[Regression](https://utsa.blackboard.com/webapps/assignment/uploadAssignment?content_id=_4166022_1&course_id=_167729_1&group_id=&mode=view)

**Directions:**

Use the attached Regression Template to format the project.

**NOTES:**

The uploaded file must be one the following extensions (.doc or .docx).

**Problem 1**

What is a better predictor of the number of Personnel in a hospital?  Using the “Regression Databases.xls” file, locate the tab for the Hospital Database.  Use Excel to develop two simple regression models for the Hospital Database at a 5% significance level.

Model 1: Predict the number of Personnel by the number of Births

Model 2: Predict number of Personnel by number of Beds

**Must complete all the parts to this problem:**

* **PART 1:** Perform a simple linear regression analysis in Excel for both models and output the results.  Include the Regression Statistics, ANOVA, and table of Coefficients for each model.
* **PART 2:** Perform a test for the overall model for model 1 and model 2.  Clearly state the hypotheses, the p-value, and your decision and conclusion for each model.
* **PART 3:** For model 1 and model 2, write the model using the Excel output.
* **PART 4:** Perform a residual analysis using Excel on each model.  How many residuals are within 1 standard error for each model?  (Do not output all residuals, use your Excel output to answer this question).
* **PART 5:** Which model (1 or 2) is stronger at predicting number of Personnel?  Why?

**Problem 2**

Use Excel to develop a regression model for the Consumer Food Database (using the “Regression Databases.xls” file) to predict Annual Food Spending by Annual Household Income.  Assume a 5% level of significance.

**Must complete all the parts to this problem:**

* **PART 1:** Perform a simple linear regression in Excel to predict Annual Food Spending by Annual Household Income and output the results.  Include the Regression Statistics, ANOVA, and table of Coefficients for each model.
* **PART 2:** Suppose a household’s annual income is $60,000.  Predict how much they spend on food per year.  Write the model and show the work to get the answer.
* **PART 3:** Now, develop a regression model to predict Annual Food Spending by Annual Household Income for those living in the Metro area only and output the results.  Include the Regression Statistics, ANOVA, and table of Coefficients for each model.
* **PART 4:** Suppose a household’s annual income for those living in the metro area only is $60,000.  Predict how much they spend on food per year.  Write the model and show the work to get the answer.

**Problem 3**

Use the Financial database from “Regression Databases.xls”.  Use Total Revenues, Total Assets, Return on Equity, Earnings Per Share, Average Yield, and Dividends Per Share to predict the average P/E ratio for a company.  Assume a 5% level of significance.

**Must complete all the parts to this problem:**

* **PART 1:** Perform a multiple regression analysis in Excel to predict the average P/E ratio for a company.  Include the Regression Statistics, ANOVA, and table of Coefficients for each model.
* **PART 2:** Write the model based on the Excel output.
* **PART 3:** Is the overall model significant at a 5% level of significance?  Make sure to include the hypotheses and support your answer using the p-value.
* **PART 4:** Which independent variables are significantly predicting the average P/E ratio of the company?  Why?  Include the p-values in your discussion to support your answer.
* **PART 5:** Compare the r-square to the adjusted r-square for this analysis.  What are the values of each?  Which one is a better measure for this study and why?