



Bfsi

FRaud Detection

Health Insurance



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**Health Insurances: Why?**

In a recent [article](https://www.microsoft.com/en-us/iegallery?rtc=1) of World Health Organisation they stated certain facts which must be given importance so that we can understand the need of Health Insurances. They stated that by 2025, 8% of all deaths will be in the under-5s, 3% among 5-19 year-olds, 27% among 20-64 year-olds and 63% among the over-65s and also provided the leading causes of these global deaths in 1997 are follows:

|  |  |
| --- | --- |
| **Cause** | **Deaths(in Millions)** |
| Infectious and parasitic diseases | 17.3 |
| Circulatory diseases | 15.3 |
| Cancer | 6.2 |
| Respiratory diseases(chronic obstructive pulmonary disease) | 2.9 |
| Perinatal conditions | 3.6 |
| Respiratory infections | 3.7 |
| Tuberculosis | 2.9 |
| Diarrhoea | 2.5 |
| Hiv/aids | 2.3 |
| Malaria | 1.5-2.7 |
| Coronary heart disease | 7.2 |
| Cerebrovascular disease | 4.6 |

Now several more disease could be added into the list and this shows that we will require a good medical service to survive. But Medical Service costs are constantly increasing and with the ever rising instances of diseases, Health insurance today is a necessity.

Health insurance provides people with a much needed financial backup at times of medical emergencies, but it is an observed fact that till date, medical care in our country still remains largely as an expensive affair. According to various reports, India still continues to have the lowest health insurance penetration in the world. However, government's focus towards health schemes, new initiatives like, Ayushman Bharat Yojana, and capital expenditure towards healthcare may ameliorate the situation.

**Scope of the Project**

In an Outlook [article](https://www.outlookindia.com/outlookmoney/insurance/frauds-in-insurance-sector-3706) it was stated as “*India is a huge market for insurance but the industry is bleeding losses due to fraud. Insurance fraud leads to around Rs 40,000 crore every year and makes up for 8.5 per cent of the revenue that the industry generates*”

Being such a necessity, Health Insurance Firms are still facing losses due to these frauds which cause firms to increase the premiums and lower the profits for the customer which will lead to create tension in the industry. In this particular case study.

Now let’s understand what these frauds are:

IRDAI classified insurance frauds into:

**a)   *Policyholder Fraud and/or Claims Fraud*** - Fraud against the insurer in the purchase and/or execution of an insurance product, including fraud at the time of making a claim.

**b) *Intermediary Fraud*** - Fraud perpetuated by an insurance agent/Corporate Agent/intermediary/Third Party Administrators (TPAs) against the insurer and/or policyholders.

**c)   *Internal Fraud*** – Fraud/ mis-appropriation against the insurer by its Director, Manager and/or any other officer or staff member (by whatever name called).

And there are several possible ways to detect the frauds to save the firm from losses and that would be the **scope of the project to detect the Frauds in a Health Insurance Firm** on these three measures and also optimise the process of Health Insurance Fraud Detection by eliminating loopholes in the process.

**Objective of the Project:**

Some of the most common methods implemented by insurers to tackle the menace are:

● Investigation and cross checks of documents to detect the fraud.

● Knowing the potential of fraud: can help minimise the loss

● Use of data analytics to detect fraud

● Running through special investigation of every doubtful claim

● Allocating private investigators

All of the above process could be time taking and might require lots of resources and expenses but here our objective will be using Data Science and Machine Learning to detect Frauds which will apply Statistical Inferences to the Data and will lead us detect pattern for the fraud claims made and also providing an easy user interface for making it accessible to every person and it won’t require technical knowledge and with a simple form entry, our app would be able to tell that the provided case is fraud or no. Also while studying the project we will we rectifying the loopholes and diving deep as much as we can to diminish the losses and no. of fraud cases.

**Dataset Used:-** Kaggle data . Link :- <https://www.kaggle.com/rohitrox/healthcare-provider-fraud-detection-analysis>

**Final Outcome :-** We find out two type of fraud :-

1. Fraud Agent
2. Fraud Claim

We got 96 % accuracy for fraud agents and 67% accuracy for fraud claim.

We created a webapp. Link :- <https://hifd.herokuapp.com/>

**Team members and Their contribution**

Dev Gupta :-

1. Perform Exploratory analysis on fraud claim and helped to archive accuracy of 96% in data.

2. Apply different visualization technique on different data set like count beneficiary on different state.

3. Library used for visualization is seaborn, matplotlib.

Saurabh Verma :-

1. Analysed the fraud detection on the behalf of every case with an accuracy of 67%.

2. Helped deployment app using streamlit and python.

3. Hosted the final application on heroku using github.