Exercise 1:

Please look at the attached data (MockDataSet1.xlsx). This shows an illustrative sample of quotation requests received by an insurer over a period of time for life products. The insurer profit is the GrossCommission, if the Sold flag is "Y" and nothing otherwise.

a) What can you find what is of interest in the data?
b) Can you build a model that predicts the probability of sale?
c) What are the main drivers of profit?

Exercise 2:

Please refer to the attached dataset (MockDataSet2.xlsx). This contains mortality patterns from a large insurer, over the period 29-Dec-1988 to 31-Dec-1993. These contracts are joint and last-survivor annuities that were in the payout status over the observation period. For each contract, we have the age of entry into the 5-year study, time of death (if applicable), and sex of each annuitant.

a) What can you find that is of interest in the data?
b) Calculate mortalities by age, for each sex separately, using the Kaplan-Meier method. How do the mortality curves compare, for male and female?
c) Fit the Gompertz model to the mortality curves:

$$F(x) = 1 - \exp\left(e^{-\frac{m}{\sigma}}\left(1 - e^{-\frac{x}{\sigma}}\right)\right)$$

What do you find from the analysis?

Please submit all code and workings for exercises 1 and 2 above, together with a presentation outlining your findings.

Thank you, and good luck!