

**EAA Seminar**  
**“Modelling and Validating  
Mortality under Solvency”II**  
28/29 May 2015 | Stockholm, Sweden



Organised by the EAA - European Actuarial Academy GmbH in cooperation with the Svenska Aktuarieföreningen

## 1. Introduction

In Europe the upcoming Solvency II regulations imply significant changes in the risk management of insurance companies. Under these new regulations companies are encouraged to quantify a 99.5% Value-at-Risk over a one-year horizon using an Internal Model, or by using the Standard Formula provided by EIOPA. In this seminar we focus on modelling mortality risk, which we define as the risk of unexpected changes in the trend underlying future mortality rates. For the simulation of mortality rates, a wide variety of stochastic models have been proposed in the literature. We will discuss various aspects of mortality model specification, calibration, and application, and provide ideas and practical advice for the implementation of these models. Also examples of modelling portfolio-specific mortality and the validation of mortality models under Solvency II will be discussed.

## 2. Participants

The seminar is specially developed for (life) actuaries, risk managers or statisticians working in actuarial, risk management and model validation departments. A basic knowledge of life techniques in actuarial science and statistics is useful.

Attendees are encouraged to bring a laptop computer with Microsoft Excel and if possible also Cran R<sup>1</sup> installed.

### **3. Purpose and Nature**

The seminar combines methodological concepts within mortality modelling with many practical examples and applications within a Solvency II context. A case study will be performed in order to obtain full understanding of the presented techniques. After attending this seminar, participants will be familiar with most recent insights within mortality modelling within Solvency II.

During the seminar, participants will have the opportunity to apply mortality models, analyse model fits, calculate impacts and validate model choices within Excel and Cran R, both for population and portfolio-specific mortality. Outcomes will also be compared to the Solvency II Standard Formula scenario for mortality and longevity risk.

### **4. Lecturers**

#### **Dr Katrien Antonio**

Katrien Antonio is associate professor in the Insurance research group at KU Leuven (Belgium) and assistant professor in the Actuarial Sciences and Mathematical Finance group at the University of Amsterdam. Katrien studied Mathematics at KU Leuven and obtained her PhD degree in 2007 at the same university. Her research puts focus on statistical modelling for life and non-life insurance, including stochastic loss reserving, pricing models and stochastic mortality models. In 2014 Katrien was a member of the working group of the Dutch Actuarial Association that published a stochastic mortality model for The Netherlands. She is also the lead researcher in charge of the 2015 Belgian mortality projection, published by the Institute of Actuaries in Belgium.

#### **Wilbert Ouburg MSc FRM AAG**

Wilbert Ouburg works as an actuary and financial risk manager at Delta Lloyd Group, an insurance company operating in the Netherlands and Belgium. He studied both Mathematics (Utrecht University) and Actuarial Science & Mathematical Finance (University of Amsterdam), and followed a post-graduate teaching program in mathematics. His master's thesis on Bayesian mortality modelling was awarded the Netspar thesis award. He is a member of the Royal Dutch Actuarial Society and a Financial Risk Manager at the Global Association of Risk Professionals. In 2014 Wilbert was a member of the working group of the Dutch Actuarial Association that published a stochastic mortality model for the Netherlands.

#### **Prof. dr. ir. Michel Vellekoop**

Michel Vellekoop is full professor in the Actuarial Sciences and Mathematical Finance group at the University of Amsterdam. He studied Applied Mathematics at the University of Twente and obtained his PhD. degree in 1998 at Imperial College in London for research on nonlinear filtering problems for stochastic processes. Since then he has focused on applications in finance and insurance, both as an academic and as director of research for the Derivatives Technology Foundation. His main interests are valuation and risk management problems for contingent claims in complete as well as incomplete markets. Since 2009 he has been theme coordinator for Netspar, the Dutch research network for studies on pensions, ageing and retirement. In 2014 he was a member of the committee of

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<sup>1</sup> The latest version of Cran R can be downloaded via the website <http://www.r-project.org/>

the Dutch Actuarial Association that was responsible for the design of a new stochastic mortality model for the Netherlands.

## 5. Language

The language of the seminar will be English.

## 6. Preliminary Programme

### Thursday, 28 May 2015

08.45 – 09.00 Registration

09.00 – 09.15 Introduction and welcome (EAA)

09.15 – 10.30 Module 1: Introduction in mortality and demographics

10.30 – 10.45 Coffee Break

10.45 – 12.30 Module 2: Fitting a Lee-Carter mortality model

12.30 – 13.30 Lunch

13.30 – 15.00 Module 3: Calibration and prediction of mortality models

15.00 – 15.15 Coffee Break

15.15 – 17.00 Module 4: Multi-population mortality models

approx. 18.30 Dinner

### Friday, 29 May 2015

09.00 - 10.30 Module 5: Mortality modelling and validation under Solvency II

10.30 - 10.45 Coffee Break

10.45 - 12.30 Module 6: Modelling portfolio-specific mortality

12.30 - 13.30 Lunch

13.30 - 15.10 Module 7: Case study

15.10 - 15.15 Concluding remarks, closing of seminar (EAA)

## 7. Fees & Registration

Please register for the seminar as soon as possible because of the expected demand. If there are more persons interested in this seminar than places available we will give priority to the registrations received first. Please send your registration as soon as possible by using our online registration form at [www.actuarial-academy.com](http://www.actuarial-academy.com).

Your registration is binding. Cancellation is only possible up to 4 weeks before the first day of seminar. If you cancel at a later date, the full seminar fee is due. You may appoint someone to take your place, but must notify us in advance. EAA has the right to cancel the event if the minimum number of participants is not reached.

Please always give your invoice number when you effect payment. All bank charges are to be borne by the participant. We will send you an invoice, please allow a few days for handling.

**Your early-bird registration fee is € 790.00 plus 25 % VAT until 6 April 2015. After this date the fee will be € 970.00 plus 25 % VAT.**

## 8. Accommodation

The seminar will take place at the

FIRST HOTEL NORRTULL  
S:t Eriksgatan 119  
113 43 Stockholm, Sweden  
[Hotel Website](#)

We arranged special prices for accommodation. The special price is 1490 SEK per night, including breakfast, VAT and WIFI. It is valid for bookings by 29 April 2015 out of our allotment "EAA Seminar". Our allotment includes a limited number of rooms. Kindly book your accommodation directly with the hotel, and note the hotel's cancellation policy.

## 9. CPD

For this seminar, the following CPD points are available under the CPD scheme of the relevant national actuarial association:

Austria: 11 points  
Belgium: 11 points  
Bulgaria: 12 points  
Czechia: 2-3 points (individual accreditation)  
Estonia: 11 hours  
Germany: 12 hours  
Hungary: 12 hours  
Italy: approx. 4 credits (GdLA individual accreditation)  
Netherlands: approx. 11 PE-points (individual accreditation)  
Russia: 40 points  
Slovakia: 8 CPD points  
Slovenia: 50 points  
Switzerland: 15 points

No responsibility is taken for the accuracy of this information.