# Review Test Submission: Module 03 Week 6 P&P Assignment

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| User | Kohei Nishitani |
| Course | 2023GFA_ANA_500_02 Foundations of Data Analytics |
| Test | Module 03 Week 6 P&P Assignment |
| Started | 10/5/23 1:13 AM |
| Submitted | 10/5/23 2:15 AM |
| Due Date | 10/8/23 11:59 PM |
| Status | Completed |
| Attempt Score | 70 out of 100 points |
| Time Elapsed | 1 hour, 2 minutes |
| Instructions | The online portion of this paper and pencil assignment has a variety of types of questions; multiple choice, fill in the blank, true/false, etc. Please select the choice that best answers the question or enter a value rounded to two decimal places unless otherwise instructed. If you have any questions just ask!<br><br>If you didn't already download it, here is a copy of the Word document associated with this week's assignment.<br><br>mphModule 3 Week 2, PP6 ANA 500.docx |

## Question 1

0 out of 5 points

Generating an OLS solution using the variables RM, AGE, TAX, PTRATIO with the dependent variable CMEDV, the intercept value, -41.56, represents where the regression line would intercept the y-axis at x=0. The question is, "What is that home value in whole USD dollars (no cents) _____?" If you need to be sure to include the appropriate sign for this value. (Hint: think about the axes of the 2-D regression line and what they each represent.)

## Question 2

10 out of 10 points

Is the home value in Question 1 a realistic home value?

## Question 3

0 out of 5 points

Still using the independent variables RM, AGE, TAX and PTRATIO, how much do home values increase for an increase of an additional (one) room? Enter whole USD dollars (no cents)?

## Question 4

0 out of 10 points

Still using the same independent variables; RM, AGE, TAX, and PTRATIO, how much do home values increase for each year beyond 1940? Hint: this question is different because it explicitly states a year before which and after which home values will change. That is, applying this constraint before 1940 we would expect home values to decrease and after which we would expect home values to increase.

## Question 5

10 out of 10 points

Continuing to use the independent variables; RM, AGE, TAX and PTRATIO, how much do home values increase for each 10,000 USD increase in the tax rate?

## Question 6

5 out of 5 points

It makes sense that, in questions 4 and 5, home values actually decrease or have a negative slope coefficient as the age of the home increases and/or the property-tax rate increases.

## Question 7

5 out of 5 points

Home values _____ when K-12 Pupil-teacher ratios increase. Enter either increase or decrease.

## Question 8

5 out of 5 points

Analogous to simple linear regression, if the data contain substantially more data points than the number of parameters (independent variables) the R-squared value for a multivariable linear regression model indicates how well the model fits the data.

## Question 9

5 out of 5 points

Enter the number of observations (in this last model with limited number of independent variables RM, AGE, TAX and PTRATIO).

## Question 10

5 out of 5 points

Enter the number of independent variables.

## Question 11

5 out of 5 points

The adjusted R-squared value is _____. (Hint: Be careful here because it seems pretty simple. I calculated it incorrectly the first time and caught that when I checked it against the gretl output!)

## Question 12

10 out of 10 points

Consider an F-test to verify the overall utility of our multivariable linear regression model for home values. Based on the gretl output our P-value is 3.5 e-128 or incredibly small, very near zero. Therefore we cannot reject the null hypothesis. This test has proven that the model does not have overall utility. (Hint: if this is confusing read through your second textbook Section 4.6 including Example 4.3.)

## Question 13

10 out of 10 points

Given the results of an F-test verifying a multivariable linear regression model's overall utility we can also conclude that the model is the best model that can be built. (Hint: this is covered in the second textbook same reference pages as for question 12.)

## Question 14

0 out of 5 points

Predict the home-value in whole USD (no cents) for a home built in 1950 with (average) 6 rooms, an "assessed" home value of 100,000 USD, and a pupil-teacher ratio of 20:1.

## Question 15

0 out of 5 points

Is the result you computed for question 15 more than the mean of the dependent variable in our current multivariable linear regression model?  (Hint: look through your gretl output!)

Thursday, October 5, 2023 2:15:56 AM EDT

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