

28/3 Actuarial Models Assignment :

1. Steps for developing the model :
 - Review the regulatory guidance
 - Define objectives of the model and the parameters that need to be assessed stochastically.
 - Plan the process of development of the model.
 - Check for alternative forms of model
 - Collect necessary data and validate.
 - Choose the parameters of the model
 - Define the real-world "worst-case scenarios" to be taken care of.
 - Decide ^{the} software used in the model
 - Write the computer program.
 - Debug the program to check if it gives the expected results
 - Review the appropriateness of the model's output; ^{life} if it has assigned ~~right~~ ^{prob} a reasonable probability for the "worst-case scenarios",
 - Test the sensitivity of the model with ^{small changes in the} respect to ~~the~~ parameters and review.
 - Calculate the capital requirement
 - Communicate and document the results. Present a range of results with differing parameter ~~changes~~ inputs.
2. Possible errors :
 - model ^{very} may be sensitive to the chosen parameters

- policy holder behaviour may differ in practice
 - model may rely on input data, & any error may cause an incorrect output.
 - future events that affect policy conditions may have not been accounted for in the model
 - managements may not match models output for extreme situations.
 - sampling error from insufficient simulations
 - model may not give reflection of the real world processes.
3. Stages for finding appropriate model:
- Setting objective in place by questioning the purpose of model, duration of forecast required etc.
 - considering available information in the country, currently used model / method; checking if other countries model would be suitable
 - establish data available
 - define model with data available and the appropriate type for it
 - identify suitable software to be used
 - debug the program
 - run model & check for errors & reasonableness of output obtained
 - test sensitivity sensitivity to small

changes in parameters:

- analyse output
- make report documenting results & communicate results with the government of the small country.

4. Documentation requirements:

- tests performed
- definition of input data
- how model might be adapted
- purpose of model
- name & professional qualifications
- summary of results
- form of model & basis
- references if any to data used.
- assumptions of ~~the~~ model
- any limitations

5. ^{The} Advantages of ~~the~~ strategy:

- simple
- takes account of major variation: age
- easy & cheap
- data likely to be accurate
- can be adapted easily to different populations

Disadvantages of the strategy:

- past trends related to age might not be appropriate for future consumption may be sensitive to pricing

- consumption of chocolate may be affected by the state of economy.
 - ~~the~~ strategy doesn't include any testing of the sensitivity of total demand to changes in projected population.
 - ~~It~~ There may be an upper limit to the Sunday bars a person can eat $\therefore$ rapid increase in consumption is unlikely.
6. Possible reasons for different results:
- trainee may not be fully aware of the set-up
 - ~~ipo~~ input may have ² different random seeds
 - new run may have had fewer simulations run
 - expectation of model not being sensitive to a parameter may be incorrect.
7. Appropriateness:
- ~~model~~ model should be simple
 - data specified ~~and~~ are ~~it~~ likely to available from reliable sources
 - unforeseen events may occur
 - relatively straightforward model to explain to planners
 - consider trends in fertility rates
 - may consider experience of similar towns.

8. Factors for to consider?
- ease of communication of model
 - general trends of sickness at national level
 - nature of existing sickness data the company possesses.
 - capability of staff
 - definition of sickness & level of benefits payable under the scheme
 - complexity of model
 - uses of model
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