#### Mini Project

# Hypothesis Testing on Customer Personality Analysis Dataset

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Hi, I'm Rena, an Actuarial Science student passionate about data science. Over the past two years of college, I've worked on projects involving statistics, modeling, visualization, and predictive analytics, with hands-on experience in Python. I'm passionate about using data to drive smarter decisions.

### About Dataset

#### **Customer Personality Analysis**

- Analyze the customer segments to identify their behaviors, preferences, and purchasing patterns, enabling businesses to optimize marketing strategies and product offerings.
- From Kaggle (link dataset)
- 2240 records and 29 features

## Features

Features	Description
ID	Customer's unique identifier
Year_Birth	Customer's birth year
Education	Customer's education level

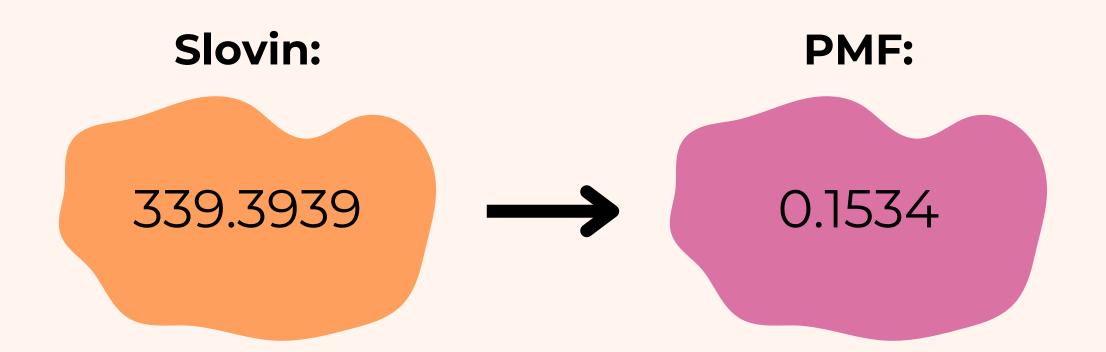
Features	Description
Marital_Status	Marital Status of customer
Income	Customer's yearly household income
Kidhome	Number of children in customer's household
Teenhome	Number of teenagers in customer's household
Dt_Customer	Date of customer's enrollment with the company
Recency	Number of days since customer's last purchase

Features	Description
MntWines	Amount spent on wine in last 2 years
MntFruits	Amount spent on fruits in last 2 years
MntMeatProducts	Amount spent on meat in last 2 years
MntFishProducts	Amount spent on fish in last 2 years
MntSweetProducts	Amount spent on sweets in last 2 years
MntGoldProds	Amount spent on gold in last 2 years

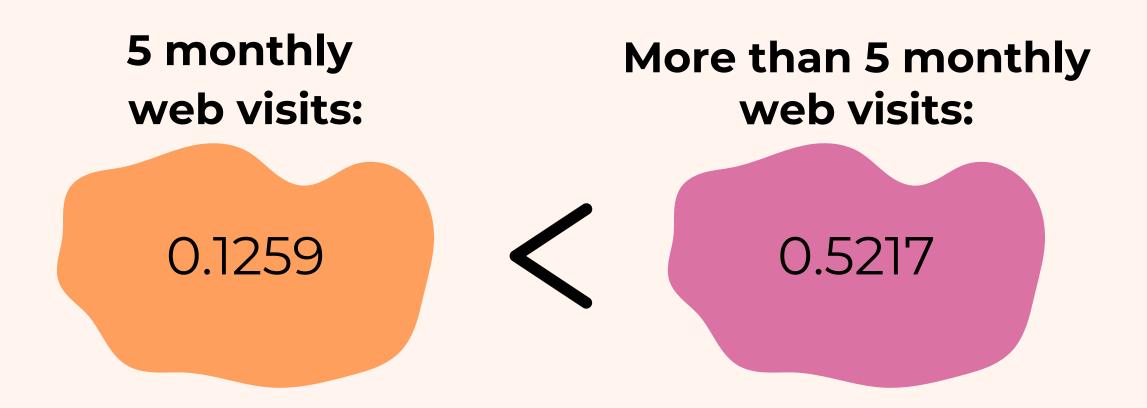
Features	Description
NumDealsPurchases	Number of purchases made with a discount
NumWebPurchases	Number of purchases made through the company's website
NumCatalogPurchases	Number of purchases made using a catalogue
NumStorePurchases	Number of purchases made directly in stores
NumWebVisitsMonth	Number of visits to company's website in the last month
AcceptedCmp3	1 if customer accepted the offer in the 3rd campaign, 0 otherwise

Features	Description
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 the customer complained in the last 2 years, 0 otherwise
Response	1 if customer accepted the offer in the last campaign, 0 otherwise

#### Probability mass function of NumWebVisitsMonth



Comparison of the probability mass function of a customer having 5 monthly web visits with a customer having more than 5 visits



## Hypothesis testing to prove whether education has an effect on income or not

#### **Anova test:**

Statistic: Pvalue:

27.7392

1.6677x10<sup>-22</sup>

Because the p-value > 0.5, therefore education has an effect on income.

## Thank you

- Notebook Google Colab
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