How to reproduce the results?

First we calculate in R (package EVIR) with the command 'gpd(data, nextremes=k, method=c("ml"))', the key estimates in the rows 4-6 described below. We do this 60 times: for the 30 years of death 1986-2015, both for women and for men.

There are 2 Excel sheets: 'life span women' and 'life span men'. In these Excel sheets the main quantities given below can be found. The used formulas can be seen by clicking on a cell. The 30 columns represent the 30 years, 1986-2015.

Row 4: the estimated extreme value index γ
Row 5: the estimated scale a (in days)
Row 6: the threshold $X_{n-k,n}$ (in days)
Row 7: the threshold $X_{n-k,n}$ (in years)
Row 8: the oldest $X_{n,n}$ (in years)
Row 9: the estimated upper limit ω
Row 10: the 95% upper confidence bound for ω

Obtaining the value of the test statistic for all the γs being negative (Section 2.1) is immediate and described in the paper.

The test statistic T (detailed in Section 3.2) for the test on the equality of the ωs in Section 2.3 is calculated step by step in the rows 38-49. The value is in cell AG49.

Figures 2 and 3 (the two key figures) plot directly the numbers in row 4 and rows 7-10, respectively, against the year, labeled 1-30; see the abovementioned Excel sheets.

Figure 4 plots directly the estimated scale a (in years) of row 5, against the year. Figure 1 plots directly, for the year 2015, the empirical quantiles (the k upper order statistics) against the quantiles based on the Generalized Pareto distribution with estimated parameters (see rows 4 and 5). (The latter quantiles are given by $X_{n-k,n} + \hat{a}(n/k)[(i/(k+1))^{-\hat{\gamma}} - 1]/\hat{\gamma},\ i = 1, \ldots, k$.)