

Define Problem / Problem Understanding

Specify the Business Problem

The healthcare industry faces the challenge of accurately estimating and predicting hospitalization and medical care costs for patients. This makes it difficult for healthcare providers and policymakers to plan and allocate resources effectively. Without a comprehensive understanding of healthcare expenditure, it can be difficult to provide cost-effective care to patients and ensure the sustainability of healthcare systems.

Medical costs are one of the most common recurring expenses in a person's life. Based on different research studies, BMI, ageing, smoking, and other factors are all related to greater personal medical care costs. The estimates of the expenditures of health care related to obesity are needed to help create cost-effective obesity prevention strategies. Obesity prevention at a young age is a top concern in global health, clinical practice, and public health.

Business Requirements

The solution requires a reliable and secure data collection system that can gather data from various sources such as electronic health records and medical claims. The system should also be able to preprocess and analyze the data using machine learning algorithms to identify key factors that affect healthcare costs. The solution should include a web application that can estimate and predict healthcare costs based on input parameters such as patient demographics and medical history. The application should also incorporate visualization tools for exploring healthcare expenditure trends and identifying cost-saving measures.

- Data collection: The first requirement is to collect data from Kaggle which is relevant to medical care costs
- Data cleaning and preparation: The collected data must be cleaned and processed to ensure it is suitable for analysis. This may involve removing irrelevant information, correcting inconsistencies and missing values, and transforming the data into a format that is compatible with the analysis tools.
- Data analysis: The data must be analysed to uncover meaningful insights into the medical care cost market. This could involve using techniques such as descriptive statistics, regression analysis, and data visualization to gain a deeper understanding of the data.
- Report creation: The insights and findings from the data analysis must be presented in a comprehensive report that includes visualizations and data tables. The report must be well organized and easy to understand, with clear and concise explanations of the results

Literature Survey

The literature survey shows that many studies have been conducted to estimate and predict healthcare costs using various machine learning techniques such as decision trees, neural networks, and regression analysis. However, these studies often focus on specific populations or healthcare systems, making it difficult to generalize the findings. There is a need for a comprehensive and scalable solution that can estimate and predict healthcare costs for a wide range of populations and healthcare systems.

The prevalence of obesity, which is defined as a body mass index (BMI) greater than 30, has increased dramatically in the United States since the late 1990s. So much so that recently obesity has been officially recognized as a disease by the American Medical Association, an action that could put more emphasis on the health condition by doctors and insurance companies to minimize its adverse effects. Currently, rates of obesity exceed 30% in most sex and adult age groups, whereas its prevalence among children and adolescents, defined as a BMI of more than the 95th percentile, has reached 17%.

The alarming rates of the high prevalence of obesity have posed a significant public health concern as well as a substantial financial burden on our society because obesity is known to be a risk factor for many chronic diseases, such as type 2 diabetes, cancer, hypertension, asthma, myocardial infarction, stroke, and other conditions. To understand the economic burden of obesity, several studies have attempted to estimate the attributable costs of obesity, following the burden-of-illness literature on other disease areas. A previous cost-of-illness study estimated that healthcare spending attributable to the rising prevalence of obesity has increased by 27% between 1987 and 2001.

Social or Business Impact

The solution can have a significant social and business impact by enabling healthcare providers and policymakers to make informed decisions and improve resource allocation. The accurate estimation and prediction of healthcare costs can help reduce costs for patients and improve the quality of care they receive, leading to greater customer satisfaction and improved health outcomes. The solution can also improve the sustainability of healthcare systems by identifying cost-saving measures and ensuring that resources are allocated efficiently. Additionally, the solution can create new business opportunities by offering data analytics and consulting services to healthcare providers and insurers.

Social Impact: Customers can make more informed decisions about their travel plans and compare prices and services more easily. Increased Accessibility and improved customer experience

Business Model/Impact: Competitive Advantage, Innovation and Improved Business strategy can be achieved by analysing