

Food Marketing Campaign Bayesian Analysis and Prediction

- Final Project - Statistical Modeling & Computing - 16:954:567:01

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- **Key Objectives are:**

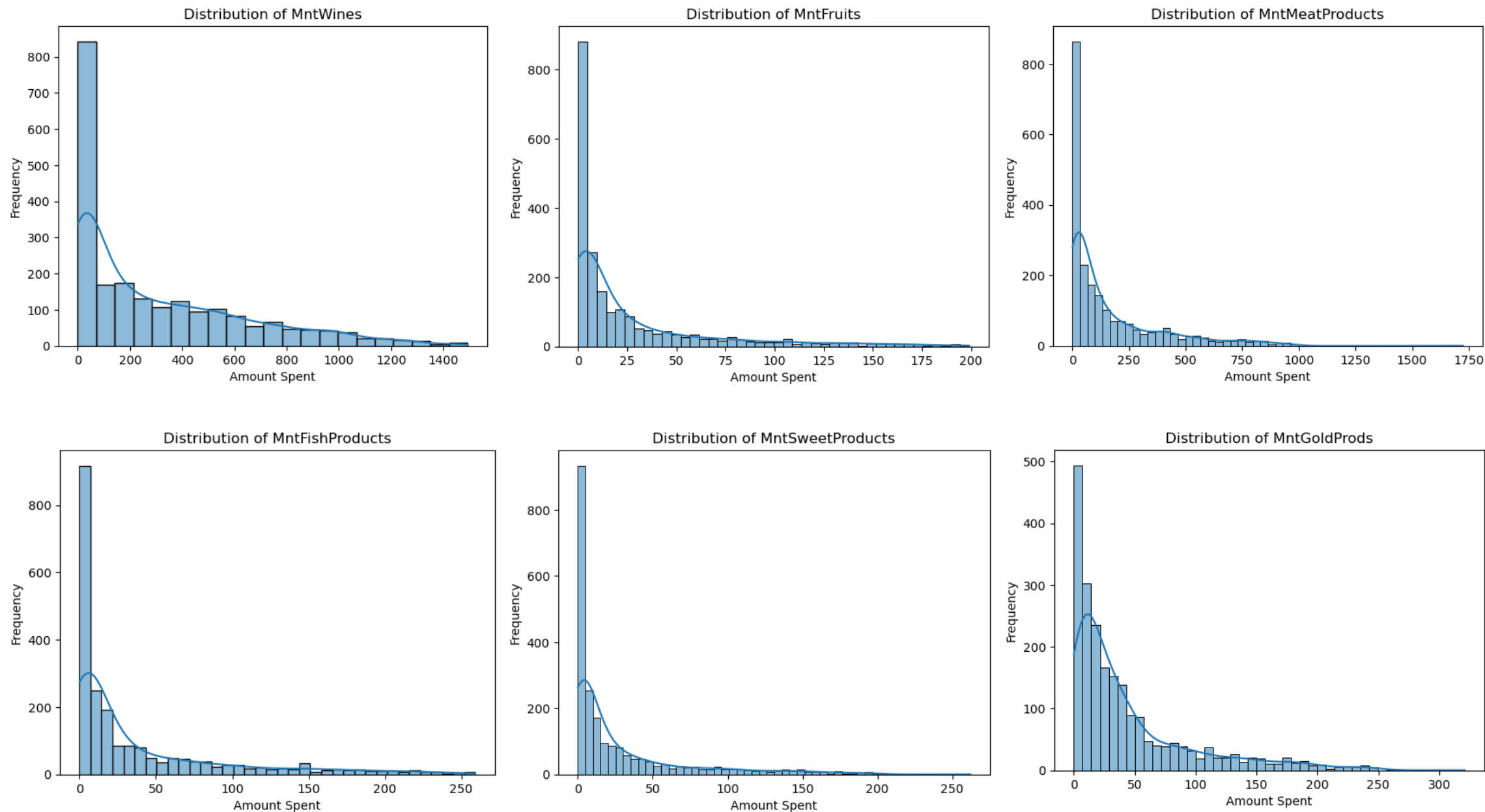
- Explore the data. Provide insights, define cause and effect. Provide a better understanding of the characteristic features of respondents.
- Propose and describe a customer segmentation based on customers behaviors.
- Create a predictive model which allows the company to maximize the profit of the next marketing campaign.

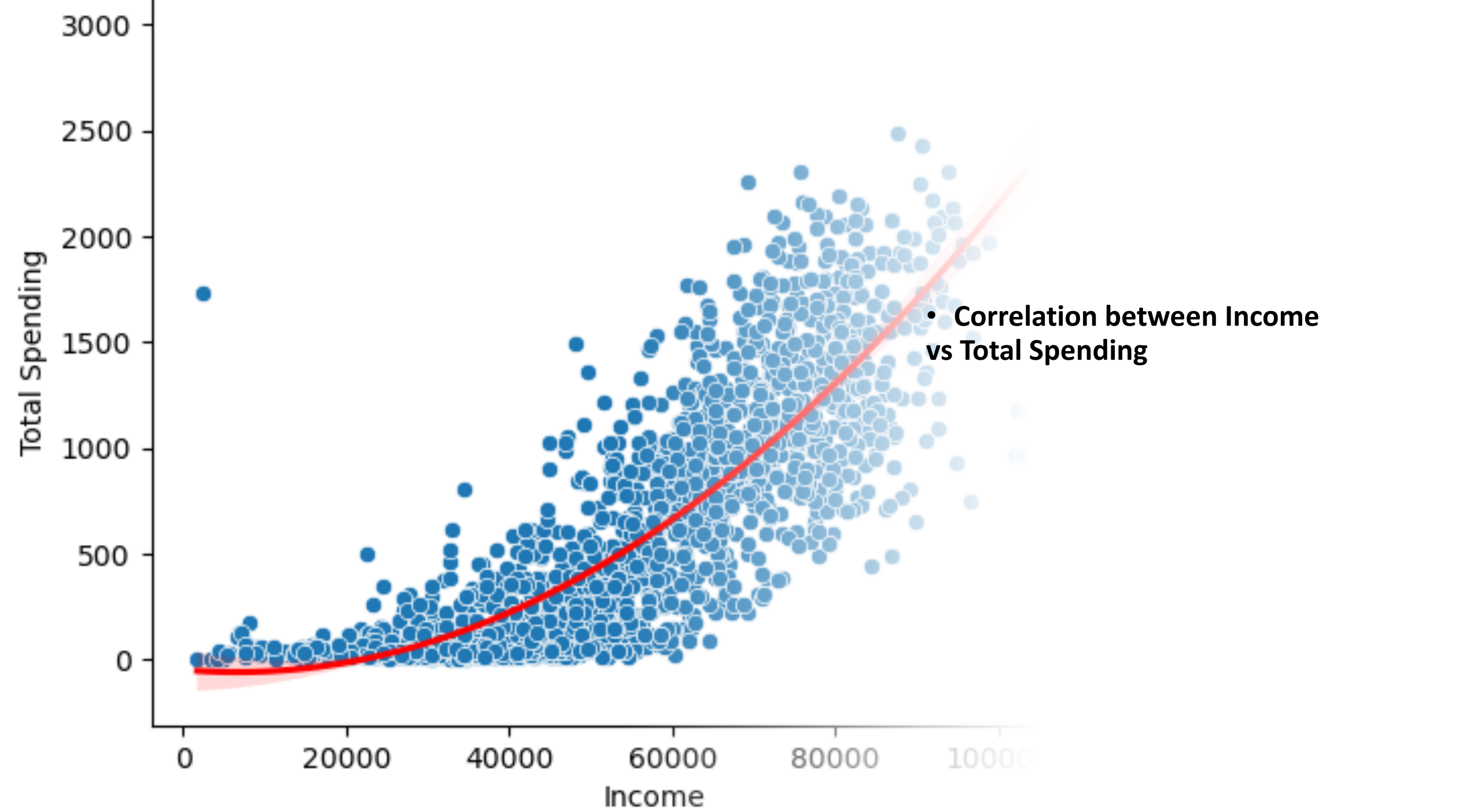
Data Overview

- Data is open sourced by iFood Brain team for Data Analysis challenge.

Feature	Description
AcceptedCmp1	1 if costumer accepted the offer in the 1 st campaign, 0 otherwise
AcceptedCmp2	1 if costumer accepted the offer in the 2 nd campaign, 0 otherwise
AcceptedCmp3	1 if costumer accepted the offer in the 3 rd campaign, 0 otherwise
AcceptedCmp4	1 if costumer accepted the offer in the 4 th campaign, 0 otherwise
AcceptedCmp5	1 if costumer accepted the offer in the 5 th campaign, 0 otherwise
Response (target)	1 if costumer accepted the offer in the last campaign, 0 otherwise
Complain	1 if costumer complained in the last 2 years
DtCustomer	date of customer's enrollment with the company
Education	customer's level of education
Marital	customer's marital status
Kidhome	number of small children in customer's household
Teenhome	number of teenagers in customer's household
Income	customer's yearly household income
MntFishProducts	amount spent on fish products in the last 2 years
MntMeatProducts	amount spent on meat products in the last 2 years
MntFruits	amount spent on fruits in the last 2 years
MntSweetProducts	amount spent on sweet products in the last 2 years
MntWines	amount spent on wines in the last 2 years
MntGoldProds	amount spent on <i>gold</i> products in the last 2 years
NumDealsPurchases	number of purchases made with discount
NumCatalogPurchases	number of purchases made using catalogue
NumStorePurchases	number of purchases made directly in stores
NumWebPurchases	number of purchases made through company's web site
NumWebVisitsMonth	number of visits to company's web site in the last month
Recency	number of days since the last purchase

Preliminary Data Analysis





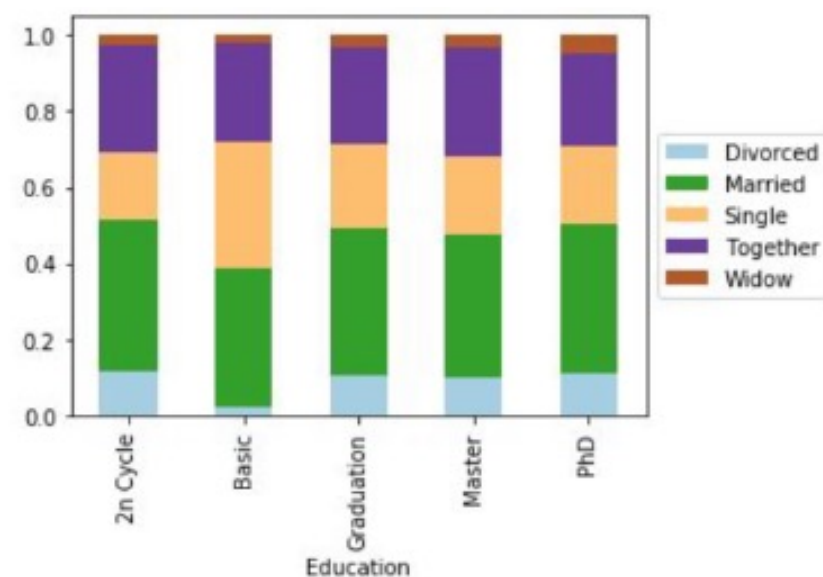
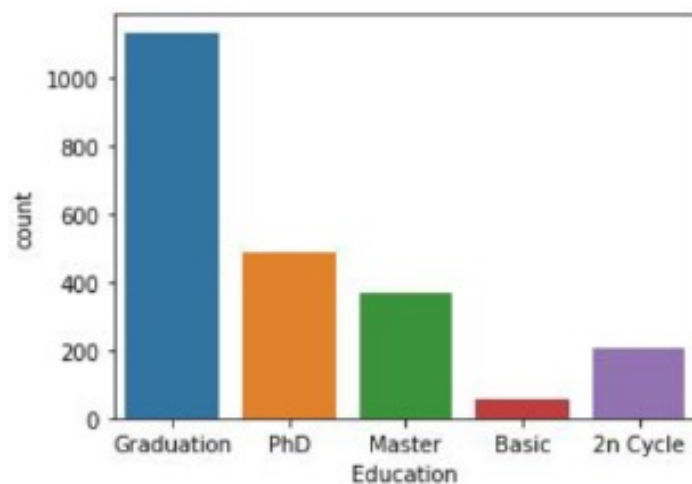
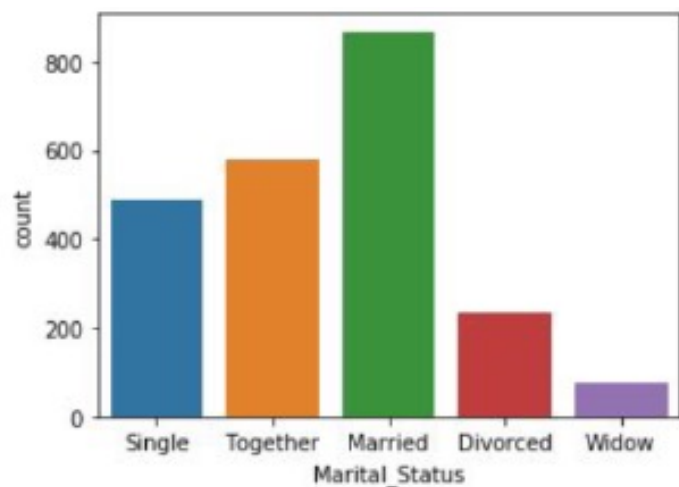
Correlation

- Income is a proxy for several other features, such as the amount spend, positively driven by meat and wine and it has a negative correlation with visits on the websites.
- The amount spend on Wine is, besides being related to high income, to the amount spend on Meat and it's purchased or in Catalog or in Stores.
- The number of kids is negative related to income, amount spent in total and, consequently, related to wine.
- Higher Income is also related to accept Campaigns.

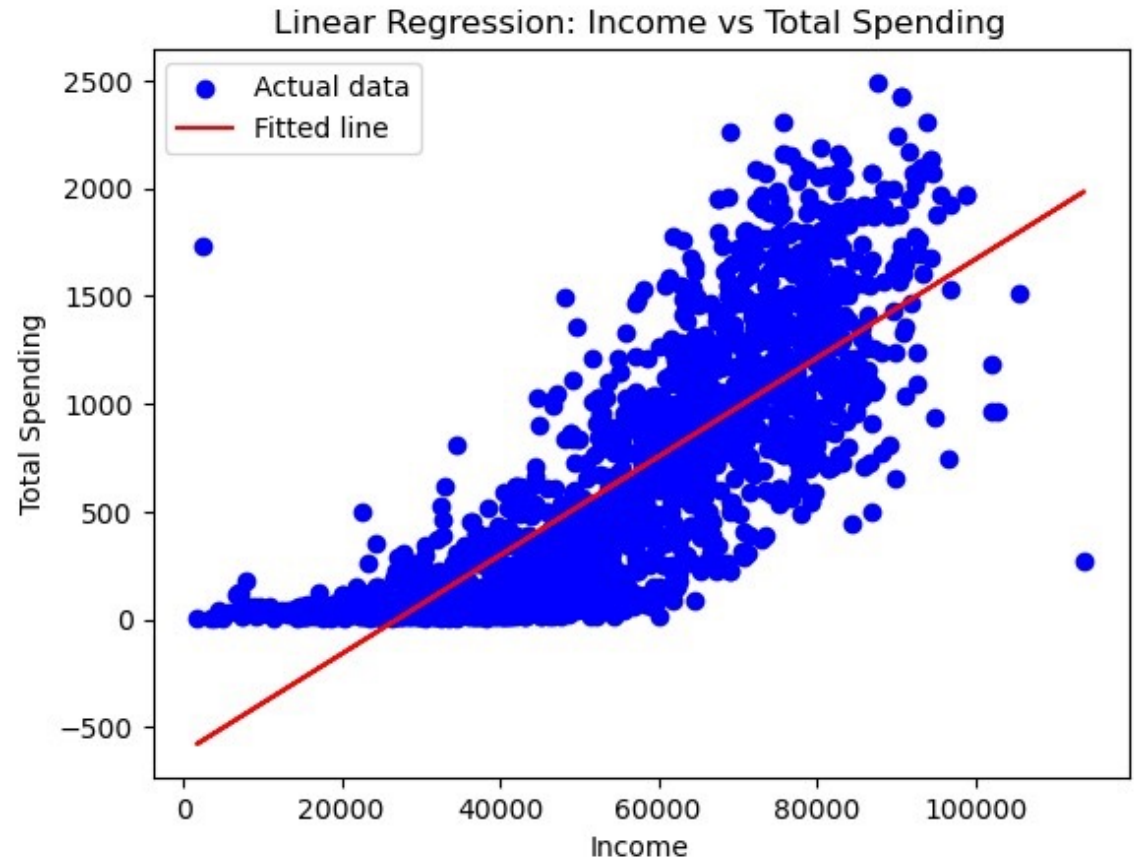


Preliminary Customer Profile Analysis

Most customers are married and highly educated.



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- A foundational regression model is employed to forecast total expenditure as a function of income, facilitating an exploration of the underlying relationship or pattern between these variables.





To be done:

- Exploratory Data Analysis
- Customer Profiling
- Bayesian Analysis
- For the new campaign we develop a predictive Bayesian Logistic Regression model that classifies if the customer will accept the offers or not. With prior Knowledge being Previous marketing campaigns.

Thank You

