Marketing Mix Modeling

The attached data is weekly sales data (**sales** column) and also marketing data of TV, Radio and Digital channels in GRPs -Gross Rating Points (**tv_grps**, **radio_grps**, **digital_grps**). And the week temperature data in **temp** column.

The idea is to quantify the effects of different marketing channels on the sales, calculate the Return of Investment (ROI) of each marketing channel and then optimize the budget for marketing campaigns.

Sales is probably a combination of a baseline (which comes from the business, brand, customer loyalty ...), organic growth (which can be some %/week), seasonality (which might come from temperature variation) and marketing activities.

You might need to study about the concept of marketing adstock and how it relates to GRPs: adstock = function of (GRPs, diminishing, decay). In this particular case:

- For TV, diminishing can be 120 to 150, decay can be 0.6 to 0.95
- For Radio diminishing can be 150 to 180, decay can be 0.3 to 0.6
- For Digital diminishing can be 70 to 100, decay can be 0.6 to 0.9

Missions:

- Build predictive model(s) that can predict sales, given the available data
- Estimate the percentage of sales that is boosted by different marketing channels.

Expectation:

- Show the ability how to build models, validate models, tune hyperparameters to select the best model(s).
- Interprete the results with visualization.

Way to work:

- Discuss with us to understand the case
- you can send any interim results so that we can reach to the final results.