

# **INSTITUTE AND FACULTY OF ACTUARIES**

## **EXAMINERS' REPORT**

### **Subject CA2 Model Documentation, Analysis and Reporting**

### **Examination Assignment L7**

#### **Introduction**

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The specimen solutions are based on one possible approach to modelling the assignment set but the examiners gave credit for any alternative approach or interpretation which they considered to be reasonable.

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Chairman of the Board of Examiners

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A possible model with audit trail and a possible summary are posted on the website. These are not intended to be model solutions but are intended to include more detail than would ordinarily be possible within the time allowed within the examination. There were many marks available in the audit trail and summary for the explanations, observations, conclusions and suggestions on the model itself. In practice, a wide number of solutions was acceptable and candidates would have achieved good pass standards without having the same level of detail as the specimen solutions.

Candidates were required to produce a mortality and fertility projection of a population of rabbits. This exam required basic knowledge of decrement rates and population projection.

The model was generally produced well, although only the stronger candidates correctly dealt with age exact and age last birthday differences in the data, and applying this at time 0. Most candidates were able to produce a population projection at 2005 to compare to the survey data.

Some common pitfalls and mistakes included:

- implicitly assuming that fertile female rabbits only give birth to female rabbits, i.e. not allowing for a 50% (say) chance of giving birth to a male rabbit.
- not applying the mortality shock and subsequent reduction in fertility correctly in the Additional Information scenario.
- not acknowledging, in the Summary and Audit Trail, instances where the model produced answers that were clearly unreasonable but which the candidate had been unable to correct.

In the population projection scenario, a number of assumptions need to be made as the model is progressed, for instance:

- half of all baby rabbits born are male, half are female.
- population is evenly spread over each age band.
- deaths occur evenly throughout the year.
- births occur on average halfway through the year.

Candidates should always state such assumptions even if they seem too obvious to include.

This exam assignment contained a number of additional scenarios, the results of which candidates were required to compare to the survey data. A number of candidates failed to make enough distinct and reasonable conclusions on the results and did not compare and contrast the projection outputs satisfactorily. Candidates need to be able to demonstrate a good level and depth of understanding of the model scenario to meet the pass standard.

## **END OF EXAMINERS' REPORT**