This note is for those who want to reproduce the figures in Richards, Currie & Ritchie (2012). A summary of the data used is given below:

Source	ONS
Countries	England & Wales
Gender	Males
Age range	50–104
Date range	1961–2010

Below are the global parameters used when fitting the models (Table 3) and performing the VaR simulations (Table 5). Users of the Projections Toolkit can set these using the menu sequence **Settings→Configuration→Projections**.

Configuration setting	Value	Description
Age knot positioning	First	Position of knot for age splines.
Age knot spacing	5	Gap in years between knots for age splines.
ARIMA search space	Search d in d(1,2), p,q, in (1,2,3)	ARIMA(p,d,q) values considering when fitting ARIMA models.
Fit ARIMA mean	Yes	Whether an ARIMA(p,d,q) model has a mean or not.
Fitting/optimisation step size	0.001	
Fitting target	BIC	The information criterion to optimise when fitting a model.
Gender of dataset	M	Male ONS data for England & Wales were used in Richards, Currie & Ritchie (2012).
Generate residuals file	No residuals file	Whether to generate a file of residuals for the model fit.
Interest %	3	Discount rate used for calculating annuity factors.
Key ages	50,60,70,80	Ages for illustrative life expectancies and annuity factors.
Maximum age	104	The data to age 104 were used. The data for age group 105+ were not used.
Maximum year	2010	Maximum year of data used.
Minimum age	50	The data from age 50 were used. Ages below this were felt not to be relevant enough for annuity and pensions business.

Minimum year	1961	Minimum year of data used.
Mortality rate interpolation	Linear	How mortality rates at fractional ages are interpolated. See the Projections Toolkit Technical Guide for more details.
Optimisation method	BFGS with box constraints	Algorithm used for minimising the target information criterion.
Over-dispersion parameter	Automatic estimation	An over-dispersion parameter was included for spline-based models such as the 2DAP model.
Override optimal ARIMA	No (search for optimal)	The ARIMA(p,d,q) model is refitted anew for each new dataset.
Penalty order	2	Order of penalty function — a second-order penalty gives a linear extrapolation on a logarithmic scale. See the Projections Toolkit Technical Guide for more details.
Projection convergence tolerance	0.00001	Tolerance level when maximising the log-likelihood function.
Projection iteration limit	100	Maximum number of iterations permitted when fitting models.
Projection year	2100	The year to project to when fitting a model.
Reproducible sample paths	Yes — generate reproducible sample paths	Whether to fix the seed of the random number generator used for sample paths.
Residual weighting threshold	No residual weighting	Whether to weight out observations producing particularly large residuals.
Spline degree	3	The order of the splines used in spline-based models. See the Projections Toolkit Technical Guide for more details.
Uncertainty included in sample paths	Volatility and trend uncertainty combined	The sources of uncertainty to include in sample-path generation.
Year knot positioning	Last	Position of knot for year splines.
Year knot spacing	5	Gap in years between knots for year splines.

References

RICHARDS, S. J., CURRIE, I. D. AND RITCHIE, G. P. (2012) A value-at-risk framework for longevity trend risk, Longevitas Ltd. Available for download at www.longevitas.co.uk/var