Actuarial Models Assignment 1

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Q1. Steps required in the development of the model-

- Planning out the modelling and validation process.
- Necessary data for the models needs to be collected and analyzed.
- Parameters and their appropriate values need to be set.
- Receiving feedback on the parameters from experts.
- Writing a program for the model
- Debugging the program to make sure it performs the intended operations in the model definition.
- Testing how reasonable the output of the model is.
- Reviewing the appropriateness of the models when small changes are made to the input characters.
- Output needs to be analyzed.
- Relevant professional guidance needs to be complied with.
- The results need to be documented.

Q2. Factors that could potentially cause the probability to be inaccurate:

- Potentially inaccurate or wrongly set parameters.
- Data used could be incorrect.
- Since the model used is stochastic, there is an aspect of randomness to the model. Hence, the outcome may differ.

Q3. Stages that I will go through in order to create the required model:

- Setting up a well-defined set of objectives.
- Planning the modelling and validation process.
- Collect and analyze the necessary data.
- Parameter needs to be defined and appropriate parameter values need to be considered.

Q4. Key items I would include in the documentation of the model:

- The knowledge of the target should be taken into account in the communication.
- Audience Comprehensive documentation should contain sections on model inputs, calculations, outputs, limitations, associated business processes, governance practices, application and platform specifics and their viewpoint.

Q5.

ADVANTAGES	DISADVANTAGES
Using past data to predict the future	There may be a demographic shift considering that it has been 2 years
The board of directors can get a rough idea about the future of the company	The past data may be unreliable
Provides a rough idea about the future prospect of the company	We can't accurately predict the future based on past data
	We don't know if the same age group would prefer scrummy bar in the next 20 years or so

Q6. Potential causes for the two observed results to differ could be:

- Since the model is stochastic in nature, the input in the model in those 2 times could be differing from each other.
- The documentation of the model may have been incorrect causing the results to differ.

Q7. The required data is extensive but easy to obtain. The parameters considered are realistic and intuitive. This model utilizes a cost effective and efficient approach to model the number and sizes of schools required. A possible drawback of the model might be the inability to predict data for the long-term future, which might be required for long term planning. But incorporating this feature might add on to the cost, and should be incorporated only if required. The modelling approach is a cost efficient one, but it's not the most accurate also. So, it should be used keeping in mind these advantages and limitations.

Q8. I would consider these factors:

- Age and Gender of all employees.
- Medical History.
- Job positions and working hours associated.
- Employee Lifestyles.
- Demographics of the city.
- Pollution levels and Road Safety Index.