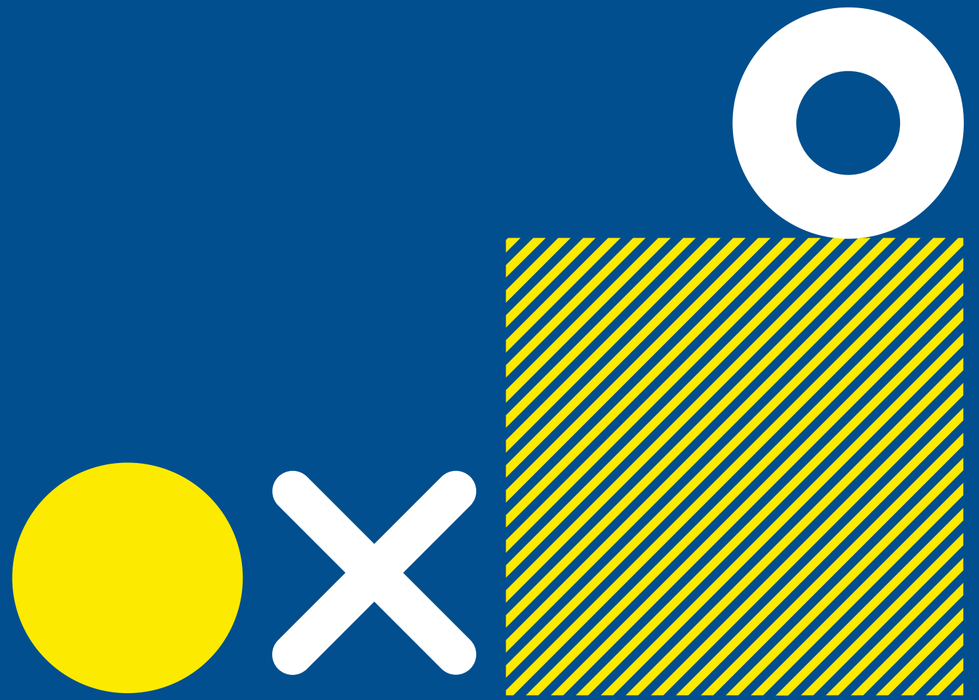
DATA JAGO

ur' Data Solution Partner

We Are Independent Consultant Data Analyst & Scientist for Business

How characteristics & promotion can boost Growth the Vehicle Insurance



Agenda

- Background & Objectives
- Data Pre - Processing
- Data Insights
- Modelling
- Summary & Recommendation

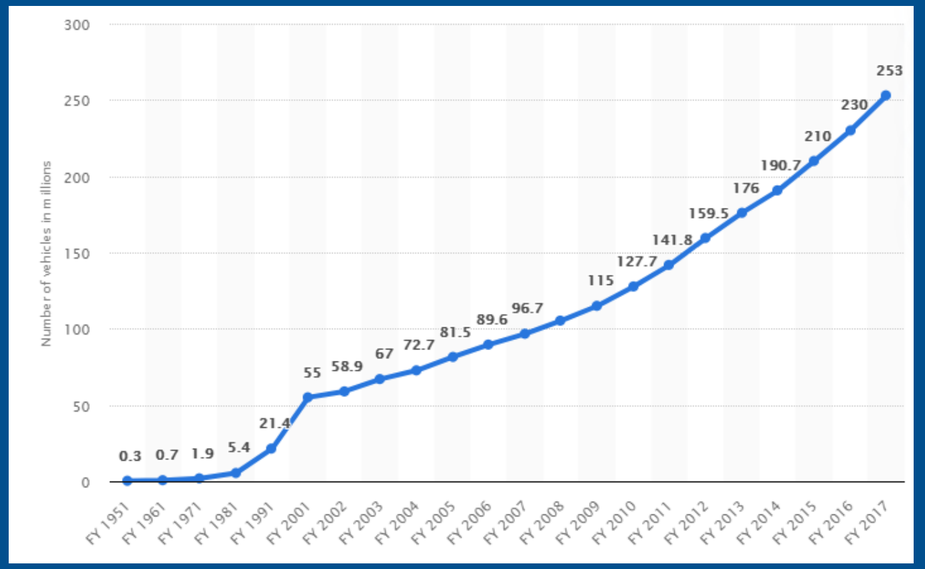
Background

Our client is an Insurance company that has provided Health Insurance

Our Client order to Need help building a Models to Predict the policyholders (customers) from past year will also be interested in Vehicle Insurance provided by the company

Needed a criteria to be used as a benchmark for target potential customers to become the focus of the company in increasing product sales.

Background in India

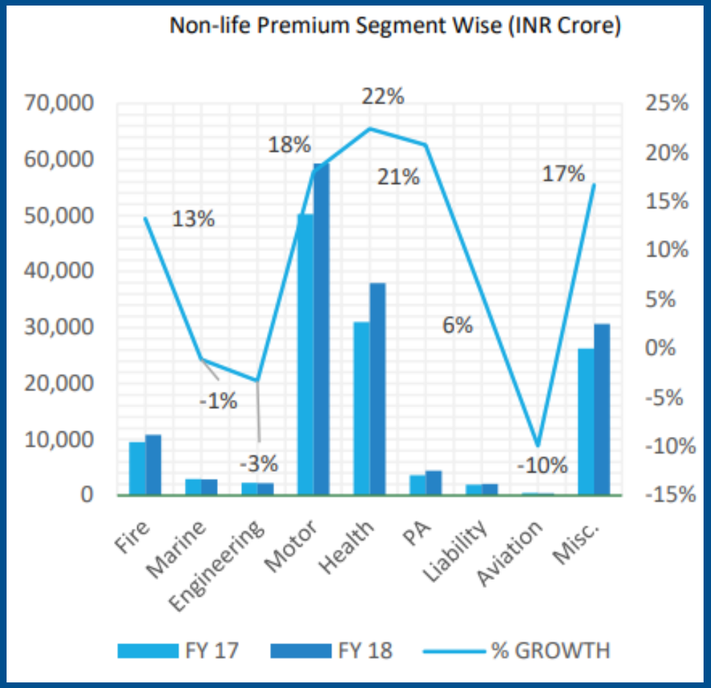


In a country with the third largest road network in the world, the total number of vehicles in fiscal year 2017 stood at 253 million

Source:
Number of operating vehicles India FY 1951-2017.
Statista.com

India Annual GDP Yr 2019
Rs. 498,606 = Rp. 95.56 Million

Source:
GDP/ Capita - India.
data.worldbank.org



Vehicle / Motor Insurance segments stands tall with premium of Rs 59.31 Billion that Premium has greater than the Health Insurance during 2017- 2018 with registering a growth rate increase 18%.

Source:
The Indian Insurance Report Industry: 2018
Indianinsure.com

Background Factor in India

Car In India

From 190 million vehicles are registered in India of which only around 82.6 million are insured (Detik.com)

https://oto.detik.com/berita/d-3408271/angka-kecelakaan-tinggi-60-kendaraan-di-india-tidak-diasuransi

Law In India

According to the Motor Vehicles Act 1988, it is compulsory for all the automobiles plying on Indian roads to have a third party insurance coverage. Defaulters will gave to pay a fine of Rs 1.000 or face 3 months imprisonment. (www.policybazaar.com)

https://www.policybazaar.com/motor-insurance/two-wheeler-insurance/articles/60-percent-of-vehicles-in-india-not-insured/

A blessing in disguise

We can see that as an opportunity

Target

Potential Customer

Define the Criteria and Benchmarking to know the Potential Customer

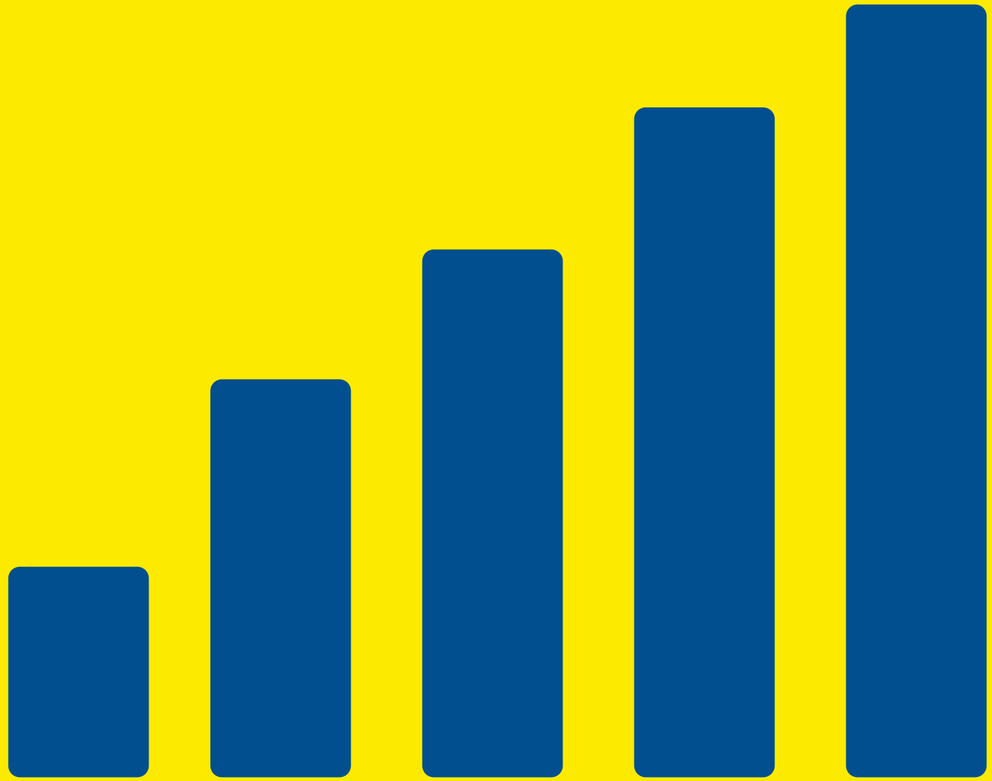
Growth User Rate

Increase the Growth of Insurance Users up to 50%

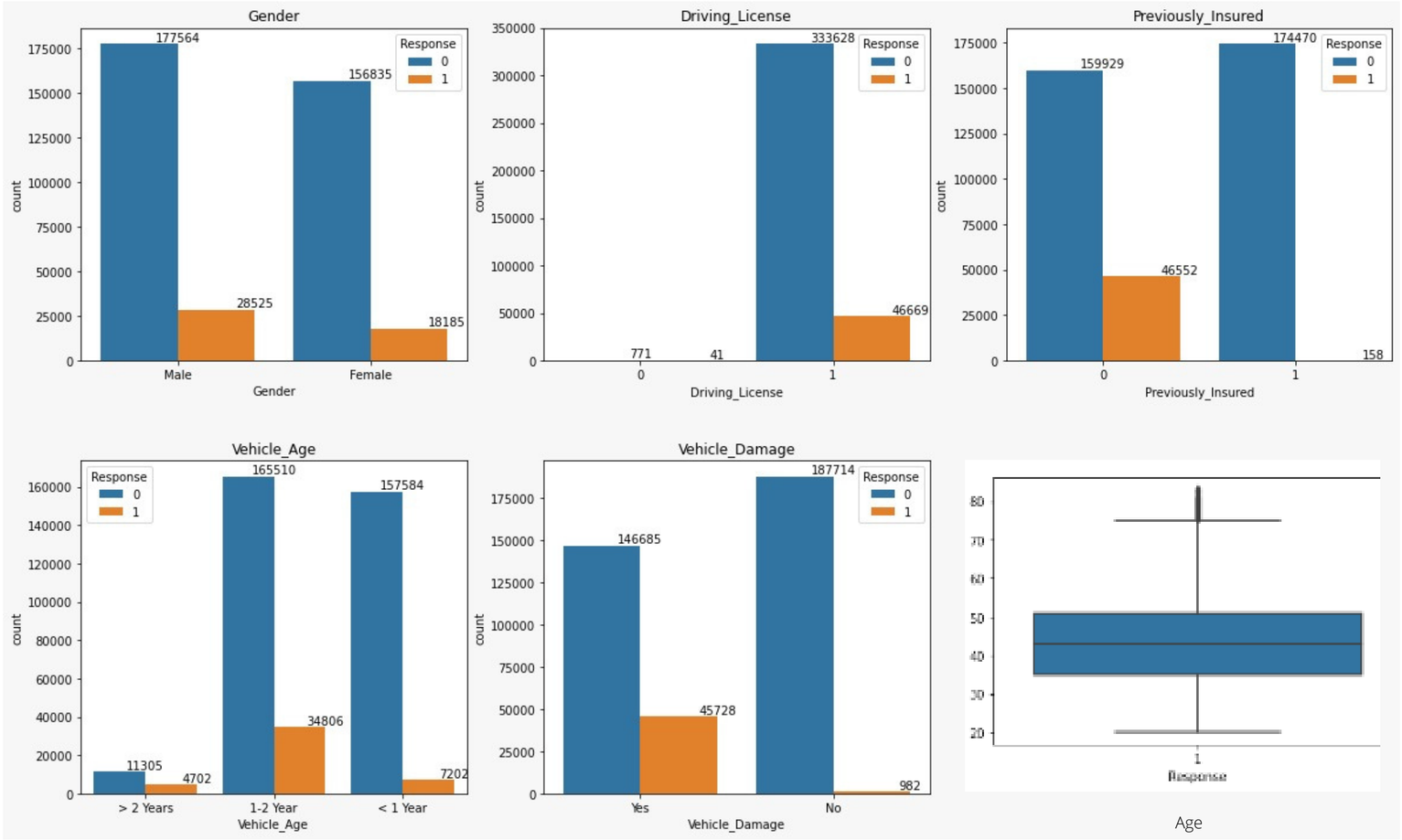
Premium Growth

Increase Annual Premium up to 70%

Then, how to reach our target?



First, knowing characteristic our users



1

Gender

Insurance Customers has dominated by Male

2

Driving License

Majority Insurance Customer have Driving License

3

Previously Insured

54% of customers do not have vehicle insurance, in amount 206.481 customers

4

Vehicle Age

95% of customers own a vehicle aged 0-2 years. in amount 365,102

5

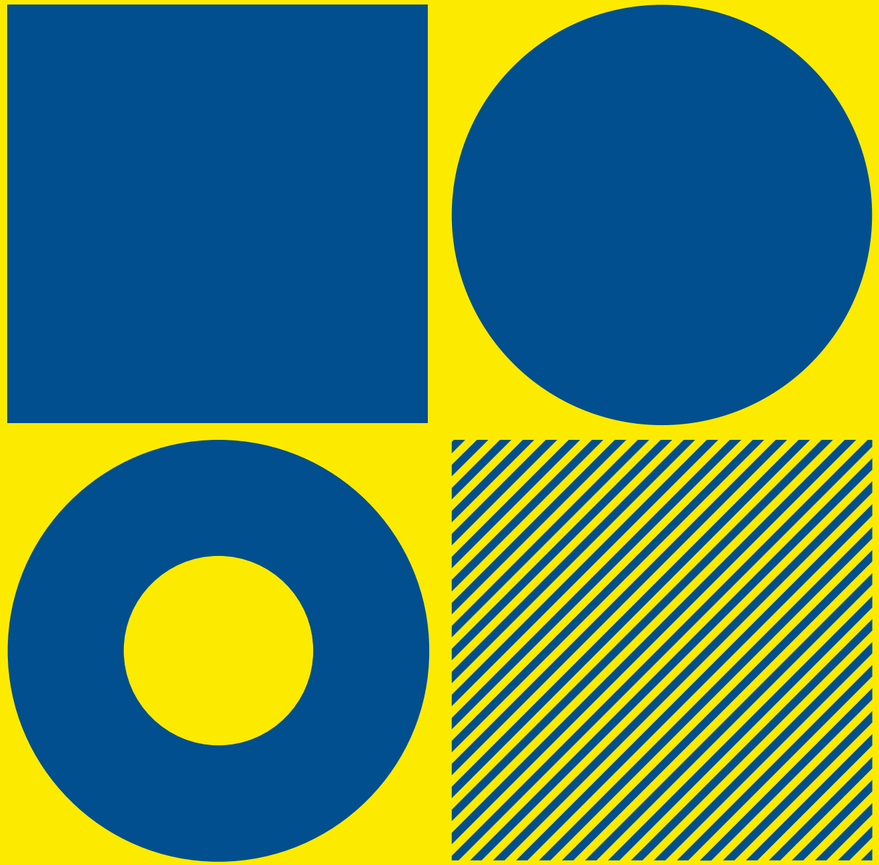
Vehicle Damage

The number of customers' vehicles is damaged or not nearly equally

6

Age

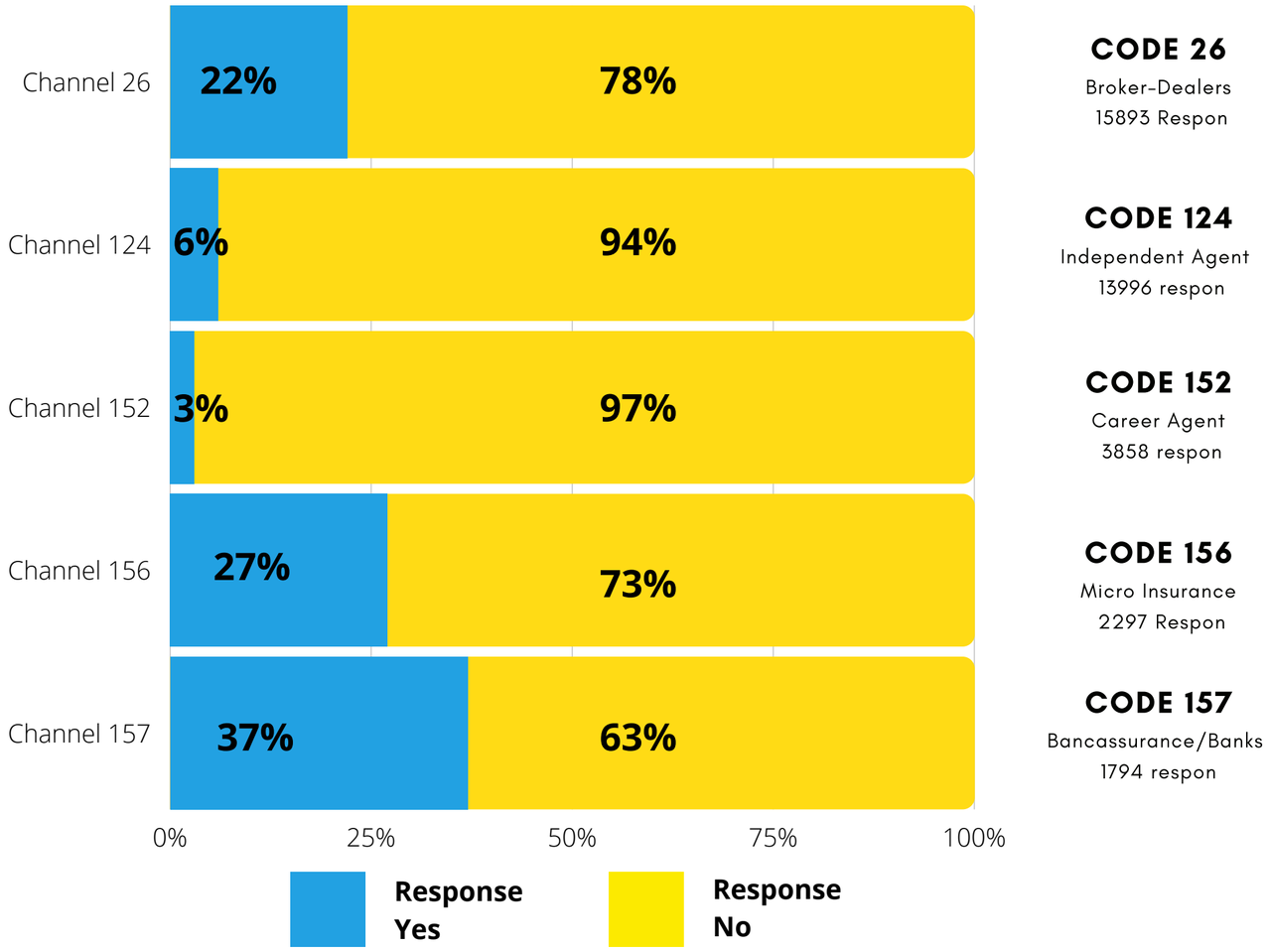
The average age of customers ranges from 35-50 years



After we know characteristic user, the next is?

INSIGHT

SALES CHANNEL POLICY



CODE 26
Broker-Dealers
15893 Respon

CODE 124
Independent Agent
13996 respon

CODE 152
Career Agent
3858 respon

CODE 156
Micro Insurance
2297 Respon

CODE 157
Bancassurance/Banks
1794 respon

Insight:

The highest sales channel that responded was sales channel 157 (Bancassurance), which had the highest percentage of vehicle policy sales at 37%, better than the other 4 top channels.

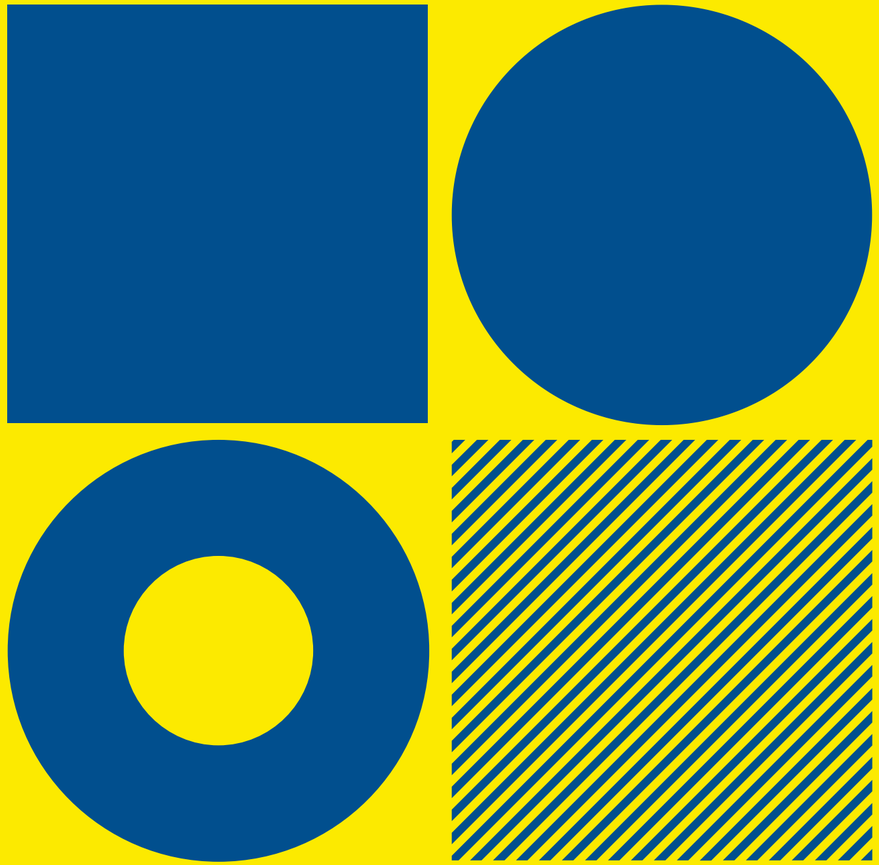
Recommendation:

Maximizing Channel 26, 156 and 157 as a Sales Channel Priority in marketing vehicle insurance, in all Region areas company's operations to Increase Customer Growth and Annual Premium

Notes:

the Top 5 Policy Sales Channel we do cross-reference with Emerging Trends in Multi-Channel Distribution on Insurance Industries

SOURCE DATA SALES CHANNEL:
HTTPS://WWW.COFORGETECH.COM/RESOURCE-LIBRARY/WHITE-PAPERS/FUTURE-READY-MULTI-CHANNEL-DISTRIBUTION-LIFE-INSURANCE



After we know sales channel policy, the next is ??

INSIGHT — REGION CODE

THERE ARE 5 POTENTIAL REGIONS (**REGION CODE**) BECAUSE THEY HAVE THE HIGHEST **RESPONSE** RATE

INDIA

- WEST BENGAL
- HIMACHAL PRADESH STATE
- LADAKH
- SIKKIM

PAKISTAN

- SINDH

REGION CODE 28 (WEST BENGAL)
19917 RESPON

REGION CODE 8 GUJARAT STATE
3257 RESPON

REGION CODE 41 (LADAKH)
2224 RESPON

REGION CODE 46 (SINDH, PAKISTAN)
2032 RESPON

REGION CODE 29 (SIKKIM)
1365 RESPON

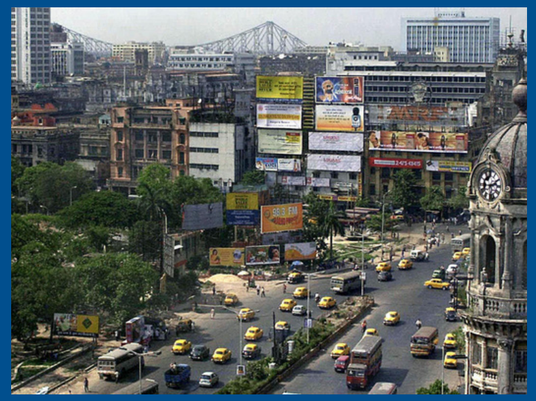
Notes:
Our Client is The Multinational Insurance Company has operated in 2 country (i,e India and Pakistan) and used Rupee (Rs) as a currencies

SOURCE HTTPS://EN.WIKIPEDIA.ORG/WIKI/LIST_OF_FIPS_REGION_CODES_(G%E2%80%93I)#IN:_INDIA
SOURCE: HTTPS://EN.WIKIPEDIA.ORG/WIKI/LIST_OF_FIPS_REGION_CODES_(P%E2%80%93R)#PK:_PAKISTAN

***FIPS: Federal Information Processing Standard**

Potential Market in West Bengal

FACT IN WEST BENGAL



West Bengal is ranked 6 largest GDP in India and have 3 main economic like agriculture, industry, and services.

West Bengal GDP
Rs. 115,748 =
Rp. 22.745.280

West Bengal has 19,917 customers who already have vehicle insurance, while there are still 86,498 who do not have vehicle insurance while the number of vehicles circulating there is more than 7.4 million vehicles

RECOMMENDATION:
West Bengal area can be a priority for the operation of vehicle insurance policies, given the conditions that can be an opportunity for the company

HTTPS://EN.WIKIPEDIA.ORG/WIKI/LIST_OF_INDIAN_STATES_AND_UNION_TERRITORIES_BY_GDP
HTTPS://EN.WIKIPEDIA.ORG/WIKI/ECONOMY_OF_WEST_BENGAL
HTTPS://WWW.STATISTA.COM/STATISTICS/664729/TOTAL-NUMBER-OF-VEHICLES-INDIA.

After this, we found Potential & Priority customer

Benchmark to Reach Goals Increasing Growth User and Premium of Vehicle Insurance

Potential Customer / New User

We define the Criteria of Potential Customer by characteristics of Customer. i.e:

- ***Responses No (Users Health Insure)***
- ***Vehicle Age less than 1 years***
- ***Users don't have Vehicle Insurance Before***
- ***Customers had Vehicle Damaged***

And we found the potential customer !

Potential Customer

37.423 Users

Expected Premium from potential Customer

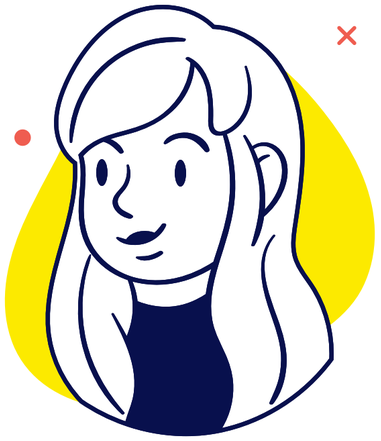
Rs. 1.10 Billion or Rp. 210.67 Billion

Priority Customer

Customer which Interested with Vehicle Insurance

25 years old
Vintage:
10 months / 294 days

Annual Premium:
Rs. 136.061



46 years old
Vintage:
10 months / 294 days

Annual Premium:
Rs. 113.088

Total Annual Premium
Rs. 249.149 = Rp. 47.418.087

Insight:

Both Customers are from Region Code 28 (West Bengal), and applying insurance through Sales Channel 122 and Channel 26 (Brokers)

Recommendation:

Giving the special treatments to the customer, I.e Give a Reward Coupon Fuel Rs. 1300/Month and Free Towing if their vehicle had trouble

The Booster

We will implement the machine learning model to predict potential customer in order to achieve our target effectively.

Step 1

Data Preparation & Processing

Step 2

Modelling

Step 3

Evaluation

Sample

381109 data train & **127037** data test

Data Preprocessing

Annual Premium

Divided into 4 groups, then do label encoding

Vintage

Converted to Month, divided into 3 groups then do label encoding

Others Categorical Data

Do label & one hot encoding

Outlier Treatment

Do a log transformation

Feature Selection

Drop some features :
id, Gender, Driving License, Previously Insured, Vehicle Age, Vehicle Damage, Annual Premium, Vintage

Imbalance Treatment

Do an oversampling

Modelling

accuracy _train	accuracy _test	recall _train	recall _test	precision _train	precision _test	AUC _train	AUC _test	f1_score _train	f1_score _test	model
0.78210	0.78489	0.78225	0.78454	0.83084	0.832501	0.78225	0.78454	0.81708	0.81936	Logistic Regression
0.86217	0.82959	0.86224	0.82939	0.875315	0.84538	0.86224	0.82939	0.87388	0.84627	KNN
0.92323	0.88642	0.92327	0.88627	0.92884	0.89683	0.92327	0.88627	0.92734	0.89507	Decision Tree
0.92322	0.887311	0.92327	0.88715	0.929517	0.899154	0.92327	0.88715	0.92756	0.89638	Random Forest
0.81216	0.81125	0.81226	0.81102	0.833871	0.83239	0.81226	0.81102	0.83330	0.83262	XGBoost

- The ***Random Forest*** algorithm was chosen because it is capable of handling data with more categorical data
- Cross Validation has 10 folds with Average 88% Accuracy
- Hyperparameter Tuning with estimators: 1000, Random State: 42, Max depth: 200. F1 Score has increase from 89% to 90%

Things we get from the model

With Accuracy 88% and Precision 90%
we found a prediction of Growth

- **Increase user by 31 K**
- **Increase Premium by Rs. 3.87 billion**
- **Feature Importance: Age & Region**

Business Recommendation

STRATEGIC RECOMMENDATION

1. Region Code 28 (West-Bengal) can be a Potential Target Market to increasing user growth and Vehicle Insurance Premium

2. Re-Adjust the Premium Pricing Strategy by 2 Classification Gold & Silver, to Re-Approaching for Potential Customer

3. Maximize the Sales Channel 26, 156 & 157 (Brokers, Bancassurance & Micro-Insurance) to implement in all Company operation region areas

4. Implement The Business Operation With Technology Trends Nowadays. Technology Trends in Sales Channel Distribution can be leveraged to Streamline process, reduce cost, increase productivity and Profitability for Company (i.e Digital Marketing & Big Data, etc.)

NEW SERVICES RECOMMENDATION

1. a New packaged of Services. Targeting by Potential Customers with All Risk Claim Vehicle insurance Guarantee and can be directly to claim. and we defining the packaged service into 2 Class

2. <u>Gold</u> :
Provides insurance Claim for all types of Risk from minor to heavy damage (Company Provide 100% to Repairing Claim), and Provide Claim Vehicle Loss (company provide 50% by Vehicle Price if users had a loss). Which Price Set of Annual Premium > Rs 50.000 to Gold Class

<u>Silver</u> :
Provides Insurance Claim if customer had vehicle loss, Company can provide the claim 40% of the price of the Vehicle. and 75% to Vehicle Repair. Which Price set of Annual Premium < Rs 50.000 to Silver Class

3. Giving Bonus to Priority Customers, i.e Fuel Coupon, Free towing Services, Discount Repair Services and etc.

PREDICTION BY RECOMMENDATION

*With the Modelling Prediction and Business Recommendation that we provided to Company. the Prediction can be Increase **31 K users growth**, equivalent **82%** from potential customer (**37.423 Users**). With the addition of Premium for Vehicle Insurance in amount **Rs. 3,87 billion** or Rp. 740 billion, equivalent **78%** greater than from Expected Annual Premium Potential Customer (**Rs.1.10 Billion** or Rp. 210.67 Billion)*

DATA JAGO

ur' Data Solution Partner

DERIS

Exploring Data & Give Recommendation Business Strategic

IKVI

Processing & Modelling Data

TEDI

Speakers

ARIA

Define Business Problems

Our Mentor & Advisor

Rezki Trianto

DATA JAGO

ur' Data Solution Partner

THANK YOU