

QMS210: Applied Statistics for Business

SPSS GROUP PROJECT #2

Spring2021

DUE: WEEK 9 (July 4 by 11:59PM)

MARKS: Total marks = 70 (or 7% of the final grade)

PENALTY: There will be a 50% penalty based on total marks of this project for late submission per day after the due date (including weekends).

The purpose of this assignment is to investigate the sale prices at auction of Toyota Camry's to demonstrate your understanding of the material covered in lessons regarding the various tools and techniques of the SPSS computer package. Another purpose is to develop team skills.

You will analyze data about prices of Toyota Camry's sold at auction in the USA based on 600 actual transactions. You are allowed to add variables to the original input data if needed to answer the questions.

The important aspect of your answers is YOUR DISCUSSION and analysis-- supported by SPSS output and charts.

Your data is found in a unique SPSS file provided to each team. The file contains the following information on Auction Sales.

Variable	Description
YEAR	Quantitative: model year of car.
Model_SE_LE	Qualitative: LE & SE (we only provide data for 2 models)
Engine	Qualitative: 4 cylinders or 6 transformed 0<-- 4 & 1<-- 6
Cyl6	Quantitative: "0" if 4-Cylinder "1" if 6 Cylinder
Cond	Qualitative: 0=Poor, 1=Avg (average), 2=Superior NOTE: Cond is short for "Condition"
Color	Qualitative: e.g. Green, Red, Silver, Gray, Black, White, etc
Auction	Qualitative: Locations of auction. e.g., ATLANTA; BALTWASH; California; Florida; New Jersey; Pennsylvania, etc
Price	Quantitative: Auction prices
Odometer	Quantitative: recorded odometer reading in miles
Age	Age of the used car at auction
WHITE	"1" if colour is WHITE, "0" otherwise... and similarly for other colors

Your report must include the following:

1. Title page:
 - [1] title
 - [2] submission date
 - [3] group number and the file name of the data set used
 - [4] GROUP No&names of each group member with Ryerson ID student numbers.No other information should appear on this front page.
2. Your project must be submitted online via D2L under Assessments
⇒ Assignment.
3. Use the same data assigned to your group for project #1.
4. The answer to each question must begin on a new page below a copy of the statement of the question.
5. Cut and paste **all relevant SPSS outputs** in the write-up section at the bottom of your answer to each question. Do not send the reader to appendices to find them.
6. Not using the exact dataset assigned to your group will result in a mark of ZERO for the project. Each group has a unique data set. If 2 groups use the same data set, both groups will get a zero mark and will be charged with academic misconduct.
7. A complete write up of your chosen hypothesis test must include
 - your assumptions
 - Hypothesis statement
 - analysis of results and
 - your statistical and managerial conclusions.

You must provide both approaches (critical value and p-value approach) to make your statistical decision.

8. All data analyses must be done with SPSS and/or EXCEL. SPSS is preferred.
9. The pages of your report must have a page number. Use a font size 12 and double spacing for your submission for clarity.

How the Project is graded

Your submission will be graded based upon the following factors: substance, presentation, accuracy, grammar, and clarity. A demonstration of effort is the driving force of this assignment. Assignments will be compared to discern levels of effort and excellence.

MOST COMMON TEAM ERROR: Amy does #1, Bob #2, Carrie #3- put it together and that's it. WRONG. Proper approach → everybody does all 3 and everybody checks everyone else's work. Then discuss and finalize. The FINAL EXAM will assume you have all done all 3. START EARLY.

QUESTION 1 (30marks)

- a) Use the variable "**Price**" to construct the confidence intervals for the estimate of population mean "**Price**" for a _____

(IF YOUR TEAM NUMBER IS ODD) **RED CAR** (use variable **RED**),

(IF YOUR TEAM NUMBER IS EVEN) **SILVER CAR** (use variable **SILVER**),

at both the 60% and 90% levels. Interpret and compare your confidence intervals.

Include your SPSS output chart for ALL questions, pasted at the bottom.

- b) Clearly state all assumptions made in constructing your confidence intervals and discuss why your team made these assumptions? If possible, check to see whether the assumption(s) is(are) satisfied.

- c) Are the **Variances** of the Prices of the

(IF YOUR TEAM NUMBER IS ODD) **SILVER CARS** (use variable **SILVER**),

(IF YOUR TEAM NUMBER IS EVEN) **RED CARS** (use variable **RED**),

significantly different from the set of all the other colors at the .06 level of significance? (HINT: use a two-sample Independent t-test, where 1 is the desired color and 0 the remainder.) (**READ CAREFULLY. The data has changed!**)

Show your output table(s) and discuss your answer. (Hint: first find the variances and then perform the hypothesis testing).

QUESTION 2 (20 marks)

Is there evidence that the population mean odometer reading of the used cars at auction is equal to

(IF YOUR TEAM NUMBER IS ODD) 45,000 miles at the 0.09 level of significance.

(IF YOUR TEAM NUMBER IS EVEN) 49,500 miles at the 0.08 level of significance.

and find the confidence interval for your estimate.

QUESTION 3 (20 marks)

Is there evidence that the population mean ODOMETER READING of 4-cylinder cars is greater than that of 6-cylinder cars?

(IF TEAM NUMBER ODD) Use a 9% level of significance.

(IF TEAM NUMBER EVEN) Use a 13% level of significance.

Consider 2 cases and discuss your finding carefully:

[a] Assume that variances are equal.

[b] Assume that variances are NOT equal.