**Week 3 participation**

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**Once you have completed this assignment, please submit it as a PDF to the Week 3 Participation Folder.**

**Question 1 - Regression coefficient exercise**

Please read the prompt and the data dictionary, then answer the questions asked.

A retail store manager wants to explore the effects of different factors on total sales for customer orders. He pulls data from the point-of-sale system from a recent “normal” week of sales. Each observation in the data set represents one sale/order. The variables of interest were:

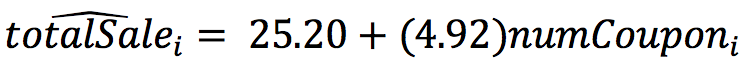
totalSale: The total amount in dollars the customer paid for the order (continuous)

numCoupons: The number of coupons applied to the order (continuous)

yearsLoyal: Number of years the customer has been a member of the store’s loyalty program

paymentType: Whether the customer paid with a credit/debit card or with cash (categorical: 0 = cash, 1 = card)

**Part 1**: He was especially interested in the effect of the number of coupons, so he started by conducting a simple linear regression. The result of this analyses was as follows:



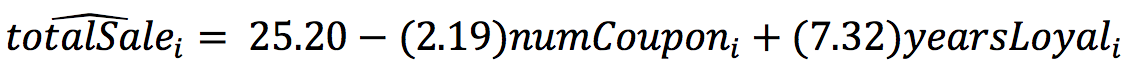
* Interpret the intercept (25.20) and slope (4.92) coefficients in the context of the problem.

Without use of any coupons, the totalSale predicted to be $25.20. For each coupon in addition, the predicted total sale increases by $4.92.

* What would be the predicted total sale for a customer who used 3 coupons in the order?

$39.96

**Part 2**: He ran the analysis again, this time including the yearsLoyal variable in addition to the numCoupon variable.



* Interpret the coefficients in this model in the context of the problem.

Without any coupons or years of loyalty, the total sale is predicted to be $25.20. Holding the effect of the number of years constant, we can expect the totalSale to drop by $2.19 for each coupon. Holding the number of number of coupons constant, we can expect each year of loyalty to increase total sale by 7.32.

* What would be the predicted total sale for a customer who used 2 coupons and had been a member of the loyalty program for 4 years?

$50.1

**Part 3**: He ran the analysis one more time, this time dropping the numLoyal variable and adding the paymentType variable.



* Interpret the coefficients in this model in the context of the problem.

When there are no coupons and the payment type is cash, we can expect the totalSale to be $25.20.

* What is the predicted total sale for a customer who used one coupon and paid cash?

$25.60