INTRODUCTION TO ACTUARIAL MODELS

ASSIGNMENT: -

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CLASS – FY BSc

SECTION – B

ROLL NO.- 80

1.) Key steps in the data analysis process are:

• Develop a set of well-defined objectives that need to be met by the results of data analysis.

• Obtain the data required for analysis.

• Collection of information from relevant sources.

• Processing and formatting data for analysis, e.g. upload to spreadsheet, website or other model.

• Data cleaning, e.g. to deal with unusual, missing or inconsistent values.

• Modelling the data.

• Communicating results.

2.) Items to be mentioned include -

- **simple random sampling e.g., selecting 10 vehicles from over 100 vehicles of different brands. Each car has its own**
- **an equal opportunity to be elected. So, we could end up choosing 10 Honda cars.**
- **stratified samples e.g. when we divide 10 brands into groups and choose one from each group.**
- **The sample therefore reflects the product diversity as seen in the group.**
- **another sampling method.**

3.) The stages we can go through in identifying a suitable model are:

- **Consider using or modifying existing models used in other countries.**
- **Based on what data is available, describe the model you intend to use. If the data is simple and has no details, then the complex model is incorrect.**
- **Identify the appropriate computer software to use the model**

4.) The key items I would include in the documentation on the model are -

- **Modifications performed to confirm the output of the model.**
- **Description of input data.**
- **Any model limitations noted.**
- **Basis on which model type is selected (e.g. deterministic or stochastic)**
- **References to any research papers or interviews with qualified professionals.**
- **Summary of model results.**
- **Name and professional qualifications.**
- **The objectives of the model.**
- **How the model can be modified.**

5.) Benefits of this strategy -

- **The model is easy to understand and communicate.**
- **The model looks at one major source of variation in consumption rates, especially age.**
- **The model is easy and cheap to use.**

Disadvantages of this strategy:

- **Past trends in consumption may not be a good data for future trends.**
- **Other factors besides age may be important in determining consumption.**
- **competitors introducing new products may affect future consumption.**

6.) Possible reasons for different outcomes are:

- **One or both of the runs (real or new) may have been incorrect as, for example, the second trainee may not have been fully aware of the set (for example he may not have followed the procedure correctly, or he may have used a different guess).**
- **The difference between the two runs may not have been the only parameter change, for example two runs may have used different random seeds, or a second run may have fewer simulations.**
- **Expecting the model to be resistant to this parameter may have been incorrect.**

8.) The factors a company should consider when developing a model are:

- **Ease of the model.**
- **Budget and resources available for modelling.**
- **The type of medical data that a company has. The model can be as complex as the data will allow it to be.**
- **Whether the company has made any previous efforts to model disease rates among its employees, and how successful they have been.**
- **Definition of illness and the level of benefits paid under this program.**