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Power Ahead

Capstone Presentation

Healthcare Project

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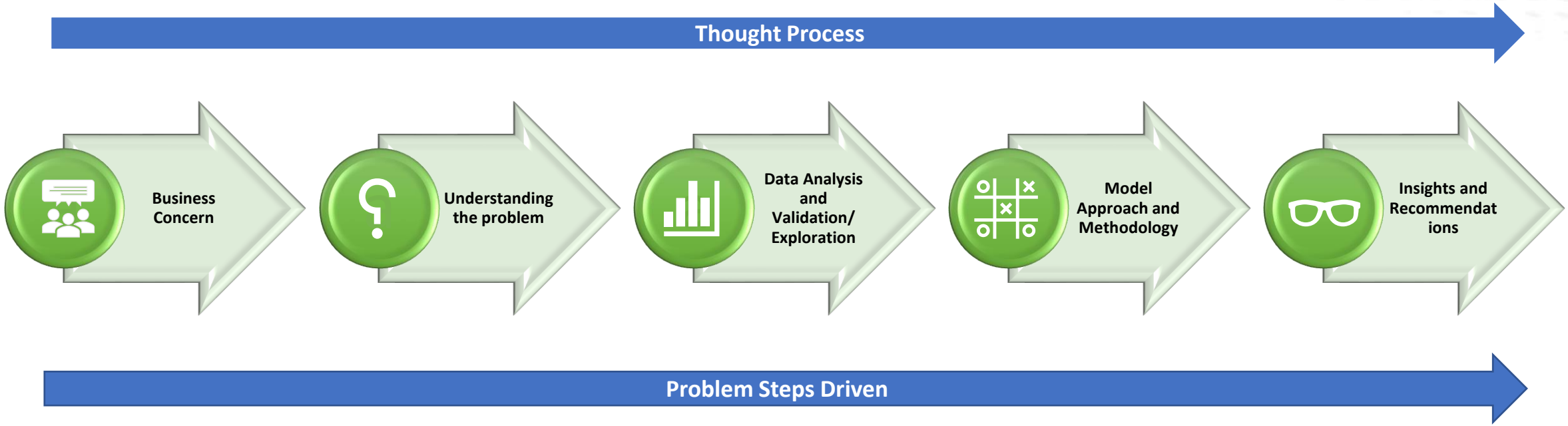
Roadmap of the Presentation



Business Problem Understanding

Business Problem → Money plays a major role in this domain, because sometime treatment becomes super costly and if any individual is not covered under the insurance, then it will become a tough financial situation for that individual. The companies in the medical insurance also want to reduce their risk by optimizing the insurance cost, because we all know a healthy body is in the hand of the individual only. If individual eat healthy and do proper exercise the chance of getting ill is drastically reduced.

Objective → To build a model, using data that provide the optimum insurance cost for an individual.

Tools used→ Python & Tableau

Data Preparation

Step 1: Data Extraction

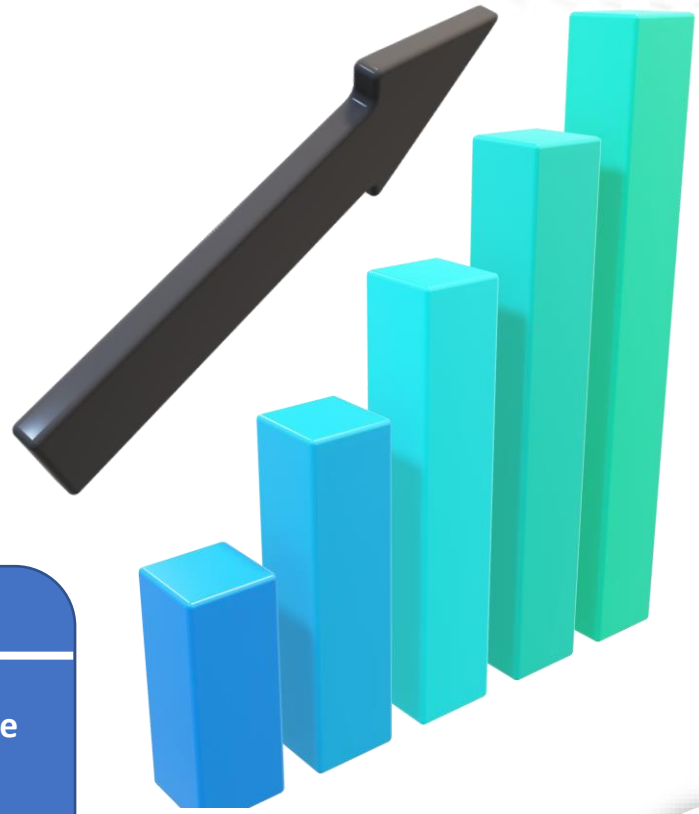
- Extracting data with 25000 entries from CSV file using Pandas library.

Step 2: Data Cleaning

- Missing values analysis and Treatment.
- Handling Outliers
- Change Columns names to make reading easier.

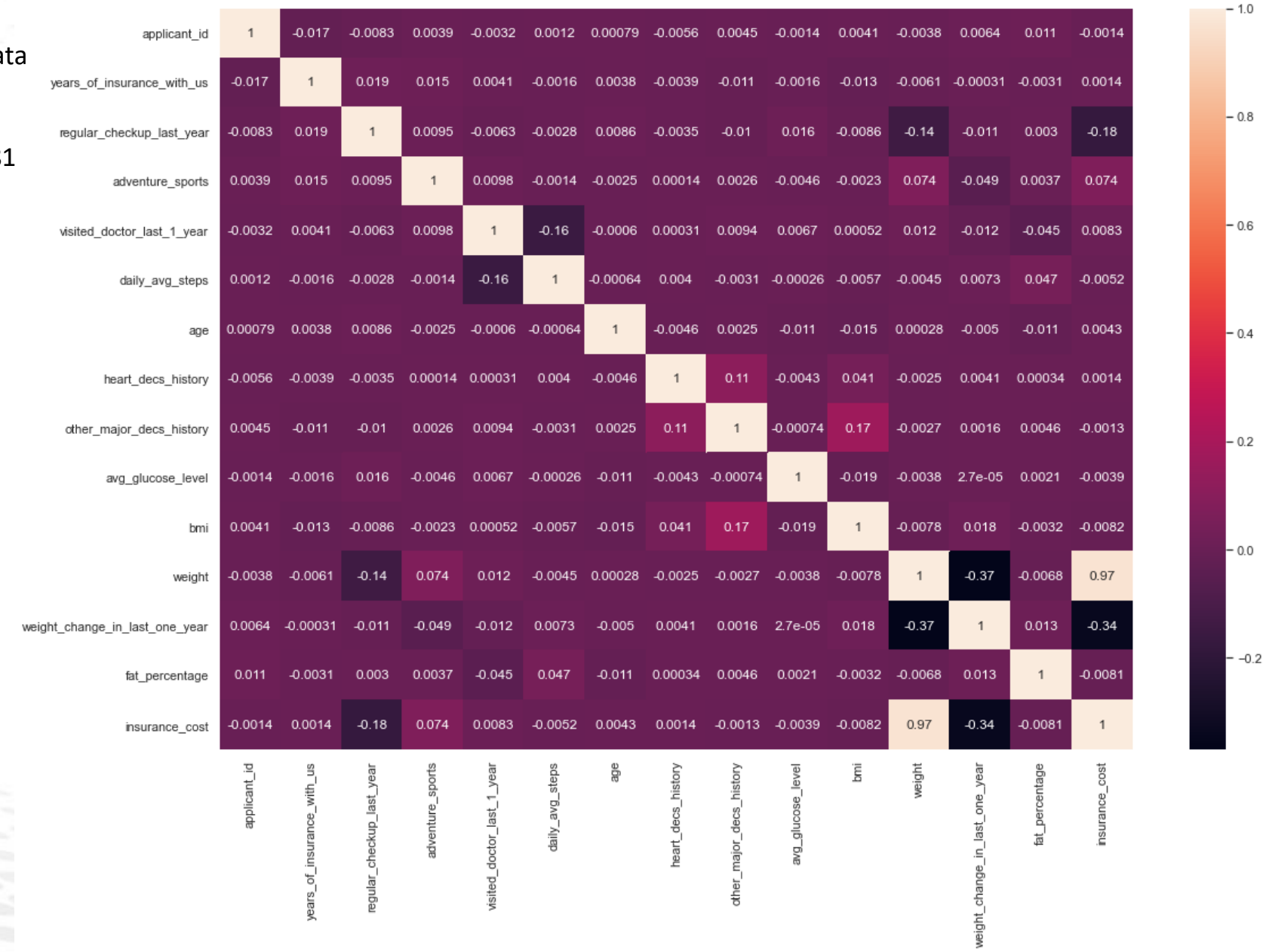
Step 3: Feature Engineering

- Transforming raw data into features that can be used in supervised learning



Brief Summary of Data

- 25000 Rows & 24 Columns.
- 8 Object, 2 Float & 14 Int data types.
- Missing values: bmi – 990, Year_last_admitted – 11,881



Model Approached

Linear regression model, ANN, Decision Tree and Random Forest model is created using Scikit and stats model packages. Output from Stats Model and using comparison tables is as follows.
Values for RMSE models is extreme high, we cannot consider, we will try to perform model tuning see the results and interpret the best model to optimize the insurance cost per individual. Values for R-square models are good score. We can see and compare their scores to interpret the business model. For now, lets do the grid search for each model and find the best parameters to identify the accurate model.

	Train RMSE	Test RMSE	Training Score	Test Score
Linear Regression	3375.862926	3339.684420	0.944401	0.945956
Decision Tree Regressor	0.000000	4356.047598	1.000000	0.908056
Random Forest Regressor	1166.608857	3092.671229	0.993360	0.953655
ANN Regressor	3009.981169	3093.412815	0.955800	0.953632

Insights from Analysis

- From the observations, we can say that we can add the variable or parameter named as premium can be added as adding up there average expenses or their income from the occupation depends on location as well.
- As there are more than 50 % missing values in year last admitted parameter, it will highly impact the accuracy score, we dropped the columns.
- As per the model approach, Random Forest has good accuracy score and R value.

Recommendations

- They must introduce the Skills upgrading scheme which may help individual to organize their day-to- day activities in a structured way. Such as it should include managerial, administrative, technical and social skills.
- Managerial skills – to manage the entire program
- Administrative skills – to manage finances and the funds
- Technical skills – to understand the complexities of health insurance
- Social skills – to understand the community's needs To optimize the best insurance cost per individual they must execute the 15 to 30 days routine check-up by organizing medical camps and awareness program.
- There must be a network of health care providers (public or private). Without this, it is not wise to talk about health insurance.
- The people must have the capacity to pay the premium. Unless there will be no takes for health insurance.
- There are many more recommendations which needs to be fulfilled but at least you should focus on executing the three recommendations to introduce the healthcare insurance programme.

Thankyou