

Statistics and Data Analysis, Fall 2015

Pre-lecture Problems for Lecture 11: Regression Analysis (2)

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Note. DO NOT submit your answers. These problems are only for you to practice by yourselves. Doing these problems definitely help you understand course materials more. Of course, you are more than welcome to discuss these problems with the instructor or TA.

1. Consider the MS Excel file “SDA-Fa15_11_regression2_pl_data.xlsx,” which contains the data of the 100 shows.
 - (a) Verify that the regression model obtained on page 21 of the slides is right.
 - (b) Set the reference level of *Time* to morning by adding $Time^M$ and $Time^A$. How should the values of these two variables be set for each show?
 - (c) Construct a regression model with the new reference level. Verify that the coefficients for *Capacity*, *AvgPrice*, and *Year* all remain the same.
 - (d) Interpret the coefficients of $Time^M$ and $Time^A$.
2. Consider the MS Excel file “SDA-Fa15_11_regression2_pl_data.xlsx,” which contains the data of the 100 shows.
 - (a) Create two new variables $Time^M \times AvgPrice$ and $Time^A \times AvgPrice$. Set their values for each show.
 - (b) Verify that the regression model obtained on page 26 of the slides is right.
3. Consider the MS Excel file “SDA-Fa15_11_regression2_pl_data.xlsx,” which contains the data of the 100 shows.
 - (a) Add a new variable $Capacity \times AvgPrice$. Set its values for each show.
 - (b) Construct a regression model with *Capacity*, *AvgPrice*, *Year*, and $Capacity \times AvgPrice$. Interpret the result.