First Stage:

* Use a synthetic dataset to simulate persons in a city as they age, and their spend behavior and their major life events such as going to university, marrying, having kids, buying house, getting promotions, buying life insurance, and random events that would cause death or revenue loss.
* Each year would cause each person to have updates in their lives or not based on probabilities.
* Because those events, they might be more inclined to buy insurance.
* Whenever a person reaches one of those events a chance of them buying insurance increases or decreases
* Create a unique measure of risk to evaluate if they are going to buy or not insurance.
* Another mechanism will be created to send emails to them randomly, and we would assume that a normal campaign would have X% of open ratio, and Y% out of the X that opened would engage with the website
* Z% would be the ones that opened, engaged and bought insurance
* There would be persons that would buy insurance regardless of the campaign.

Second Stage:

* Use synthetic data to create customer segmentation models that will be targeted by campaigns

We will create a game in Python.

The game will simulate the life of a person.

Each person will be a python class.

We will store their age, gender, income, bank balance, fixed bills.

We player will live to 65 years and then, each year there will be a chance of dying.

Each year that goes by after 65 year the chances increases.

Historic data and their live events should be stored as a data frame

It will start with 100 players. 50 Men and 50 Woman.

Each player starts with 0 balance in their account.

They will be randomly assigned to 3 career paths, Base Level, Medium Level, High Level.

The initial probability for this will be 10% for High Level, 20% for Medium and 70% for High Level.

The first players will be 18 years old.

There will be random event each year for each person.

If they belong to high level class, they will be paying 6 thousand per year CASH which is their currency. They will study for 5 years.

If they belong to Medium level class, they will be paying 3 thousand per year CASH which is their currency. They will study for 3 years.

If they belong to high level class, they will be paying 6000 CASH per year which is their currency. They will study for 5 years.

If they belong to Medium level class, they will be paying 3000 CASH per year which is their currency. They will study for 3 years.

If they belong to Base level class, they will be paying 1000 CASH per year which is their currency. They will study for 2 years.

Living costs will them during the study period will be a randomly assigned and the values will be around 20000 and 30000.

Each person will be eligible to a student loan. The loan rates will be 2 % per year.

After Graduate, they can get jobs that will provide

Generate a dataset with fake customers and Canadian postal codes, with ages between 18 – 65, and their sex (male or female), and married status, and an unique id, and birth date. Birth date will be calculated using their age and current date. People with age between 18 and 24 have annual income between 30 thousand per year or 45 thousand. All others can have annual income between 45 to 200 thousand. Annual Income usually increases with age, so older people will have more income.

Generate a second dataset with insurance and bank products, insurance term 10 years, insurance term 20 years, and insurance whole life, house mortgage and personal loans. Insurance values for term are 1000 for 10 year term, 2000 for 2000 term and 3000 per year. Loans could be a 1 year, 5 years or 10 years, mortgage are only provided to people with ages 24 and above and last 20 or 25 years.

Generate a third dataset for each customer in the first dataset. Each customer has a 30% of chance of having one insurance product, but they cannot have more than one insurance product. Each customer that do not have a insurance has 25% of having a loan, 40% of having a mortgage. 5% of the customers can have insurance and mortgage and 10% of the customer can have insurance and loan, 5% percent can have loans and mortgages but no insurance.

Loan cannot exceed 10% of their annual income. Insurance cannot exceed 2% of their annual income,

Mortgage yearly value cannot exceed 20% of their income.