

B Supplementary Figures

Figure 9: Predicted pension fund 1's log-mortality rates for 2019 (blue) induced by different models, reference population (BRA) mortality (green squares) and raw mortality (red crosses) at 2019 for the Male population for different ages in the horizontal axis.

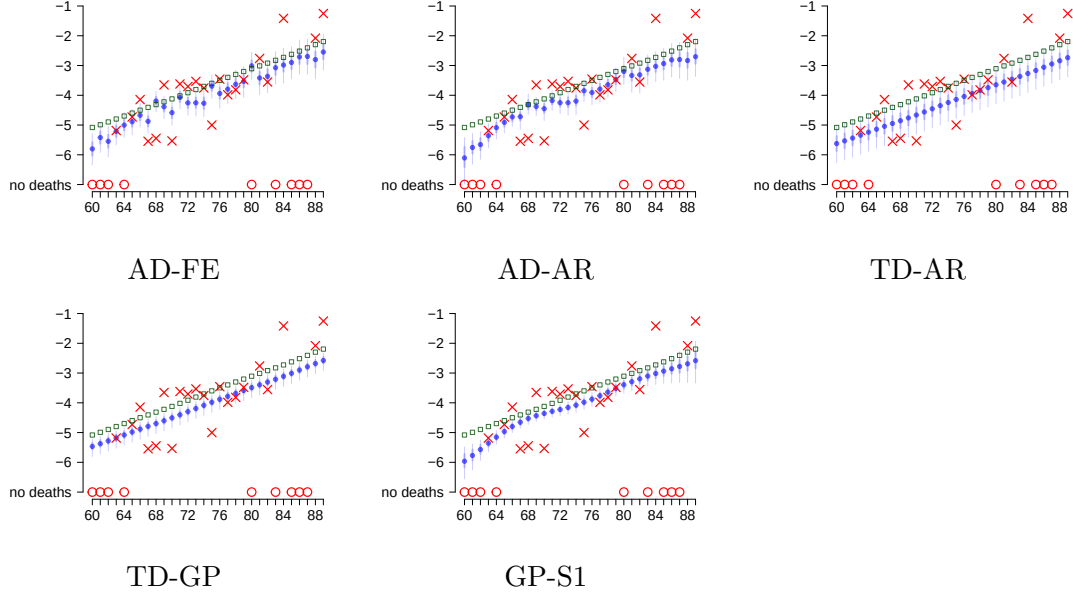


Figure 10: Predicted pension fund 1's number of deaths for 2019 (blue) induced by different models and observed number of deaths (red crosses) for the Male population for different ages in the horizontal axis. Circle sizes represent the probability assigned to the corresponding number of deaths, thin/thick lines represent 50%/90% posterior intervals and the squares are the posterior means.

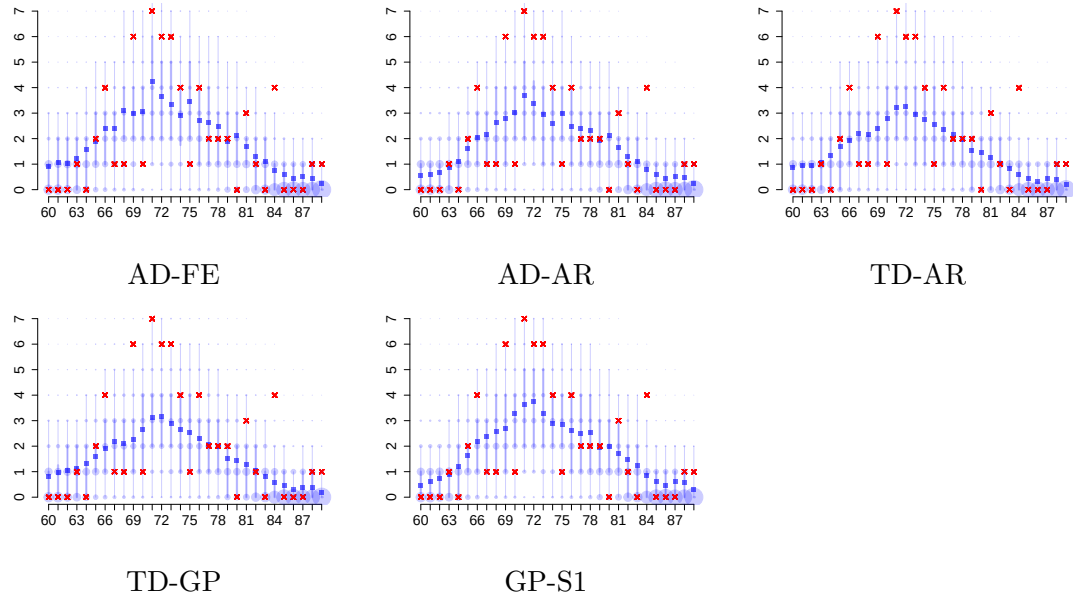


Figure 11: Posterior mean θ_x in AD-GP considering: (i) original prior mean (-0.50) as in Figure 5; (ii) linear increase for ages 60+; and (iii) alternative prior mean (-0.20).

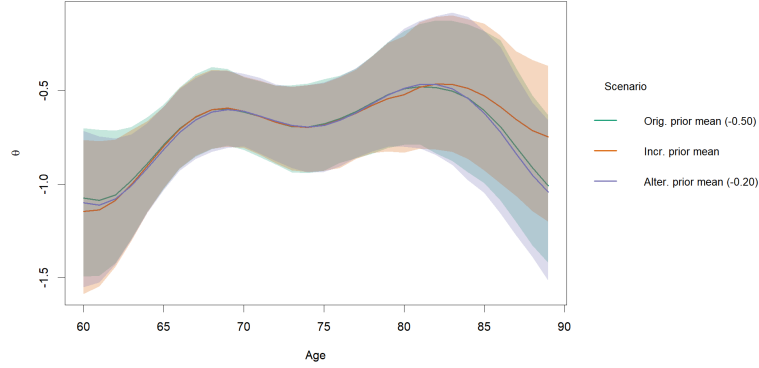


Figure 12: Posterior distributions for (i) μ^i and ρ under model AD-AR (first row); (ii) σ and ϕ_{ag} under model AD-GP (second row); (iii) ρ under model TD-AR (third row); (iv) σ and ϕ_{yr} under model TD-GP (bottom row). All results are for Males using data from pension fund 1.

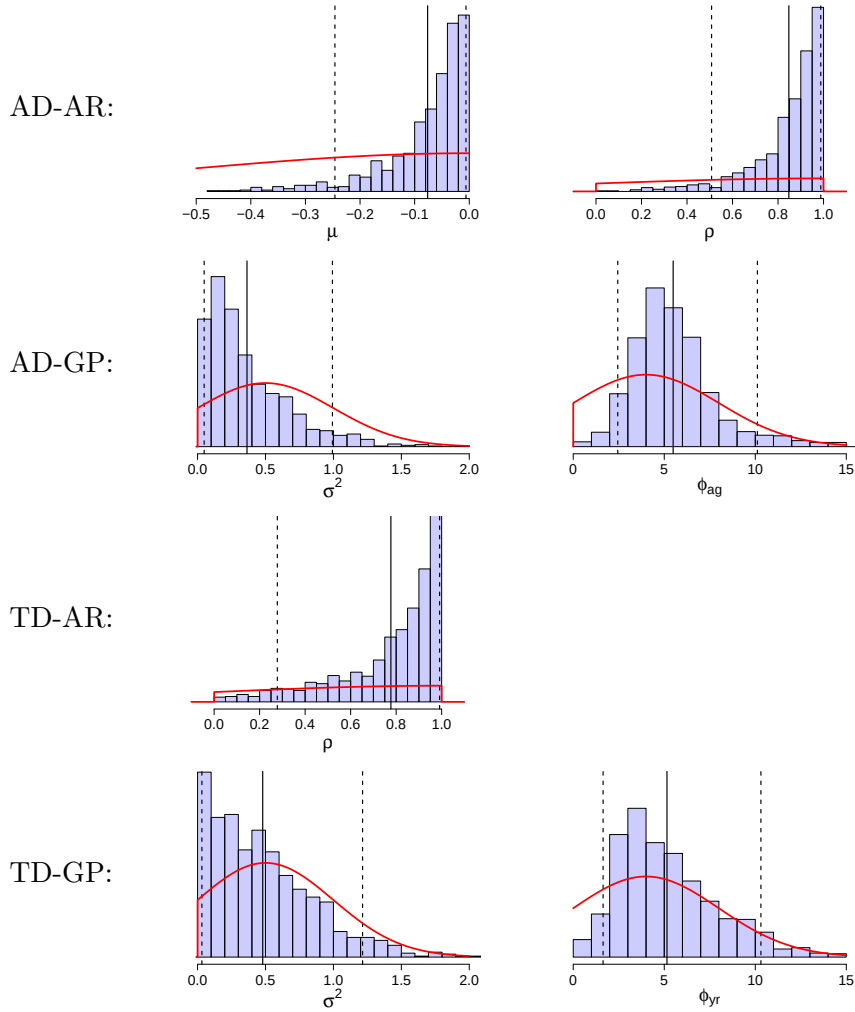


Figure 13: Posterior distributions for the hyperparameters β_0 (top row), β_{ag} (middle row) and ϕ_{ag} (bottom row) under models GP-S1 and GP-S2 for Males. We also include distributions of β_{yr} and ϕ_{yr} for GP-S2. Vertical lines indicate the posterior means and the dashed lines the posterior 95% quantile interval.

