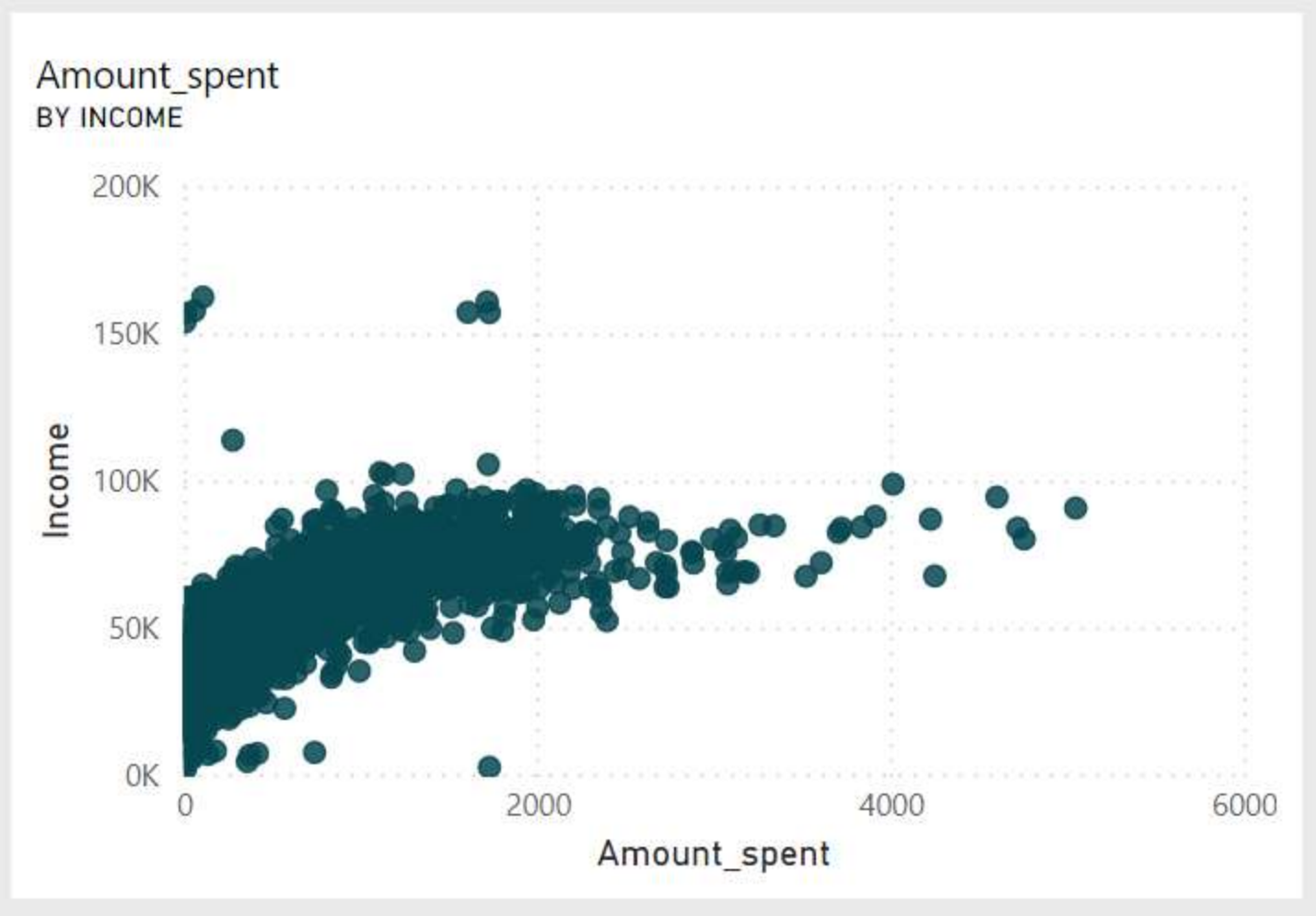
Target audience

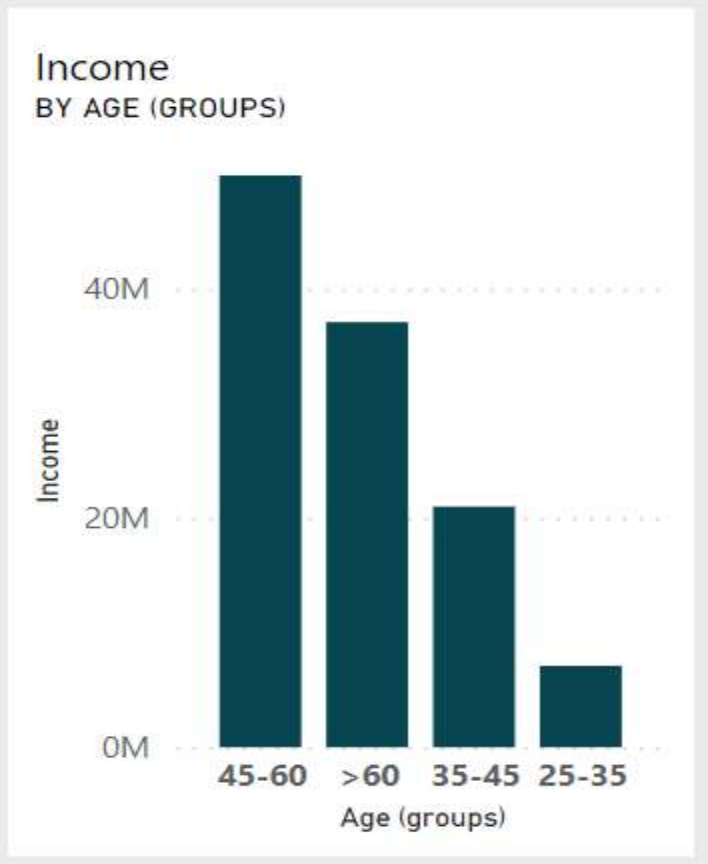
- My target audience is **Business managers.**
- How can they use the dashboard in their decision making?
    - They will get to know their right customers in order to market their campaigns to them and make the most of them possible.
    - Learn about successful marketing campaigns.
    - Using the dashboard to make other campaigns for other customers in order to benefit from them if they want to.

Chart documentation

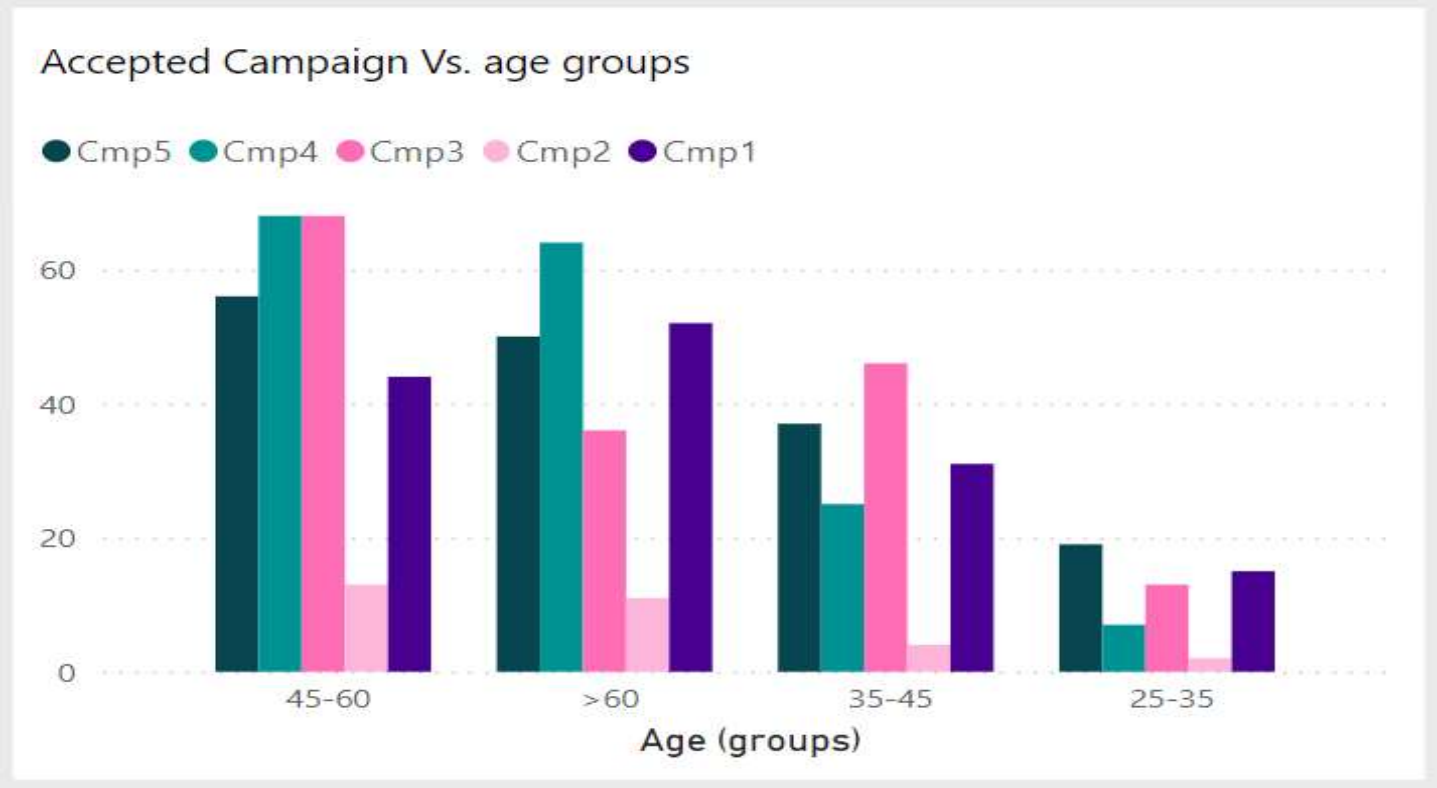
- In this chart, I have found that Spending seems to be positively correlated with the income level.



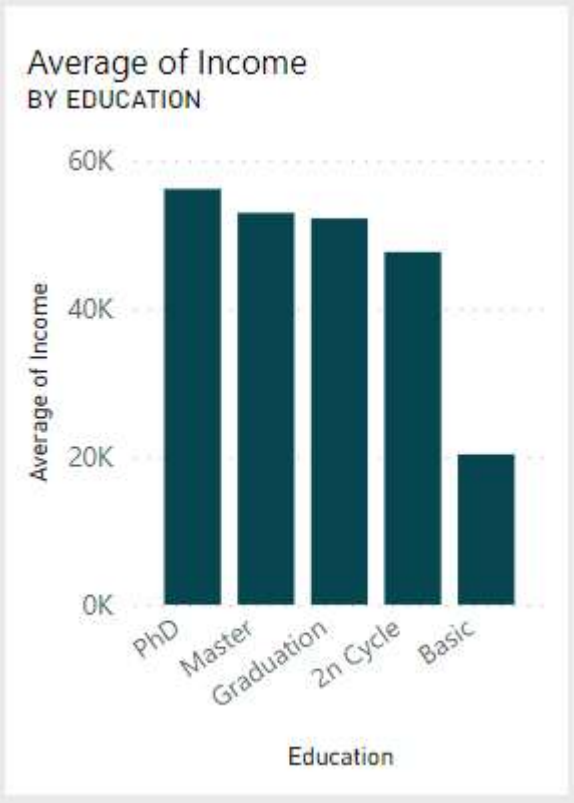
- In this chart, I have found that income varies from age group to another.



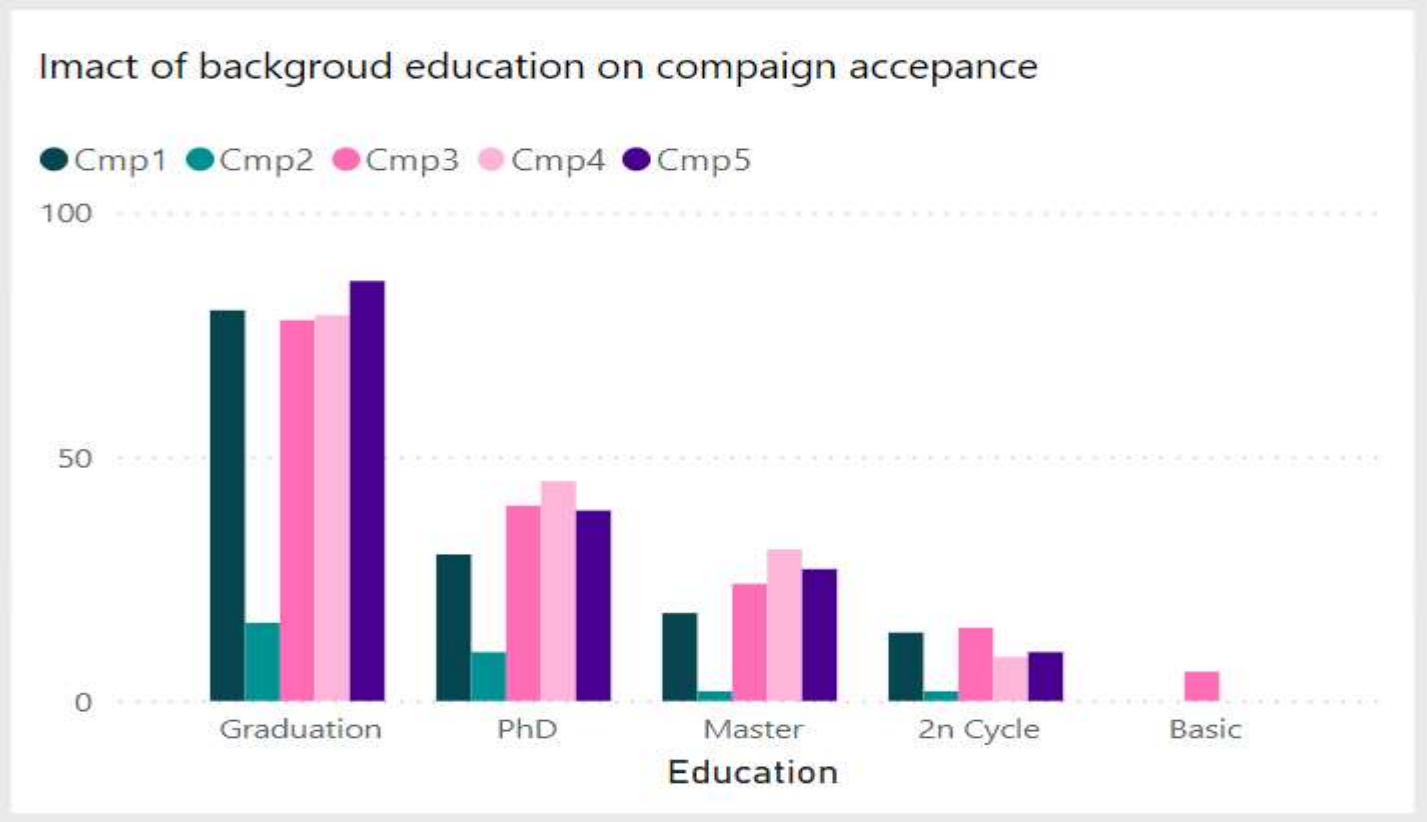
- In this chart, I have found that the 2nd campaign is the worst for all of each age group.



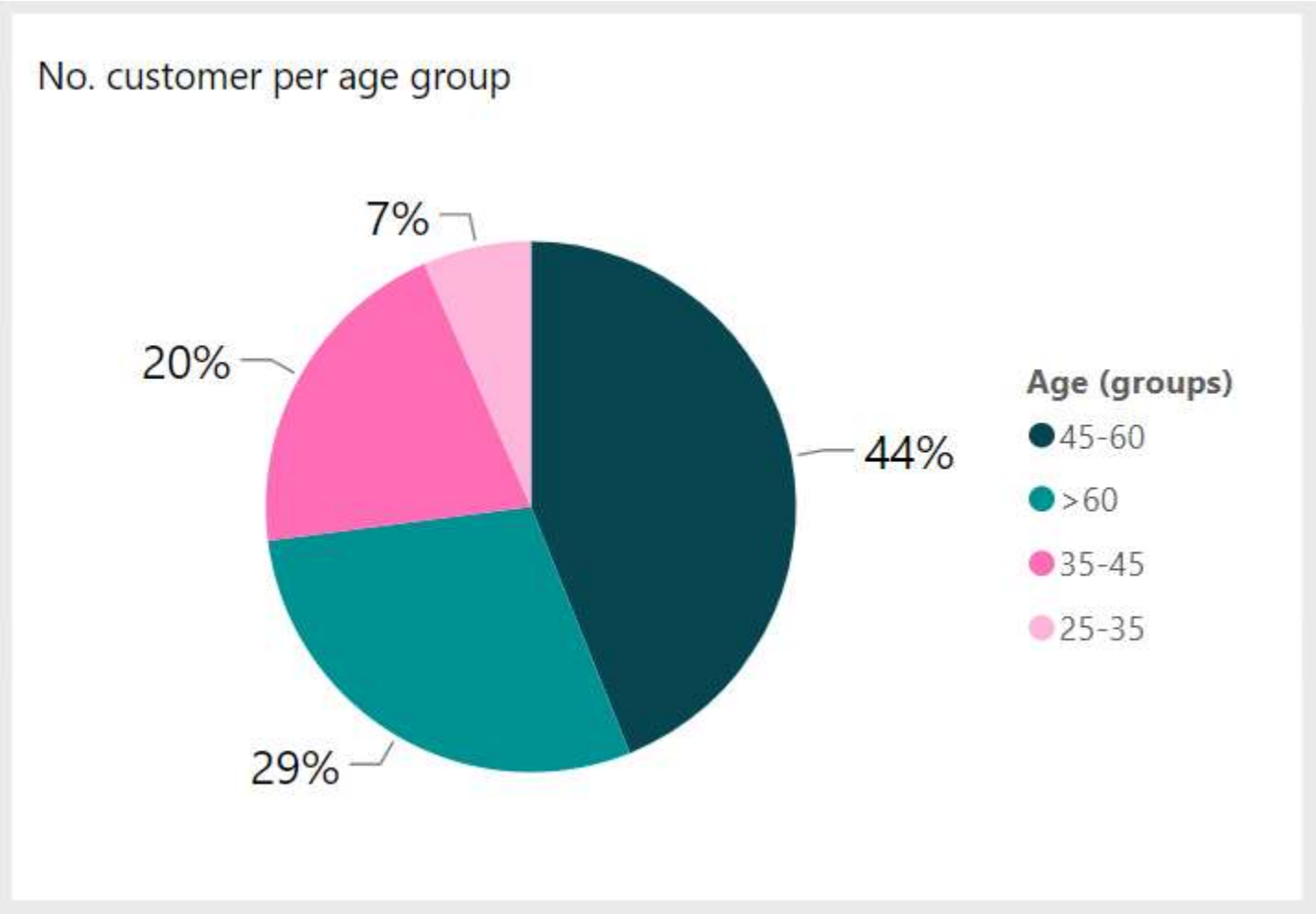
- In this chart, the better the diploma is, the higher the average salary.



- In this chart, I have also found that the 2nd campaign is the worst for all of each education.



- This chart refers to the distribution of our customers per age group.



Data preparation

Summary

Before data can be analyzed they must be organized into an appropriate form. Data preparation is the process of manipulating and organizing data prior to analysis. The whole preparation process consists of a series of major activities (or tasks) including data profiling, cleansing, integration and transformation.

Overview of Market Campaign Dataset

Column Name	Description
X.ID	Dummy Customer ID
Year_Birth	Customer's Year of Birth
Education	Customer's level of education
Marital_Status	Customer's Marital Status
Income	Customer's Yearly Household Income
Kidhome	# of Small Children in Customer's Household
Teenhome	# of Teenagers in Customer's Household
Dt_Customer	Date of Customer's Enrolment with the Company
Recency	# of Days Since the Last Purchase
MntWines	amount spent on wine products in the last 2 years
MntFruits	amount spent on fruits products in the last 2 years
MntMeatProducts	amount spent on meat products in the last 2 years
MntFishProducts	amount spent on fish products in the last 2 years
MntSweetProducts	amount spent on sweet products in the last 2 years
MntGoldProds	amount spent on gold products in the last 2 years
NumDealsPurchases	# of Purchases Made with Discount
NumWebPurchases	# of Purchases Made through Company's Web Site
NumCatalogPurchases	# of Purchases Made using Catalogue
NumStorePurchases	# of Purchases Made using Catalogue
NumWebVisitsMonth	# of Visits to Company's Web Site in the Last Month
AcceptedCmp3	1 if customer accepted the offer in the 3rd campaign, 0 otherwise
AcceptedCmp4	1 if customer accepted the offer in the 4th campaign, 0 otherwise
AcceptedCmp5	1 if customer accepted the offer in the 5th campaign, 0 otherwise
AcceptedCmp1	1 if customer accepted the offer in the 1st campaign, 0 otherwise
AcceptedCmp2	1 if customer accepted the offer in the 2nd campaign, 0 otherwise
Complain	1 if customer complained in the last 2 years
Z_CostContact	Cost to contact a customer
Z_Revenue	Revenue after client accepting campaign
Response	1 if customer accepted the offer in the last campaign, 0 otherwise

- **I have used Microsoft Excel and Power Query editor in data cleaning and preprocessing.**

Steps of cleaning and data preparation

- We have **missing values** for the ***Income*** variable (24 rows). So, we 'll remove these records.
- We don't need these columns (***X.ID, Recency, Complain, dt_cutomer***). So, we 'll remove these columns.
- We will rename ***Accepted_cmp#*** column's' name to ***cmp#*** for ease.
- We will create several variables:
  - Variable ***Age*** in replacement of the variable ***Year_birth.***
  - Variable ***Amount_spent*** as the sum of the amount spent on the 6 product categories.
  - Variable ***Marital_Status*** to group the different marital status in only 2 comprehensive categories: In "couple" and "Alone"
  - Variable ***HaveChild*** as a binary variable equal to Yes if the customer has 1 child or more.
  - Variable ***NumPurchases*** as the sum of the number of purchases on the 5 purchases categories.
- We have **outliers' values:**
  - ***Age***: 3 customers older than 120, so will be set to 53 years old (average age).
  - ***Income***: Several values are greater than the Upper Fence of 113K. While having an income of 150k is not impossible, we will remove the customer who has an income of 666k (Moreover, this observation is defined as an extreme outlier based on our definition stated previously)
  - ***Amount_spent***: There is only one outlier which is at the limit of the Upper Fence. We will not remove it.

Overview of our Dataset after data preparation

Column Name	Description
Age	Customer's age
Education	Customer's level of education
Marital_Status	Customer's Marital Status
Income	Customer's Yearly Household Income
HaveChild	Yes, if customer has 1 child or more.
Amount_spent	amount spent on all products in the last 2 years
NumPurchases	# of total Purchases
Cmp3	1 if customer accepted the offer in the 3rd campaign, 0 otherwise
Cmp4	1 if customer accepted the offer in the 4th campaign, 0 otherwise
Cmp5	1 if customer accepted the offer in the 5th campaign, 0 otherwise
Cmp1	1 if customer accepted the offer in the 1st campaign, 0 otherwise
Cmp2	1 if customer accepted the offer in the 2nd campaign, 0 otherwise
CostToContact	Cost to contact a customer
Revenue	Revenue after client accepting campaign
Response	Yes, if customer accepted the offer in the last campaign, no otherwise

Age	Education	Marital_Status	Income	HaveChild	Amount_spent	NumPurchases	Cmp3	Cmp4	Cmp5	Cmp1	Cmp2	CostToContact	Revenue	Response
46	PhD	Couple	$162,397.00	Yes	$107.00	2	0	0	0	0	0	3	11	No
40	PhD	Couple	$160,803.00	No	$1,717.00	44	0	0	0	0	0	3	11	No
51	Master	Couple	$157,733.00	Yes	$59.00	3	0	0	0	0	0	3	11	No
49	PhD	Couple	$157,243.00	Yes	$1,608.00	37	0	0	0	0	0	3	11	No
45	Graduation	Couple	$157,146.00	No	$1,730.00	29	0	0	0	0	0	3	11	No
73	PhD	Couple	$156,924.00	No	$8.00	0	0	0	0	0	0	3	11	No