

STAT 360 – PROJECT (Total 40 points)

Instructions: The **due date** of this assignment is BY **MONDAY, APRIL 1st in class only**. The assignment must be **typed in a word document (no credit for hand-written items) including your name**. **Multiple sheets (if turned in) must be neatly stapled together**. Graphs and charts produced in an Excel worksheet (or any other software of your choice) must be incorporated (using copy-paste) in your writing. Your grade on the assignment depends not only on the correctness of your work, but also on the **presentation style**. Write **complete sentences while answering questions**. Answer each part of the question to get full credit. **Failure to follow instructions will substantially lower the grade**. You can collaborate on this assignment. The hardcopy of the homework is due in class (NO email submission, please). **Excel worksheet turned – in as finished work and / or work turned in late will not be graded**.

Data

Year	Month	Domestic cost (\$/gallon)	International cost (\$/gallon)
2013	January	3.12	3.1
2013	February	3.28	3.22
2013	March	3.2	3.21
2013	April	3.05	3.04
2013	May	2.92	2.87
2013	June	2.9	2.89
2013	July	2.91	2.9
2013	August	3.05	2.89
2013	September	3.09	2.99
2013	October	3.05	2.9
2013	November	3.02	2.9
2013	December	3.03	3
2014	January	3.09	2.95
2014	February	3.04	2.98
2014	March	3	3.04
2014	April	2.98	2.93
2014	May	2.99	2.93
2014	June	2.97	2.91
2014	July	3	2.84
2014	August	2.98	2.84
2014	September	2.89	2.81
2014	October	2.69	2.67
2014	November	2.58	2.55
2014	December	2.32	2.33

Source: <http://www.transtats.bts.gov/fuel.asp?pn=1>

Data above provides the airline fuel cost in dollars per gallon for U.S. domestic and international carriers with scheduled service by month from January 2013 through December 2014. The data is also available in the course shell in Canvas for download purposes as an Excel worksheet. Based on the data, answer the following questions:

1. A financial analyst for an airline company wants to predict the fuel cost for international carriers using the fuel cost for domestic carriers only. Identify the appropriate explanatory and response variables. **[2 times ½ = 1 point]**

- **EXPLANATORY VARIABLE:**

- **RESPONSE VARIABLE:**

2a. Draw the scatterplot & regression line for the variables identified in problem 1. Remember to label the axes by the actual names. **Write out the equation of the regression line.**

[15 + 1 = 16 points]

2b. Write out the value of the correlation coefficient r .

[1/2 point]

$r =$

2c. Describe the form, strength, and direction (if applicable) of the relationship.

[3 times $\frac{1}{2}$ = 1.5 points]

- **Form:**

- **Strength:**

- **Direction:**

3a. **Draw a residual plot.**

[12 points]

3b. Predict the international carrier fuel cost if the domestic carrier fuel cost is 2.90 dollars per gallon.

[1 point]

3c. What do you call this prediction, interpolation or extrapolation?

[1 point]

3d. How reliable is this prediction?

[1 point]

4. Find the following **descriptive statistics** and complete the table below for both international and domestic carrier fuel cost variables. (See table below in the Appendix) **[6 points]**

Appendix:

Table related to Question 4

	International carrier fuel cost	Domestic carrier fuel cost
Average		
Maximum		
Minimum		