## BUS256 Marketing Analytics Spring 2017

### Exam #2: Tuesday March 28 2017

**Instructions:**  Please re-save this document including your name within the file name. Then type your answers directly into this document, which you will eventually upload to LATTE. You have the entire class session for this exam, and your work must be your own.

**I. Goodbelly case analysis continued (40 pts)**

**For this one question, you will start by downloading one script and csv file from the Github BUS256 folder called “Exam2 data and r code”. Do your work within R Studio.**

We worked with most of this code in class, and in this part of the test, you should slightly modify the code and interpret the results that the script generates. I’ve removed the stepwise regression code because we didn’t work with it very much.

Before starting, go to line 7 of the code and be sure your directory path is appropriate.   
ALSO: go to line 12 and set a seed of your choosing.

Recall that the dependent variable is unit sales, which is the mean number of units sold per week over a 10-week period.

Some stores had demonstrations in the current week and also had demos 1-3 weeks prior. There might be reason to think that repeated demos could really solidify interest in the product, so that a stores that repeated the demos would magnify the impact of demonstrations.

Modify the model specification (line 26 and following) to include an interaction term to capture possible interaction between Demo and Demo1.3. Your main goal in the problem is to interpret a multiple regression model and respond to these questions:

a. Based on your training data, please report the coefficients of Demo, Demo1.3, and the interaction of Demo & Demo1.3:

b. Which, if any, of the three are statistically significant at a level of .10 or lower?

c. Explain the magnitude of main and interaction effects of demonstrations on unit sales, taking into account only demonstration in the current or prior three weeks.

**Paste in the relevant lines of your final code here:**

**Paste in the relevant final regression output here (that is, the output you used to draw your conclusions:**

**II. Market Basket. (30 pts)**

Miller’s original presentation of market basket rules focused on vegetables. I’ve modified that analysis to develop a set of rules related to the purchase of **fruits**. Here is the set of “top 10” rules, sorted by lift:

> inspect(top.fruit.rules)

lhs rhs support confidence lift

[1] {dairy produce,

vegetables} => {fruit} 0.079 0.46 1.9

[2] {bread and backed goods,

vegetables} => {fruit} 0.051 0.44 1.8

[3] {dairy produce,

non-alc. drinks} => {fruit} 0.064 0.42 1.7

[4] {bread and backed goods,

dairy produce} => {fruit} 0.077 0.41 1.7

[5] {cheese} => {fruit} 0.051 0.41 1.6

[6] {vegetables} => {fruit} 0.107 0.39 1.6

[7] {dairy produce} => {fruit} 0.156 0.35 1.4

[8] {sausage} => {fruit} 0.065 0.34 1.4

[9] {bread and backed goods} => {fruit} 0.108 0.31 1.2

[10] {non-alc. drinks} => {fruit} 0.094 0.29 1.2

a. Within this list, use plain language to “translate” and explain the rule that applies most frequently to customer purchases:

b. Within the list, the first rule has the largest confidence as well as the highest lift. Using the example of the items in that rule, explain what confidence and lift mean.

c. Of the ten rules, which one do you think might be *least* useful to managers in a grocery store? Explain your thinking.

**III. Experimental Design (30 pts)**

I have mentioned in class that CVS has been a leader in using experimental design to gather insight into consumer behavior. Navigate to [www.cvs.com](http://www.cvs.com) now, and examine their main landing page. Find at least *four* areas or items on the web page where you think they might be conducting an on-line experiment right now. In other words, identify four specific places on the screen where they might well be showing different information or images to different viewers.

Explain your decision to choose those places, and explain how they could use the data gathered in connection with other available data to gain deeper understanding of consumer behavior.