**Summative Assesment**

**ADVANCED TOPICS IN DATA ANALYTICS – NBS-7096BB**

**Scenario**

A motor insurance broker has hired you as a data science consultant and has tasked you with finding more about its pricing strategies in relation with car insurance. For this task you have received information regarding the renewal outcomes for 20,000 customers at the point where their annual contract is up for renewal.

The data are itemized per customer and contain information about the customer demographics (Age, Gender, Marital Status), the car and its use (Car Value, Mileage), the Customer's Relationship with their Insurance Broker (No Claims Bonus, Payment Method, Tenure with Company), the Customer's Price and the change in that Price vs Last Year's Price as well as whether the customer renewed their policy or not.

The following table summarizes the types of variables.

|  |  |
| --- | --- |
| **Demographics** | Marital Status |
|  | AGE |
|  | Gender |
|  | Car Value |
|  | Years of No Claims Bonus |
|  | Annual Mileage |
|  | Payment Method |
|  | Acquisition Channel |
|  | Years of Tenure with Current Provider |
| **Price Factors** | Price |
|  | Actual Change in Price vs last Year |
|  | % Change in Price vs last Year |
|  | Grouped Change in Price |
| **Outcome Variable** | Renewed? |

Using the supplied data, you are requested to provide an analysis brief (no more than 2,500 words excluding code and appendixes) answering the following:

* Which factors have the greatest effect on renewal rate?
* How does price relate to renewal rates?
* What are the key factors that affect customers' response to price increase (also seen as price elasticity)? In this case price elasticity should be defined as the impact that changes in price have on a customer's likelihood to renew
* What advice would you give to this company on how they might think about pricing these customers?

*In providing your answers your report should provide the following:*

* A thorough descriptive analysis of the data and the relations between the variables.
* For any analysis only R code is accepted (not excel, powerbi and any other tool is permitted).
* Make sure that the insights from your analysis answer the key questions and also consider why the client should care about it

*Communication*

* Imagine the piece of work is going to a client. Therefore, you should provide an executive summary of your findings in the beginning of the report (400 words)

**Marking Criteria**

The marking criteria will be as follows:

* How well did you plan and apply the analysis?
* The quality of the insights that you derived.
* How well have you communicated your ideas?
* Your ability to translate analytical insights into business recommendations.

You can also use the CRISP-DM structure from the first semester to guide your analysis.

**Deliverable**

The report and the code should be submitted as one document in PDF format and uploaded through the blackboard submission system.