

## MORTALITY IMPROVEMENT MODEL FOR USE WITH THE '92' SERIES OF MORTALITY TABLES

These factors are recommended for all experiences, males and females, "lives" and "amounts".

It is assumed that

$$q(x,t) = q(x,0) \cdot RF(x,t),$$

where  $q(x,t)$  is the rate of mortality " $q_x$ " for a life attaining age  $x$  in the calendar year  $(1992 + t)$ .

Note that time is measured in years from 1992 and that  $q(x,0)$  is the "1992 base rate" from the new table for the appropriate experience.

The reduction factor adopted is

$$RF(x,t) = \mathbf{a}(x) + [1 - \mathbf{a}(x)] \cdot [1 - f(x)]^{\frac{t}{20}}$$

$$\mathbf{a}(x) = \begin{cases} c & x < 60 \\ 1 + (1-c) \cdot \frac{(x-110)}{50} & 60 \leq x \leq 110 \\ 1 & x > 110 \end{cases}$$

$$f(x) = \begin{cases} p & x < 60 \\ \frac{(110-x) \cdot p + (x-60) \cdot q}{50} & 60 \leq x \leq 110 \\ q & x > 110 \end{cases}$$

where  $c = 0.13$ ,  $p = 0.55$  and  $q = 0.29$ .

Specimen values of the reduction factors are given on a separate sheet.



Reduction factors (expressed as percentages) with 1992 as the base year.  
Males and females, "lives" and "amounts"

Time in years, measured from 1992

Age $x$	4	8	12	16	20	24	28	32	36	40
60	87.2	76.2	66.9	58.9	52.2	46.4	41.4	37.2	33.7	30.6
65	89.2	79.9	71.9	64.9	59.0	53.8	49.4	45.6	42.3	39.4
70	91.0	83.2	76.4	70.5	65.3	60.8	56.9	53.5	50.5	47.9
75	92.7	86.3	80.6	75.6	71.3	67.4	64.0	61.0	58.4	56.1
80	94.2	89.0	84.4	80.3	76.7	73.5	70.6	68.1	65.8	63.8
85	95.5	91.5	87.9	84.6	81.7	79.1	76.8	74.7	72.8	71.1
90	96.7	93.7	91.0	88.5	86.3	84.3	82.5	80.8	79.3	78.0
95	97.7	95.6	93.7	92.0	90.4	88.9	87.6	86.4	85.3	84.3
100	98.6	97.3	96.1	95.0	94.0	93.1	92.3	91.5	90.8	90.1