# Prediction of Insurance Charges

**Source of the data:**
Prediction of Insurance Charges
https://www.kaggle.com/datasets/thedevastator/prediction-of-insurance-charges-using-age-gender

**About the dataset:**
This data has been gathered from a variety of sources and contains information such as age, sex, region, smoking status, number of children, and BMI values for each customer.

| Variable | Description |
|---|---|
| Age | The age of the customer. (Integer) |
| Children | The number of children the customer has. (Integer) |
| Sex | The gender of the customer. (Character) |
| Smoker | Whether or not the customer is a smoker. (Character) |
| Region | The region the customer lives in. (Character) |
| Charges (Response Variable) | The insurance charges for the customer. (Double) |
| BMI | The BMI of the customer. (Double) |

Age is expectedly one of the most important variables as younger customers are far less likely than an older person to suffer serious health issues, thus bearing lesser insurance charges. Similarly, sex is also potentially influential as traditionally gender roles have dictated premiums with men paying more than women for the same coverage on many policies. Lastly, BMI and smoker status should also be taken into account when making any predictions regarding insurance costs due to health risk factors associated with obesity and smoking being considered by premium pricing decisions made by insurers.

**Research Question/Motivation:**
People's lives are centered around their health and happiness. However, because it's impossible to avoid all risks, the financial industry has developed various products to protect individuals and organizations from these risks using financial resources. One such product is insurance, which aims to reduce or eliminate the expenses associated with different types of risks. The cost of insurance charges varies from person to person since various factors influence the cost of an insurance plan.

Through this project, we are aiming to understand the combined influence of smoking behavior with body mass index (BMI) and age on insurance charges. By investigating these interaction effects, we can gain insights into how lifestyle choices and health-related attributes interact to determine insurance charges.

**Question: How do age and various health-related factors interact to determine insurance charges?**