

ISOM5610 HW2
Due: 4 Dec, 11:59pm

Based in Corona, California, Monster Beverage Corporation is a marketer and distributor of energy drinks and alternative beverages. It's revenue data from 2014:Q2 to 2022:Q2 are given in the dataset. In this assignment, your team will apply different methods to model the quarterly revenue of Monster Beverage and do prediction for 2022:Q3

Dataset: mnst.csv

A description of the variables is given below:

- Revenue: quarterly revenue (in millions of US dollars)
- Quarter: Q1-1st quarter, Q2-2nd quarter, Q3-3rd quarter, Q4-4th quarter
- Year

Task 0: Prepare the seasonal index for each quarter (see appendix in Notes; We did not cover it in class but it is not that difficult.)

Task 1: Build the following models using all the observations

- Model.1: Revenue vs Year and Quarter
- Model.2: $\ln(\text{Revenue})$ vs Year and Quarter
- Model.3: Deseasonalized Revenue vs Year
- Model.4: $\ln(\text{Deseasonalized Revenue})$ vs Year

[Remark: Quarter is a categorical variable here]

Task 2: Compare MADs among all the models in Task 1. Make sure that it is a fair comparison, i.e. the MADs are measured according to the same response.

Task 3: Check the constant variance assumption and uncorrelated residuals for each model of above.

Task 4: Predict the revenue for Q3 in 2022 using any model from above.