

Date.

Assignment - 1

- 1) Step for development of the model.
- 2) I would first determine if its scenario or proxy Model. This is a scenario Model would take into consideration a particular scenario, that is a series of input parameters based on this scenario. A proxy in contrary, is used to replace Monte-carlo simulation, fast but ~~to~~ less accurate results.
- 3) Determining sustainability while developing a model sustainability is by factors like objectives of data collections, validity of data assumptions, model, impact and extent of correlations, credibility of data etc.
- 3) Analysing model output is also quintessential step in development of a model. It takes in consideration Statistical sampling techniques and famous "Turing test". Assuming that observations are independent and identically distributed also needs to be avoided.
- 4) Sensitivity analysis is also an integral part wherein reasonableness of output, appropriateness of model and design appropriate simulation experiments is tested.
- 5) Lastly, results are communicated through perhaps the last and most imp process which communication and documentation of results. and Model itself to others. This is done to ensure that any limitations on use and validity of Model fully appreciated.

- 2) The factors needs to be considered which could cause the probability of Model to be inaccurate are.
- To study outputs for any given set of inputs, several independent runs of Model needed. If this isn't done, Model can be inaccurate.
 - Validity of model's assumptions, the computer code, the reasonableness of results and way in which results can be interpreted in plain language by target audience to be checked. If this isn't done ~~mod~~ it can be inaccurate.
 - The rely heavily on data input. If data quality is poor, then output from model is likely to be flawed and thus inaccurate.

- 3) Model is identified with help of following stages.
- Objectives of modelling exercise.
 - Validity of model for purpose to which it is to be put.
 - Validity of data to be used.
 - Validity of assumptions.
 - Possible errors associated with model or parameters used not being a perfect representation of real world situation being modelled.
 - Impact of correlations between the random variables that drive the model.

4) Steps to involve in documenting a Model are.

- 1) README File that contains
 - brief description of project
 - Installation instructions
 - Short example.

- 2) Allow issue tracker for others

- 3) Write API documentation.

- What a function do
- What function's parameters or arguments are
- What function returns

Example for code documentation

- Document your code.
- Apply coding conventions such as file organization, comments, naming conventions, programming practices etc.
- Include information for contributors.
- Include citation information.
- Licensing information.
- Link your email at the end.
- List all version of files along with edits in each version.

5) The benefits are

- Competitive edge on other companies - The reason why we need predictive analysis is to find out popular trends in Market and get competitive advantage. Buying patterns and industrial trends keep on changing time to time.
- Business growth Many companies opt for predictive analysis consulting to predict customer's preferences buying behaviour and responses.
- Past data to make smart decisions - Past performance help to develop accurate marketing strategies. Important for business to study their past mistakes. This how this method will help confectionary Manufacturer.
- Advantages
 - Understandable and easy to communicate.
 - It takes account of one major source of variation in consumption rates and age.
 - Easy and cheap to implement.
 - Past data on rates by age are fairly accurate.
- Drawbacks are
 - Data collected from different sources can vary in quality and format.
 - Data collected will have different attributes and structures.

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- 5) Data could be incomplete, Missing values lack of section or part of data, could limit its usability
- Inconsistency and errors in data
 - Any duplicates or outliers in data.

- Q7) Appropriateness of modelling approach is
- 1) Model should be simple to apply
 - 2) The data are likely to be available from reliable sources.
 - 3) Although a possibility that starting point for planned population may be wrong
 - 4) Unforeseen events like covid which changes states.
 - 5) Model relatively straightforward to explain to planners
 - 6) Should consider whether there are trends in fertility rates rather than simply using current rates.
 - 7) Mortality rates unlikely to be significant relative to uncertainty in projection, bcoz states of ages with non zero fertility rates should be small and child mortality rates should be low.
 - 8) Current age distribution for area may not be representative of that for new town