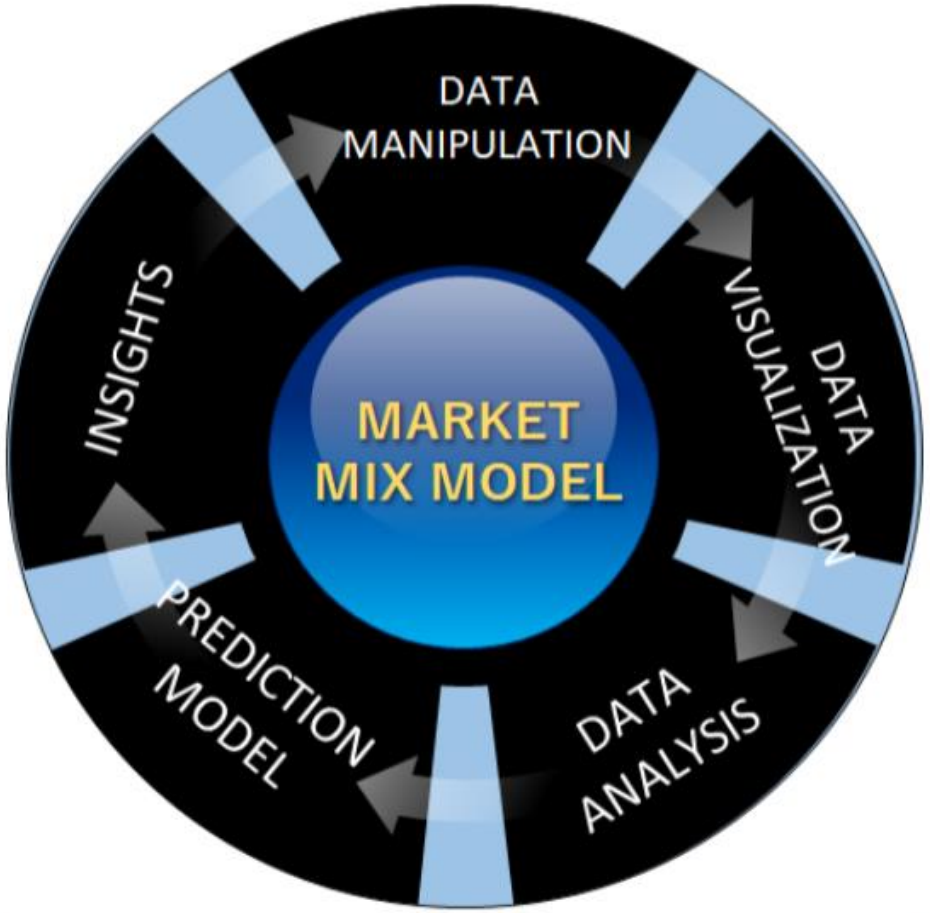
Multivariate Regression on Time Series Data

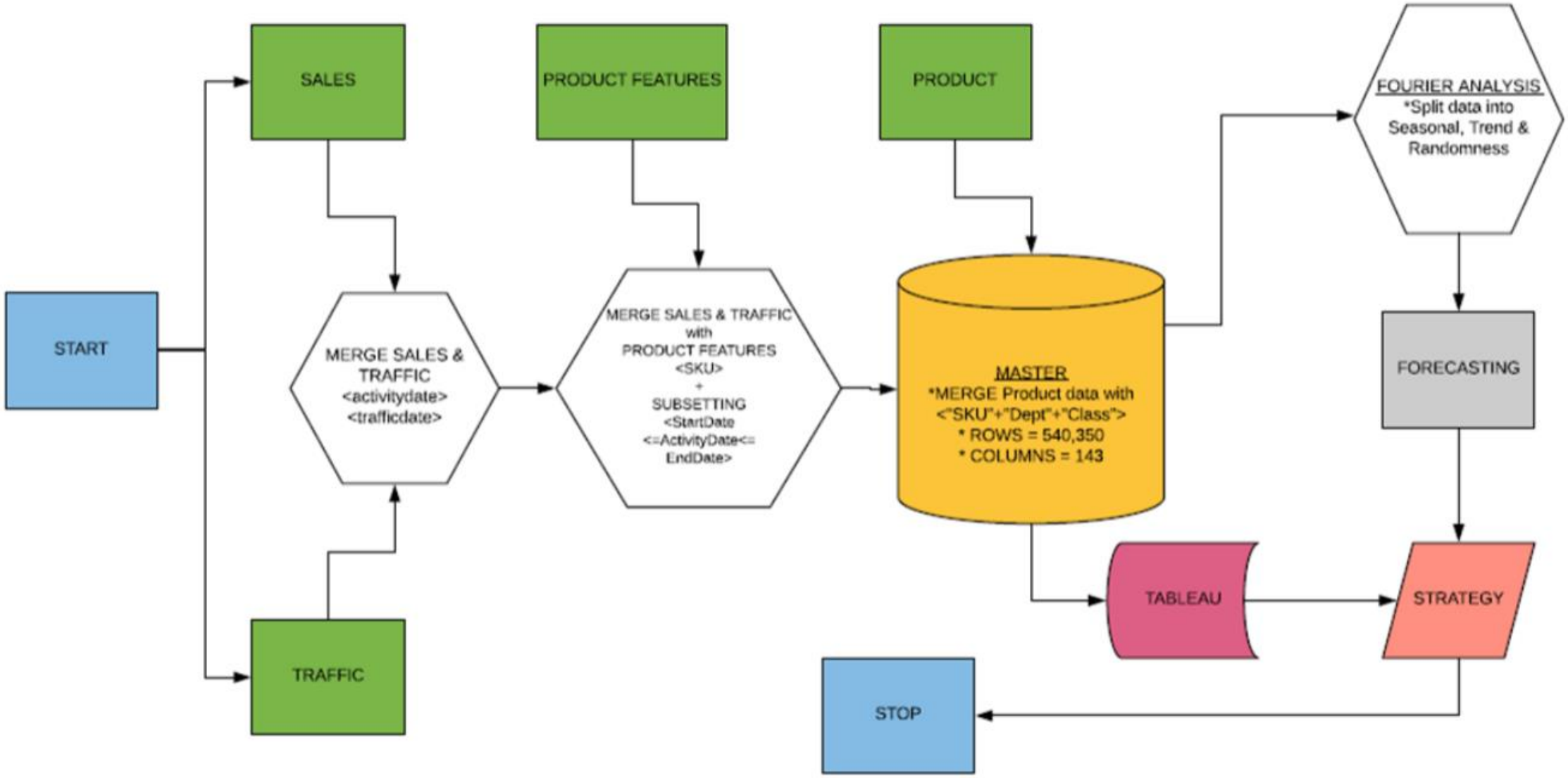
Methodology



Data Manipulation

Data Visualization & Data Analysis

METHODOLOGY



Data Visualization & Data Analysis

Sales

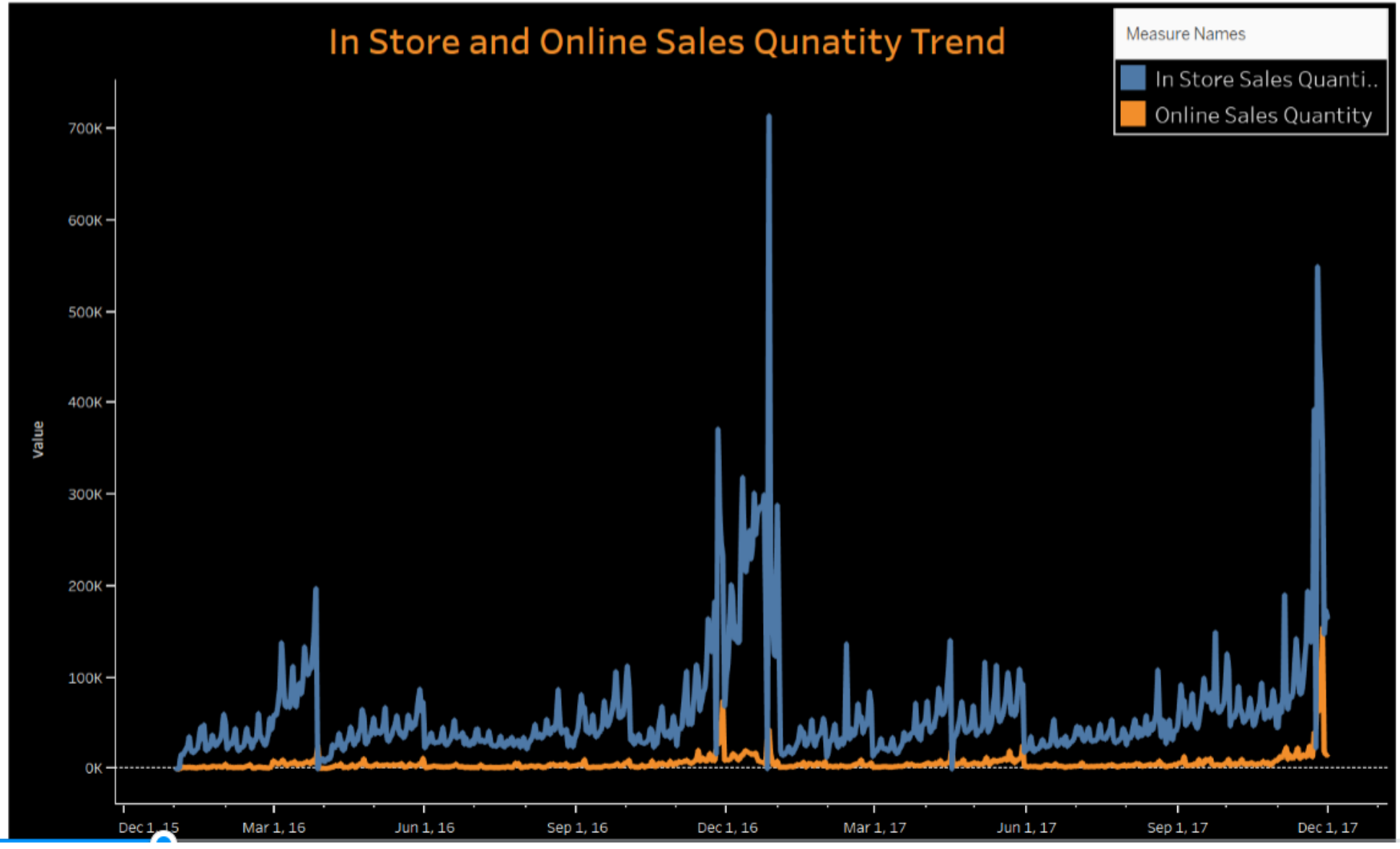
Marketing Channels

Vehicles

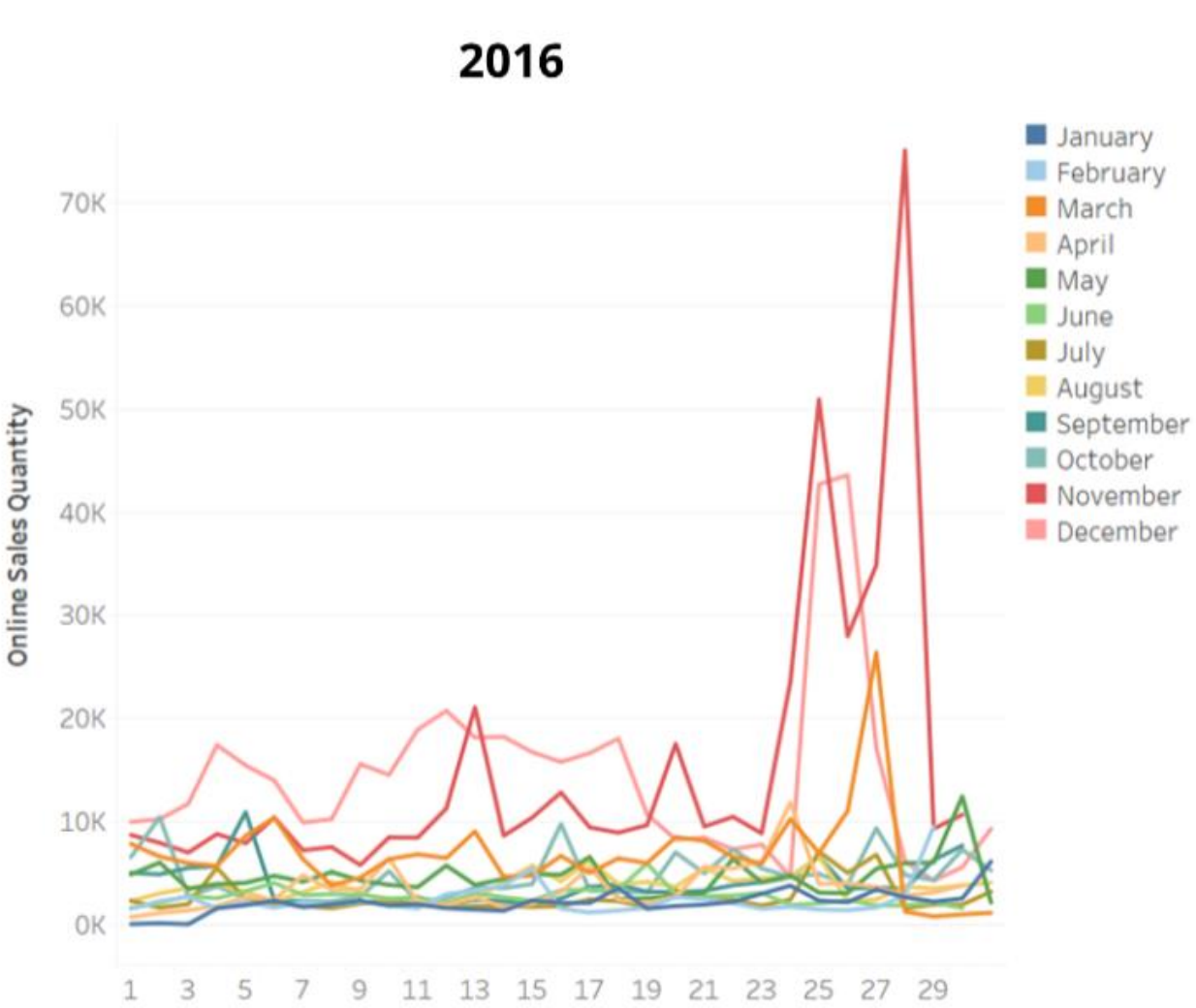
Product Category

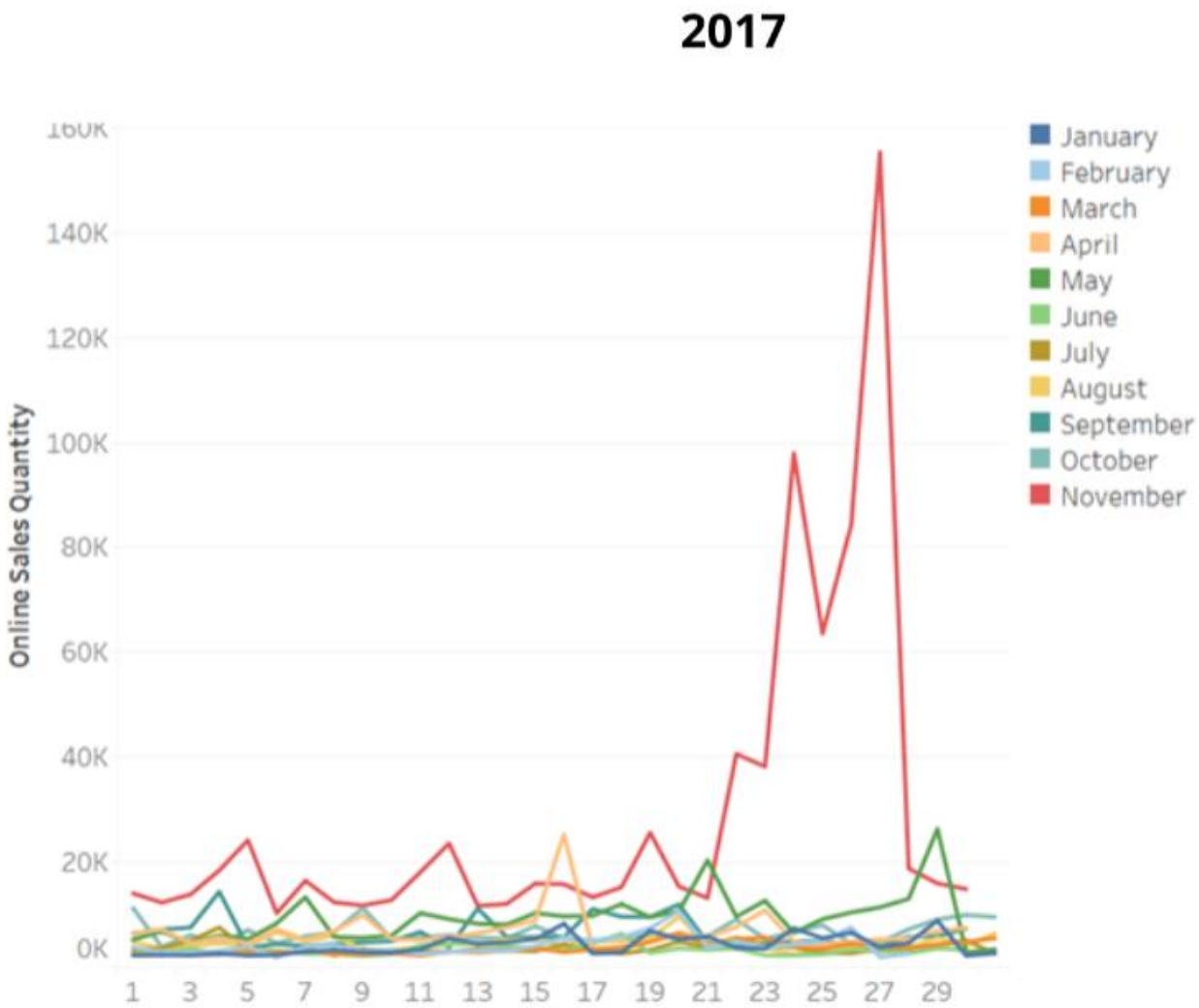
Sales

ONLINE AND INSTORE Sales



Day Wise- Sales





Impact of Marketing Channels

Hypothesis :-

Does mean of online sales quantity for 4 different channels (EM, OP1, OSM,OB) make any difference or not.

So, we sampled 5000 records for each channel and Used ANOVA to find out if the choice of advertising medium makes any difference

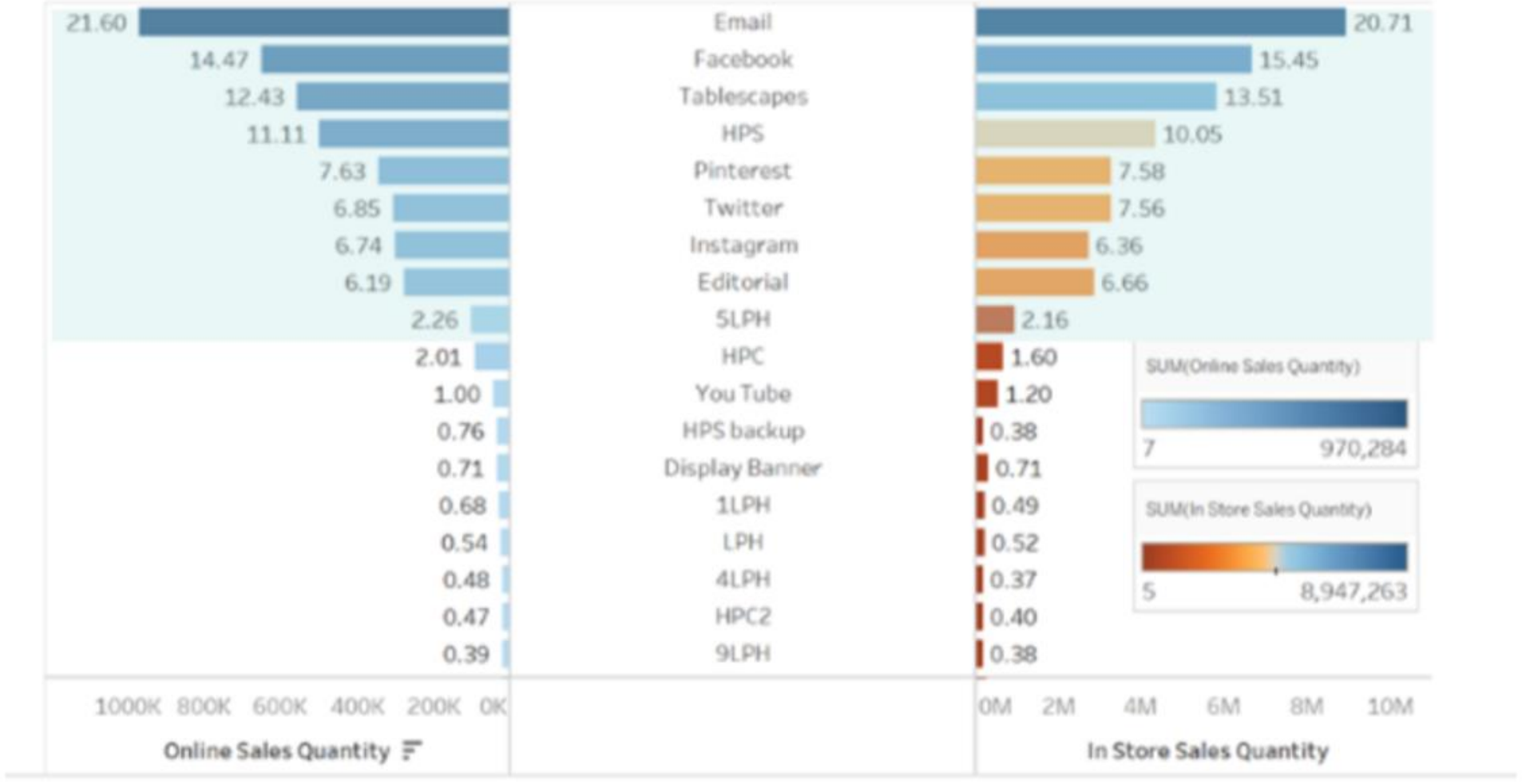
H0: All channels perform equally, mean(EM)=mean(OB)=mean(OP1)=Mean(OSM)

H1: At Least two of them are not equal
Anova: Single Factor

ANOVA Test gave us result that choosing an advertising medium makes difference in sales.

Vehicles

Impact of Vehicles on Sales

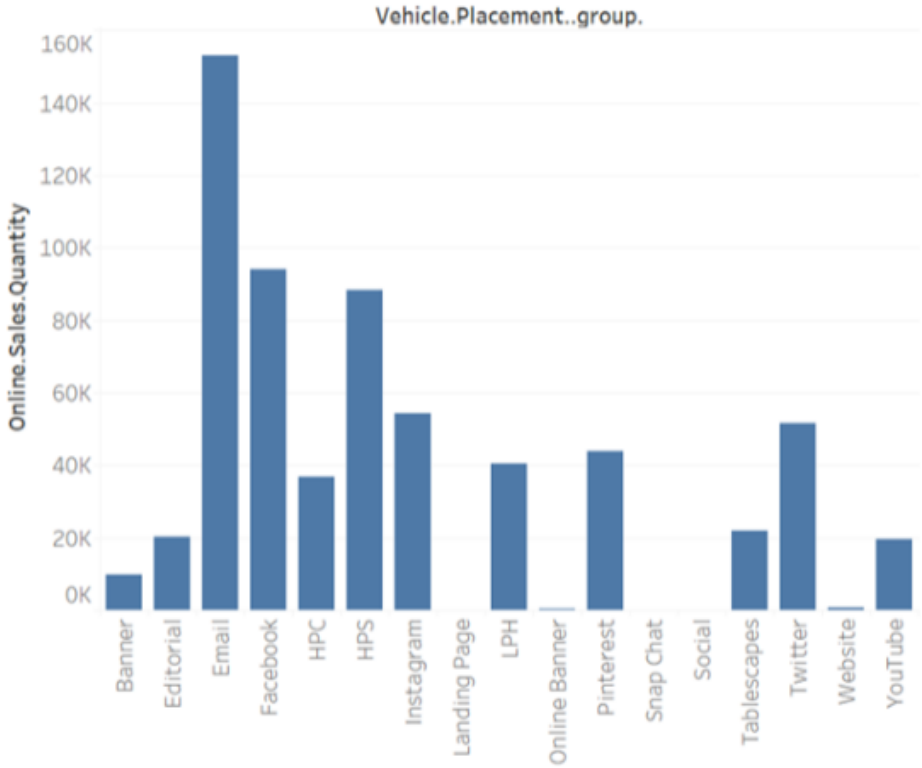


Most Effective Combinations of Vehicles

Most Effective Cluster

Online Sales Best Combinations

- You Tube
- Facebook
- Email
- Pinterest
- HPS



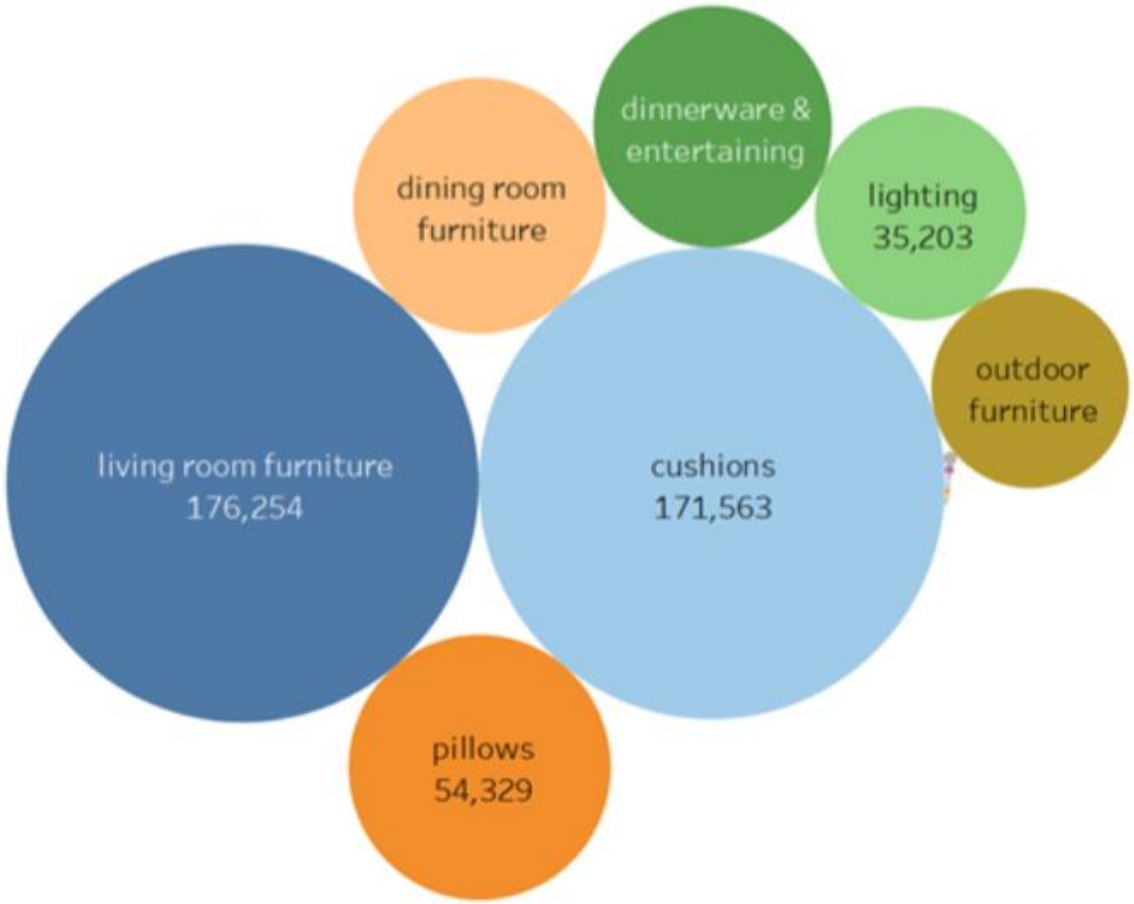
In Store Sales Best Combinations:

- HPS
- HPC
- facebook
- snap-chat

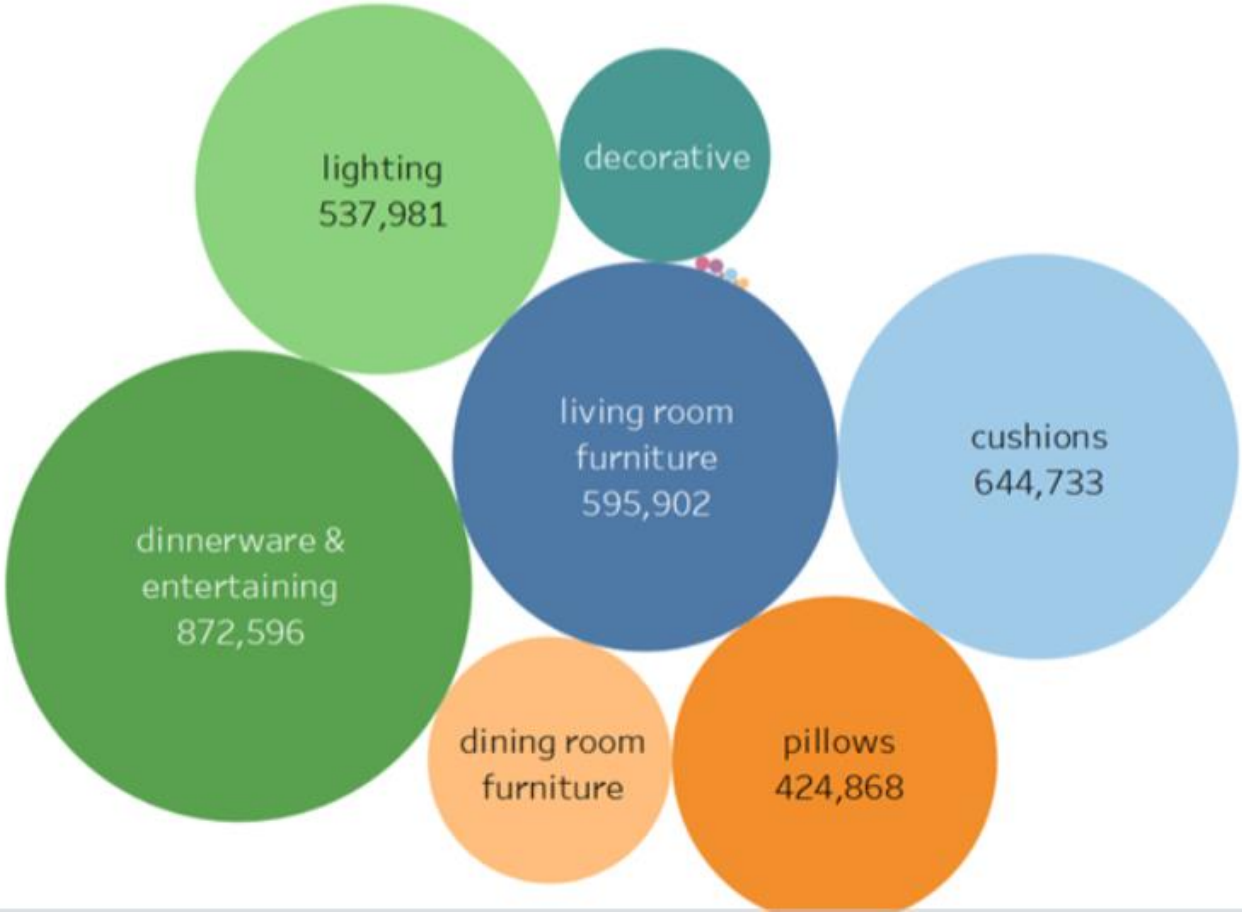
Banner , Editorial, Email, Facebook, HPS, HPC, Instagram, LPH, Pinterest, Twitter, Tablescapes,Youtube

Product Category

Online Sales



InStore Sales



Prediction Model

Data Examination

Data Cleaning

Smoothening

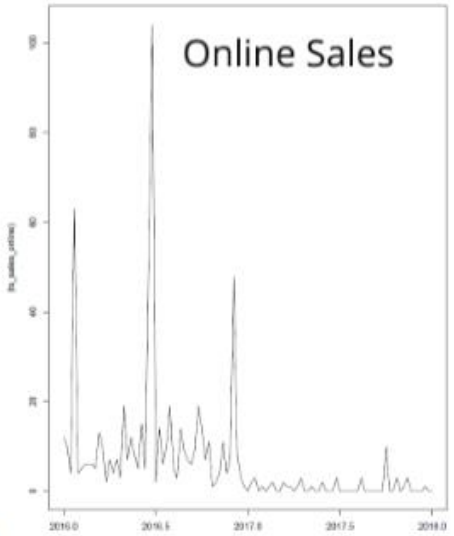
Decomposing

5. Evaluation
DickeyFuller Test for Stationarity

Forecasting

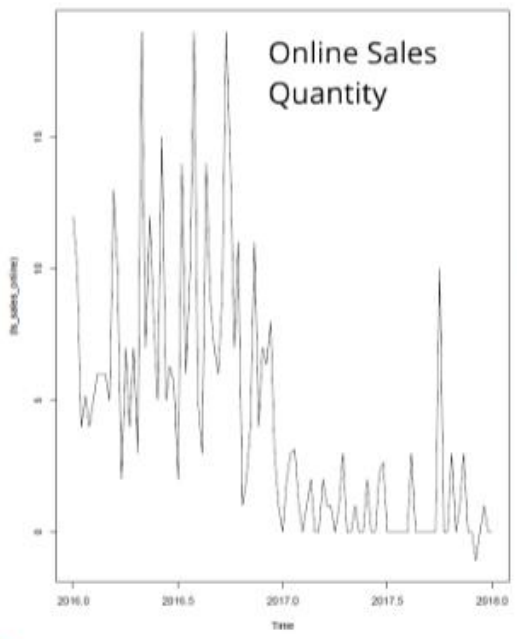
Data Examination

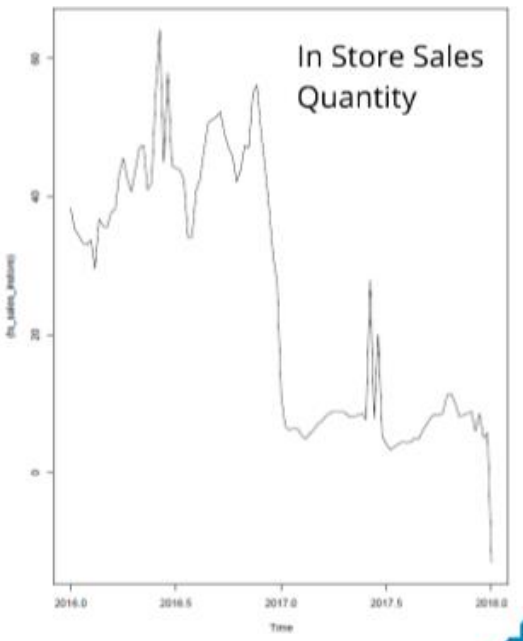
Packages Used : TTR, TSeries, Forecast, ggplot



Data Cleaning

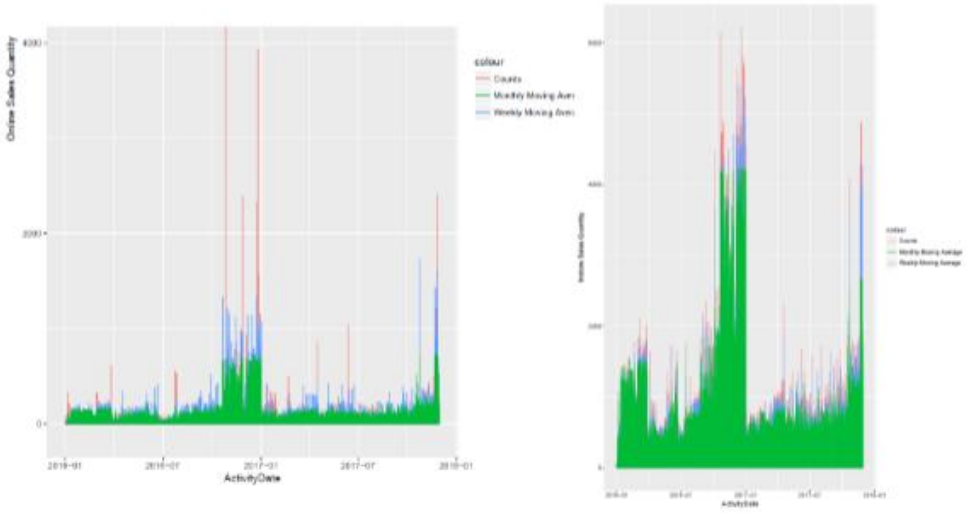
Handling Missing Value
- Package Used tclean





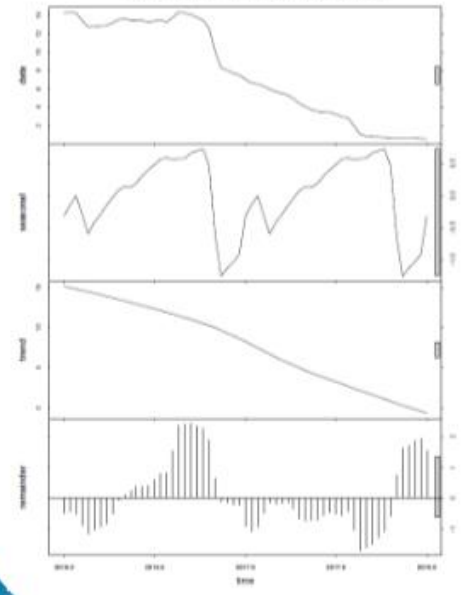
Smoothening

Noise Fluctuation – monthly, weekly- moving average

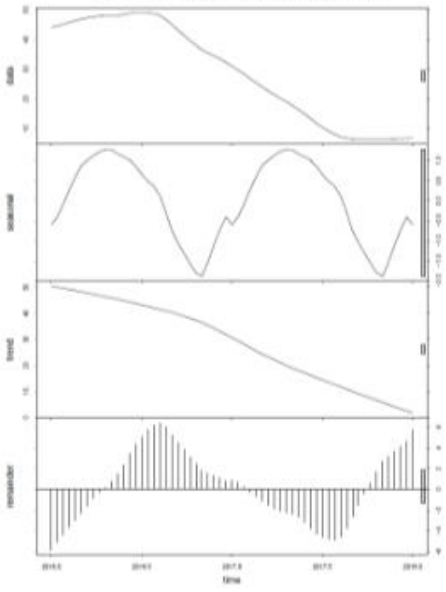


Decomposing

Online Sales

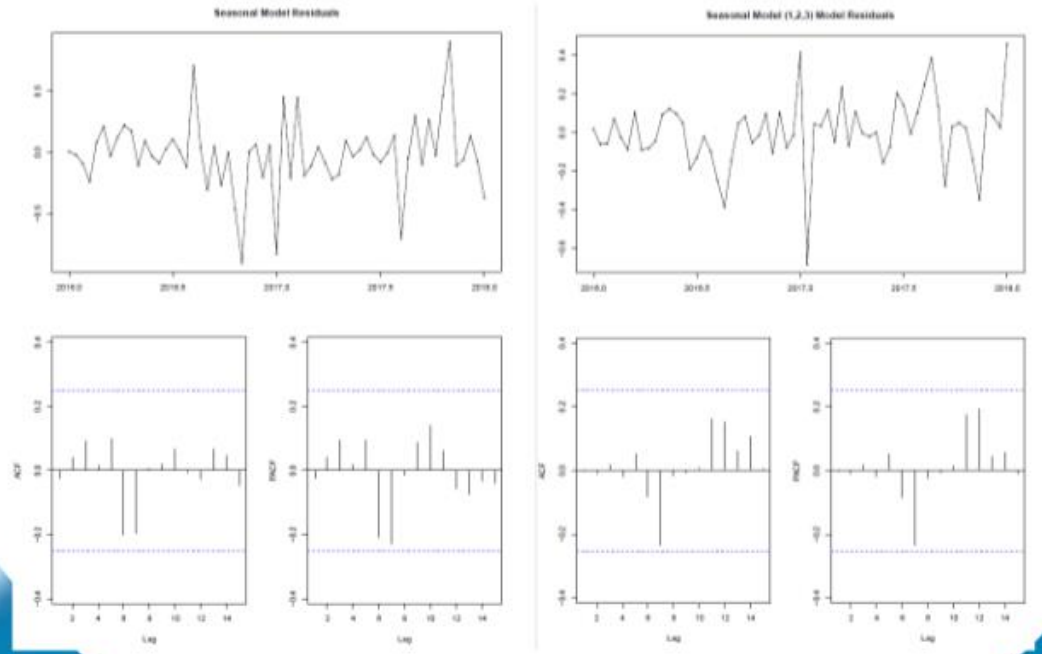


In Store Sales

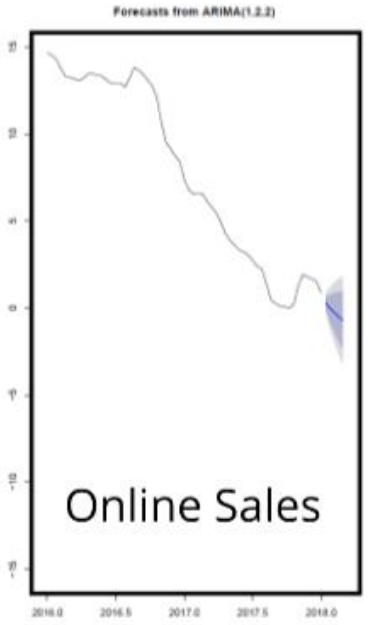


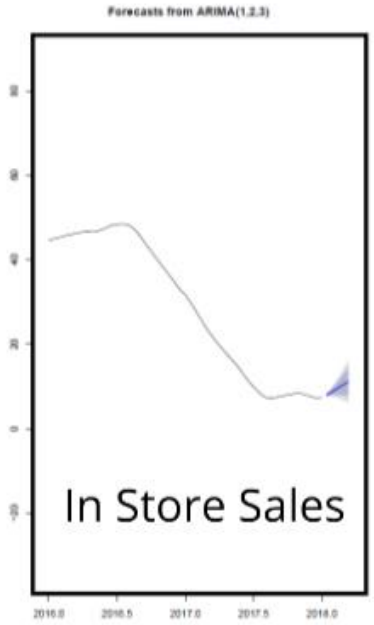
5. Evaluation

DickeyFuller Test for Stationarity



Forecasting





Strategy

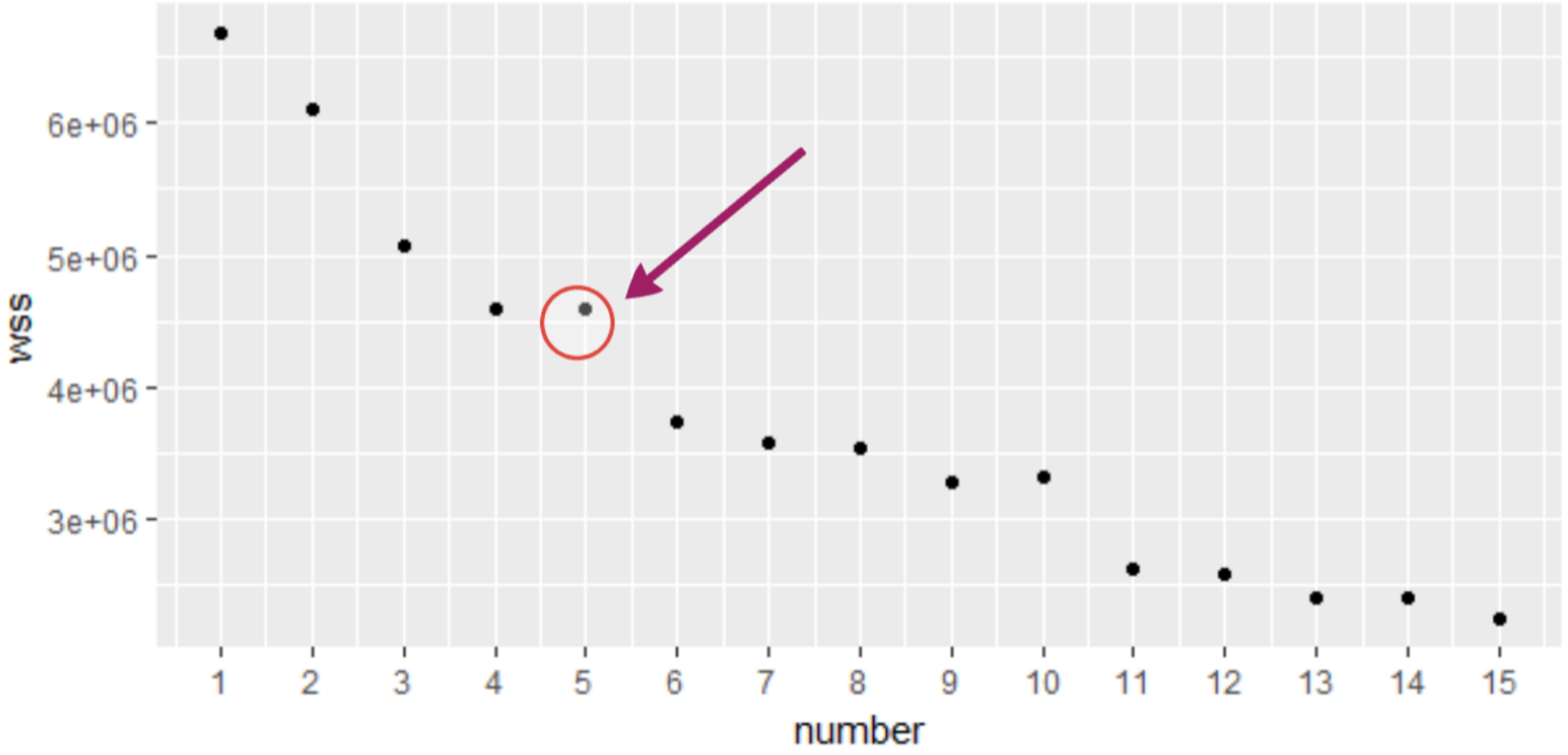
Clustering

Promotions vs Markdown

Feb 2018

Clustering

To Find Optimal Number of Clusters after scaling of data



InStore Discount percent vs Online Discount perncent

Scatter Plot- 5 Clusters

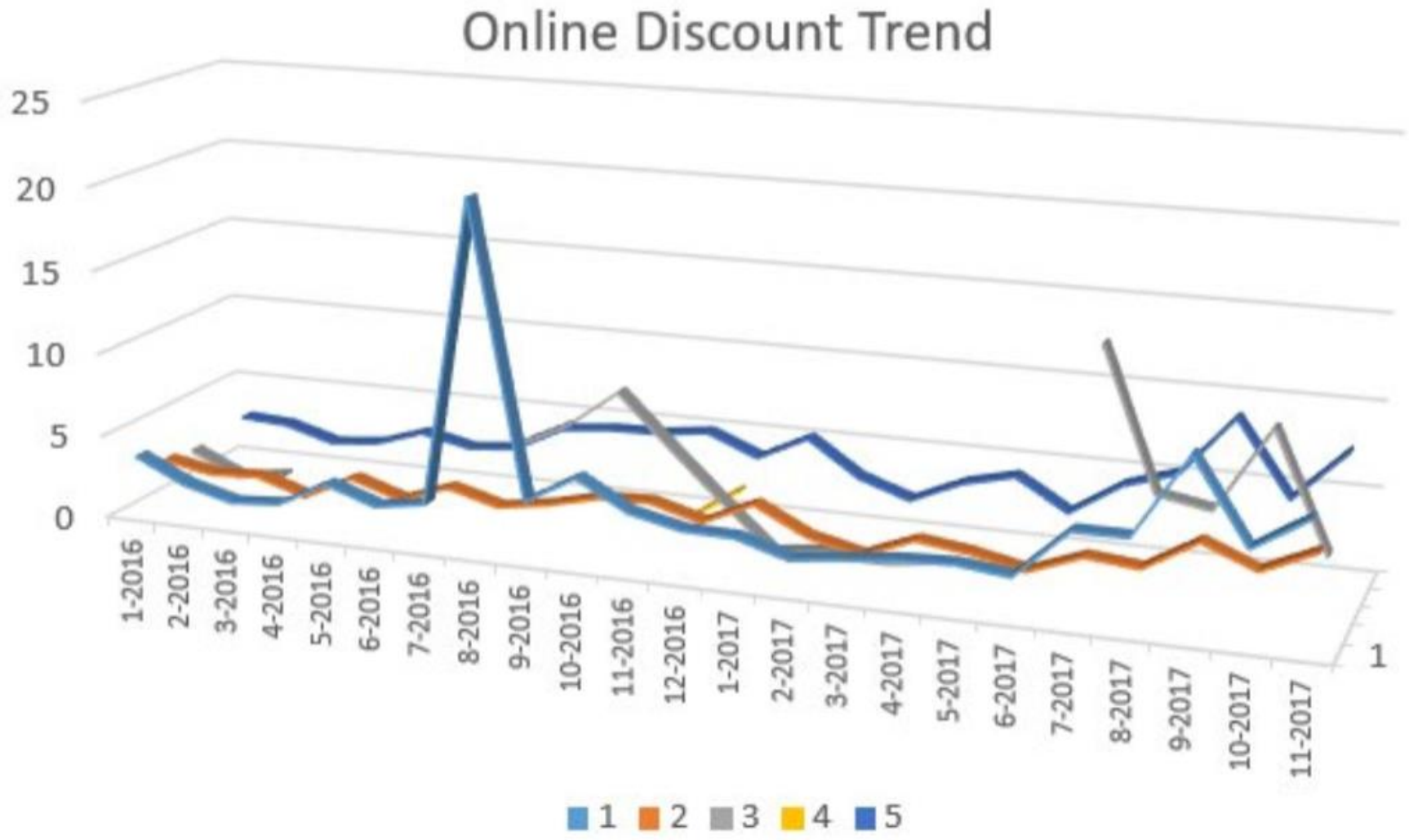
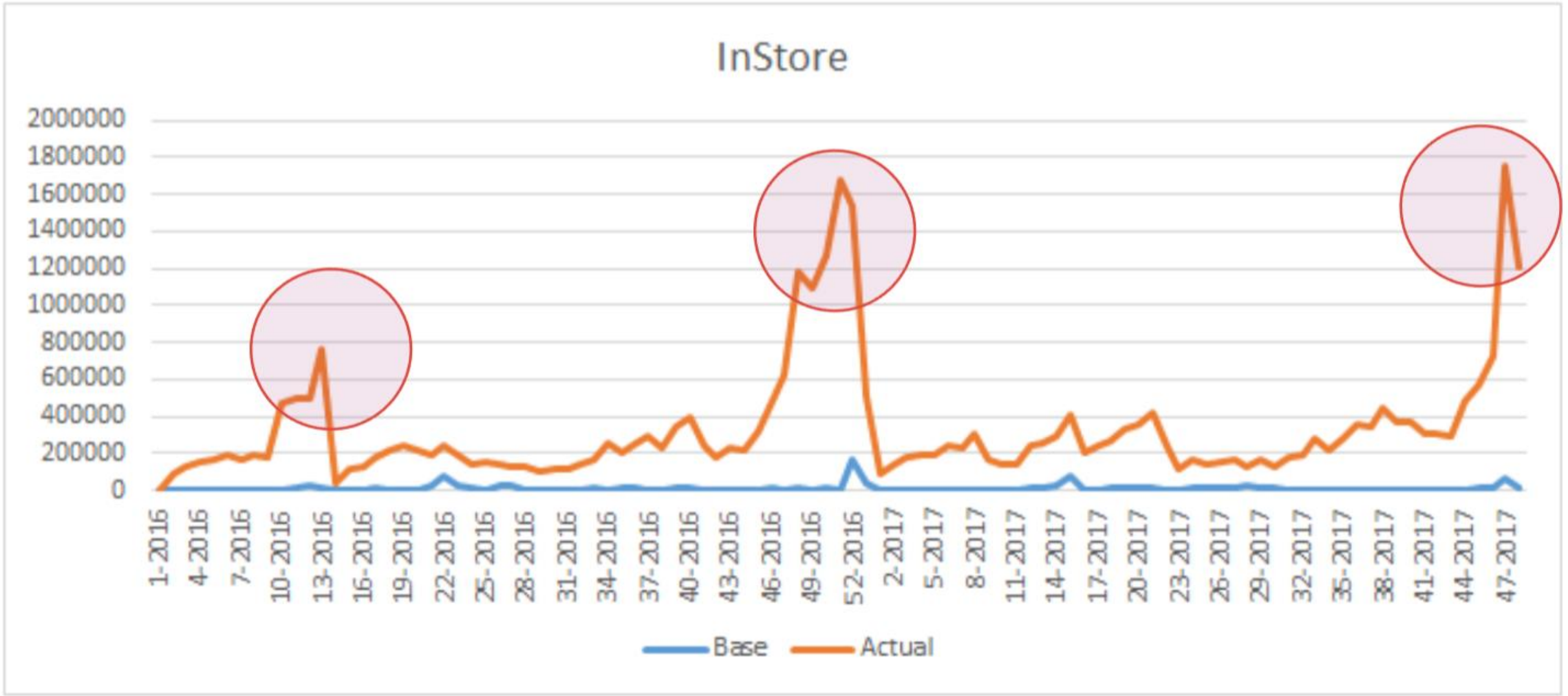
Channels which drives sales in Cluster 1

Email

Social Media-

- Facebook
- Instagram
- Snap-chat
- YouTube
- Twitter

Discount Trends



Promotions vs Markdown