**QMB 3200 Summer 2022 Homework 5**

Complete your work in this document in **black type.** Leave the existing document in the blue type it is currently in and do not edit the document except to add your responses below each prompt. Submit to Canvas as a single doc or docx file; submissions consisting of multiple files or files submitted in inaccessible formats will not be graded You will use your student data set (cars) to run all analyses. Printouts must be included; without them your grade will be zero.

Delete one of your vehicle models from your data set. We will no longer be using the variable “Year Produced” so you can delete that if you want. Add the quadratic term and the interaction terms. Recode the levels of Model Vehicle as 0 for one model and 1 for the other. You will then start with the complete 2nd-Order Model and “build down” through the entire model-testing process, until you have obtained the best-fitting model. Use this to respond to the following items.

Complete 2nd-Order Model: E(Y) = β0 +β1x1 + β2x12 +β3x2 +β4x1x2 + β5x12x2

**Part 1: Model Building**

1. Global F Test: run a test of the complete 2nd order model. Insert the STATISTIX Printout of the results of this test. **(1 pt.)**

Fill in the following information for your test **(5 pts./1 pt. each)**

 Test: H0: Ha:

 Test Statistic: \_\_\_\_\_\_\_\_\_\_ P-value: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conclusion:

1. Quadratics test: run a quadratics test. Insert the STATISTIX Printout of the results of this test . **(1 pts.)**

 Fill in the following information for your test **(7pts./1 pt. each)**:

 Full Model:

 Reduced Model:

 Test: H0: Ha:

 Test Statistic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ P-value: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Conclusion:

1. Interactions Test: run an interactions test. Insert the STATISTIX Printout of the results of this test **(1 pts.)**.

Fill in the following information for your test **(7 pts./1 pt. each)**:

Full Model:

Reduced Model:

Test: H0: Ha:

Test Statistic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ P-value: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Conclusion:

1. Would your model building be finished after the interaction test you just ran? Why or why not? **(1 pt.)**

**Part 2: Final Model Interpretations**

1. Identify the least squares prediction equation for your best model after all the testing was completed. Do not include the Printouts of any additional tests conducted, just the results of the best test. Use the values from the Printout and write the prediction equation below (use numbers, no betas). **(1 pt.)**

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1. Interpret the R2 and the 2s associated with your best model. **(2 pts.)**
2. Using your best model, create a confidence interval for observation #15. Insert the Printout. **(1 pt.)**

Interpret this confidence interval. **(1 pt.)**

1. Would you use your model in practice? Why or why not? Provide at least two items of information to support you view. **(2 pts.)**