

**Sport Analytics Spring 2019**  
**Exercise 4: Modelling**

1. Using regression analysis assess the relative performance of the NBA Efficiency measure and of the model proposed in the class to explain WINS over the sample of seasons 1994-2005 (omitting season 1999)
2. Consider the baseline MODEL for WINS estimated in the lecture over the sample 1994-2005. The model estimated in the lecture drops Season 1998-99. Why? What happens to the results obtained in class if you extend the sample by including Season 1998-1999:
  - (a) The model estimated in the lecture drops Season 1998-99. Why? What happens to the results obtained in class if you extend the sample by including Season 1998-1999
  - (b) add to the baseline model a Season effect and a Team effect and test their significance. A Season effect is a dummy that a value of 1 in a specific Season and 0 otherwise. A Team effect does the same to identify a specific team. What is the interpretation of the coefficients on Season effects and Team effects
3. Compare the Team Rebounds constructed by the formula used in the baseline programme with the proxy obtained by considering the sum of residuals and estimated constant in the regression of Total Possession Differenced on Free Throws and Opponent Free Throws
3. Using the simulation model
  - (a) derive the effect of a made free throws on WINS
  - (b) compare the distribution of wins from the simulated baseline model with that observed in the data and comment on the difference between them.