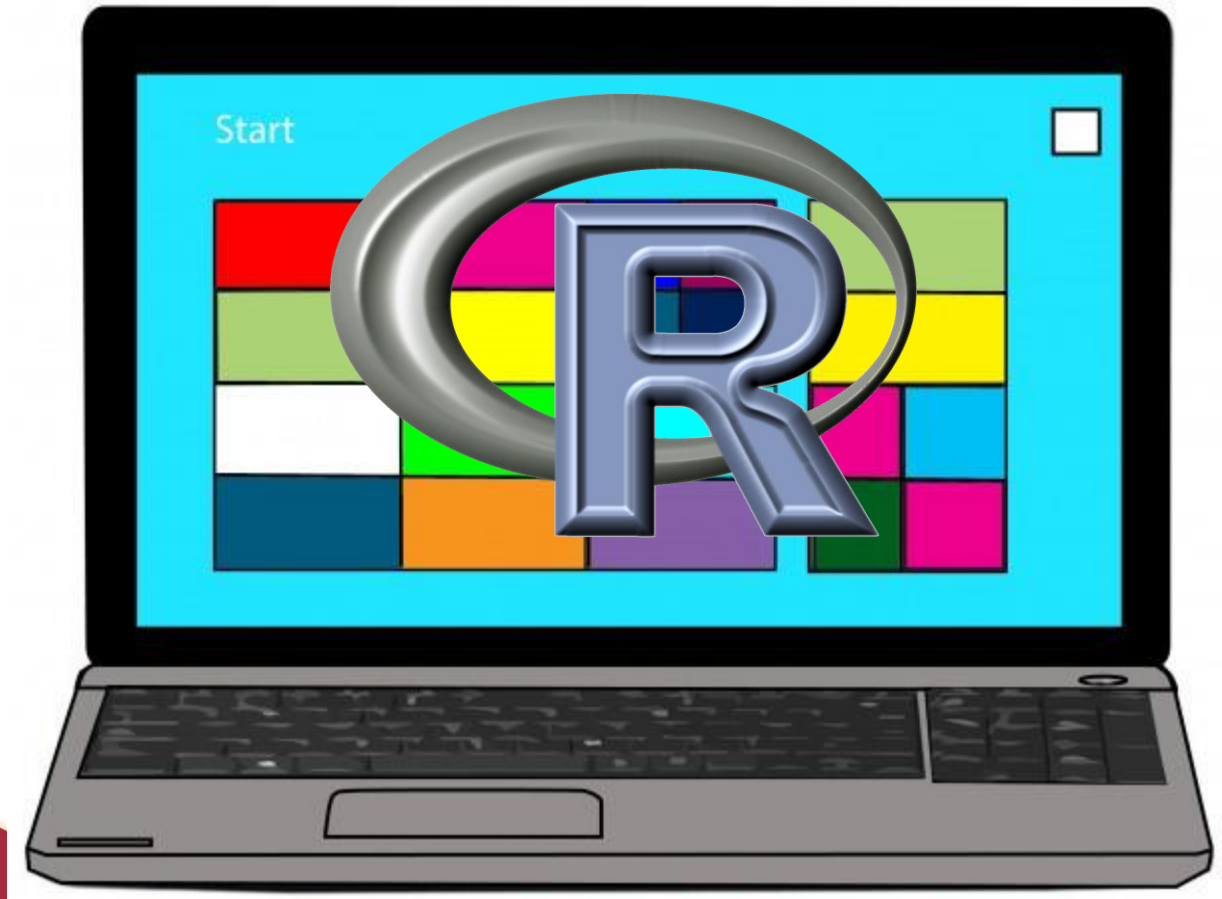
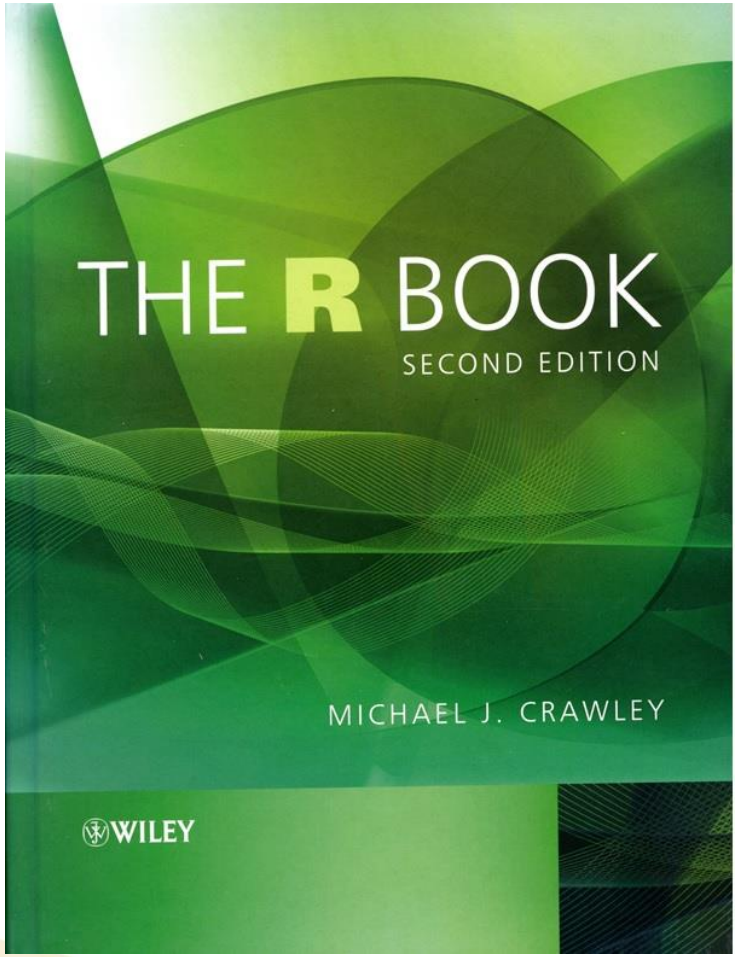
Advanced STATS and R
Multiple Regression
lm()

The University of Oklahoma

Bring your laptop or use Network.



We will Use the Library (Free)



$$\hat{\beta} = (X'X)^{-1}X'Y$$

We can use the function lm() to model multiple regression problems.

$$Y = X\beta + \epsilon$$

Using R

- # Multiple Linear Regression (MLR) can
- # be modeled in the following way
- $fit = lm(Y \sim X_1 + X_2 + X_3 + \cdots + X_r, data = mydata)$
- summary(fit) # show results

You can also use the following

- coefficients(fit) # model coefficients
- confint(fit, level=0.95) # CIs for model parameters – you can set the level to get othe sizes
- fitted(fit) # predicted values – yhat values
- anova(fit) # anova table – F test – also compare nested models
- residuals(fit) # residuals – 1 per dataum
- vcov(fit) # covariance matrix for model parameters
- influence(fit) # regression diagnostics
- library(s20x) has others

Get the Data and Book

- Link below:
- statsandr.oucreate.com

Courses

- **Bayesian Stats MATH 4803/5803**
- Advanced Applied STATS MATH 4793/5793
- **Applied Statistical Methods MATH 4753**

The University of Oklahoma

Next time bring your laptop (if you want to).