



Faculty Of Advocates Periodical Payment Orders

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Views of Longevity

- ▶ “Who wants to live forever?” – Brian May / Queen
- ▶ “I wanna live forever” – Irene Cara
- ▶ “I don’t wanna live forever” – Taylor Swift / ZAYN
- ▶ “Nothing can be said to be certain except death and taxes” – Benjamin Franklin
- ▶ “Life? Don’t talk to me about ‘Life’. ” – Marvin, the paranoid android

Actuarial Work

- ▶ “E peritia ratio” – “Reason from experience” – Institute and Faculty of Actuaries
- ▶ “Certum ex incertis” – “Certainty from uncertainty” – Institute of Actuaries
- ▶ Life Expectancies – how long do we expect to have to pay / receive the cashflow?
- ▶ Mortality – What is the chance of someone aged 40 surviving
 - ▶ for 10 years?
 - ▶ or 20, or 30, or 40 years?
- ▶ Actuaries use large data sets – the “law of large numbers” – to predict mortality rates
- ▶ Mortality Rates are based on averages

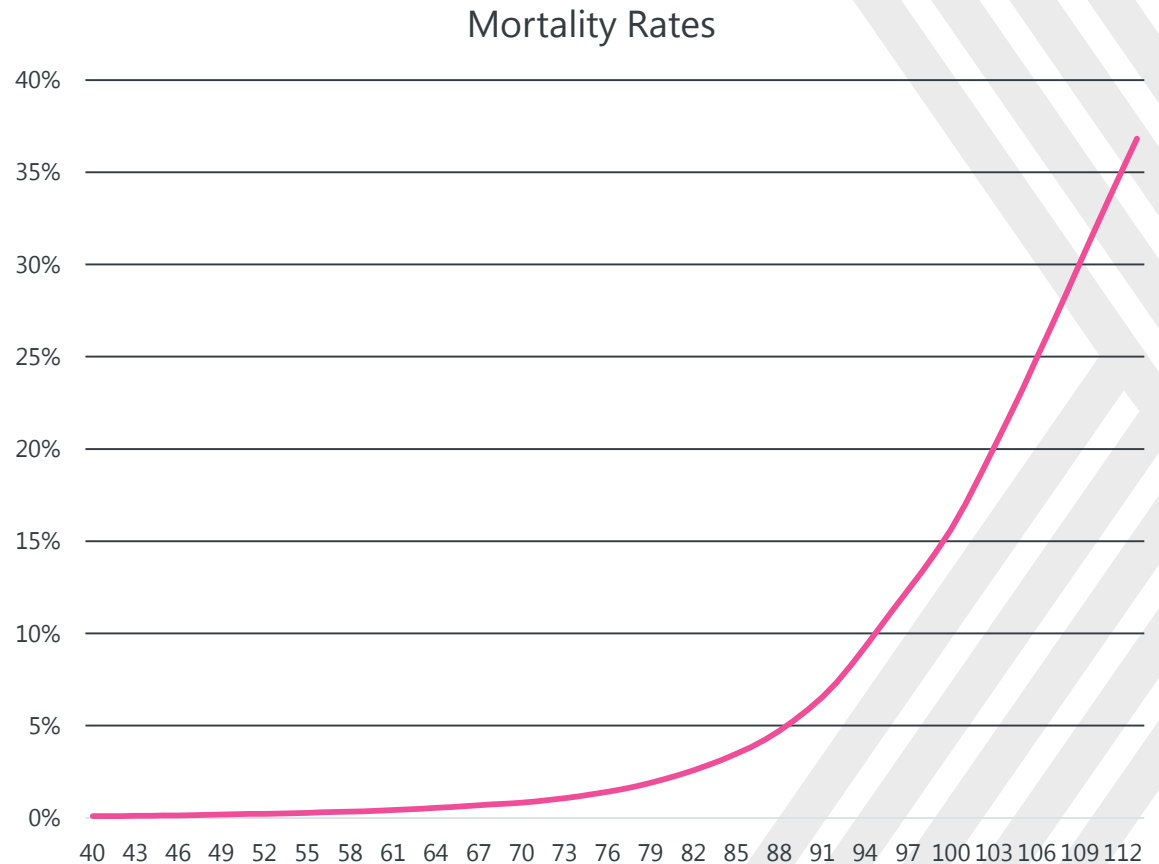
Mortality Rates

Actuaries use mortality rates to work out the chance of someone dying in a given period.

These are annual rates, e.g. the probability of someone aged 88 dying in the next year is 5%

Lots of different tables for different "populations" e.g. different tables for:-

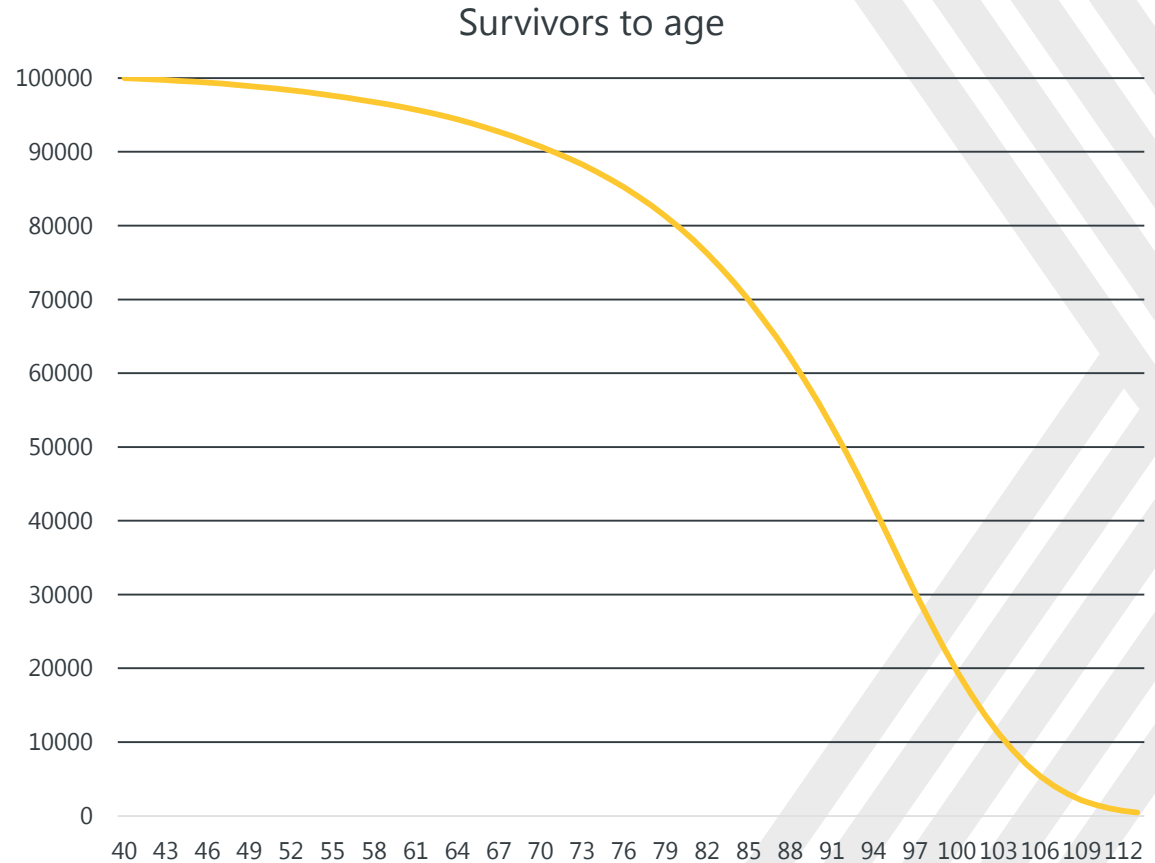
- Males
- Females
- Highly paid
- Lowly paid
- Workers



Life Expectancy

We apply these mortality rates to a (large) starting number to get the number of survivors at each age.

This is the table for a starting population of 100,000 females, all aged 40, using the population mortality that underlies the "Ogden Tables".



Distribution of Deaths

If we take the differences between the numbers of survivors to each age, we have the expected number of deaths at each age.

Life expectancy (the average) is 49.24 years. (See Ogden table #2, 0% interest)

Actuaries **do not** assume that everybody lives to age 89.24 and then dies. We **do** assume that there will be a range.

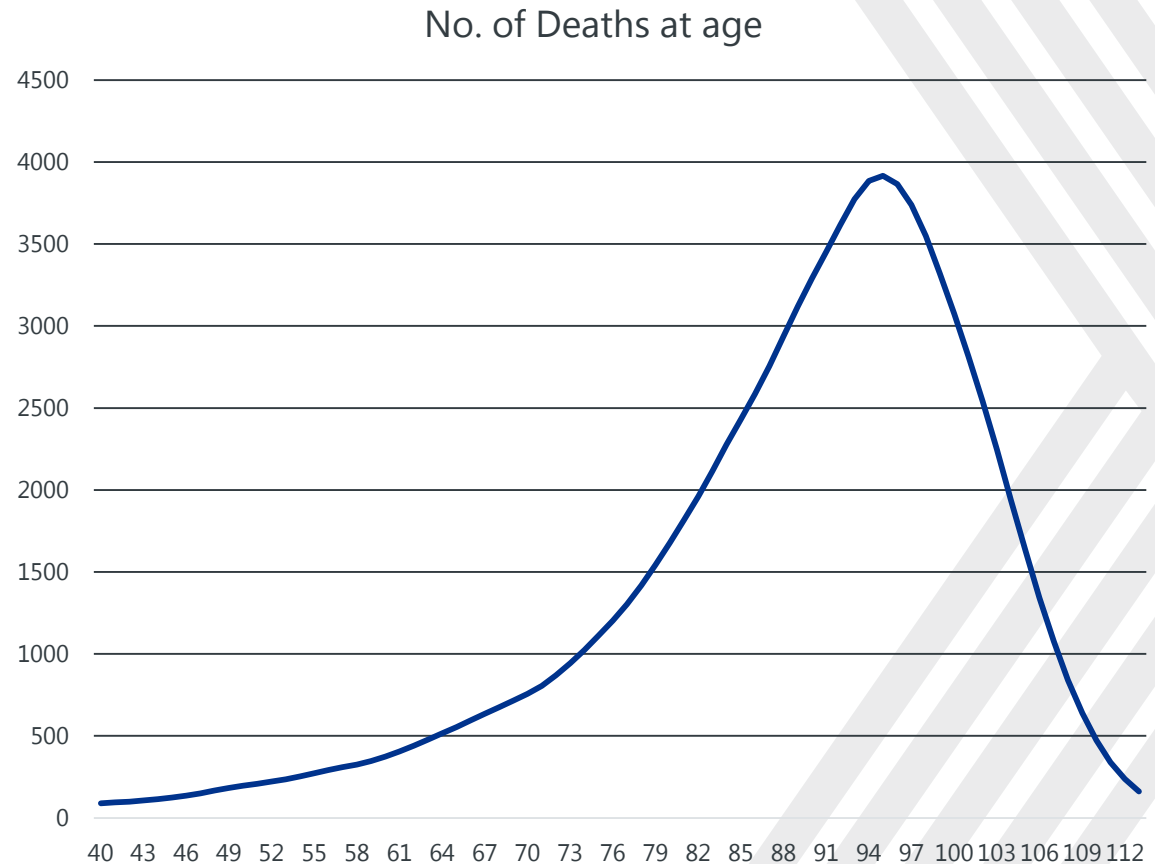
In this table:-

20% die between 40 and 80

30% die between 81 and 91

30% die between 92 and 99

20% live to over 100



Costs of Periodic Orders

Individual dies at age	Cost of PPO	Gain / (Loss) vs Lump Sum
50	£103,900	£501,300
60	£215,800	£389,400
70	£336,600	£268,600
80	£466,800	£138,400
90	£607,100	(£1,900)
100	£758,400	(£153,200)
110	£921,600	(£316,400)

Using the Ogden tables, the multiplier at -0.75%, for a female aged 40, is 60.52.

So the cost of £10k p.a. (index linked) would be £605,200. This would be the lump sum settlement (before allowance for tax).

If the individual dies at a different age, we have over or under allowed.

So if we use a Periodical Payment Order, the amount paid out could be materially greater or less, depending upon the specific longevity of the individual.

Outliers – If things are not as expected



The risk of paying *"en viager"*



1965

1975

1985

1995

"In life, one sometimes makes bad deals,"

What might cause higher than expected lifespans?



Government intervention

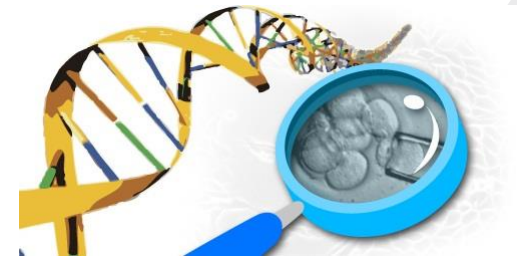
Medical innovation



Genome mapping



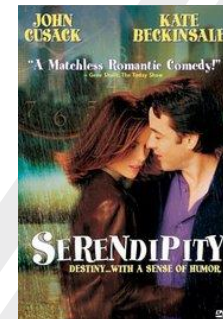
Regenerative medicine



Superdrugs



Serendipity



What might cause lower than expected lifespans?



Resource scarcity

Obesity



Smoking

Superbugs



Impaired Lives

- ▶ If someone is using an advocate, something has gone wrong
- ▶ Medical impairment? / Disability? / RTA? / Criminal Injury?
- ▶ These are “Impaired Lives”
- ▶ Mortality – What is the **adjusted** chance of someone aged 40 surviving
 - ▶ for 10 years?
 - ▶ or 20, or 30, or 40 years?
- ▶ Need expert advice on how the mortality rates will have changed
- ▶ Very small sample sizes, so greater variability

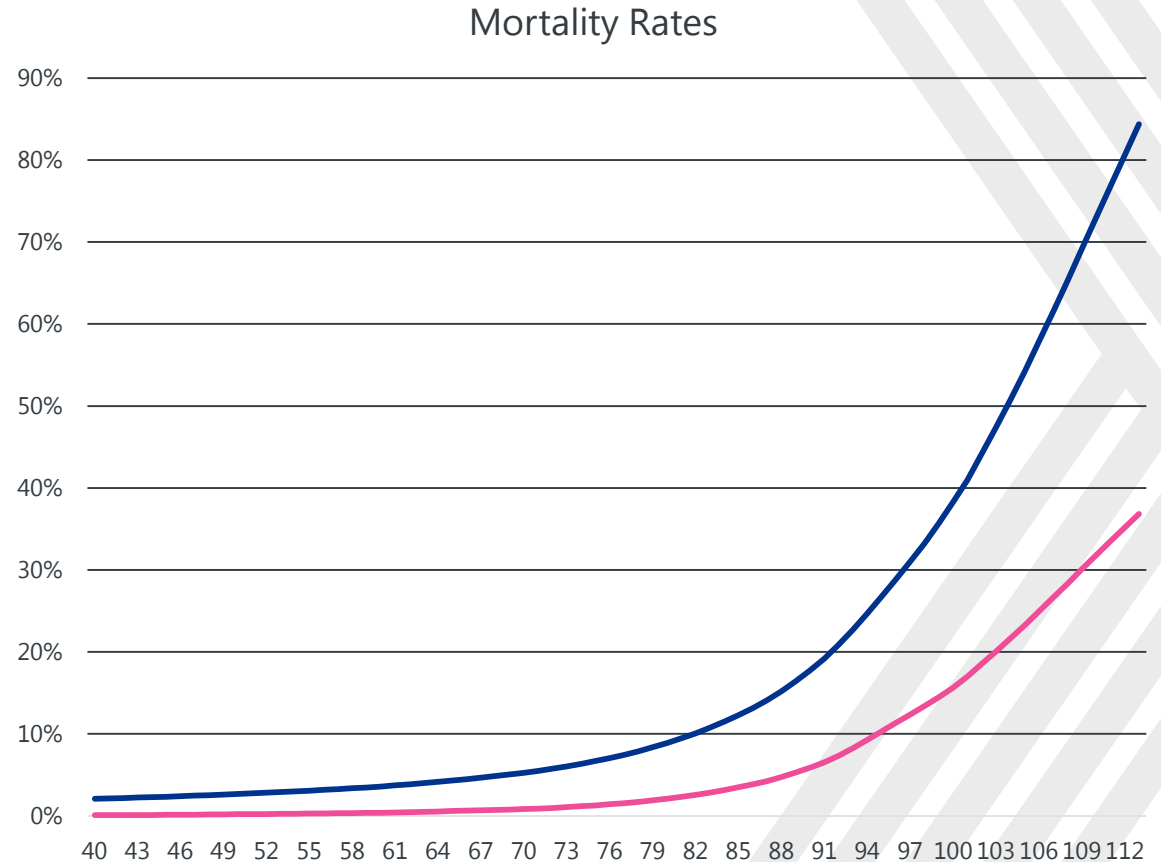
Mortality Rates

This is the same graph of mortality rates as before, for healthy females (but rescaled).

Now I have added a suggested mortality table for impaired lives.

This is for a female who has had a traumatic brain injury, who could not self-feed, and had bad epilepsy.

Life expectancy is now halved.

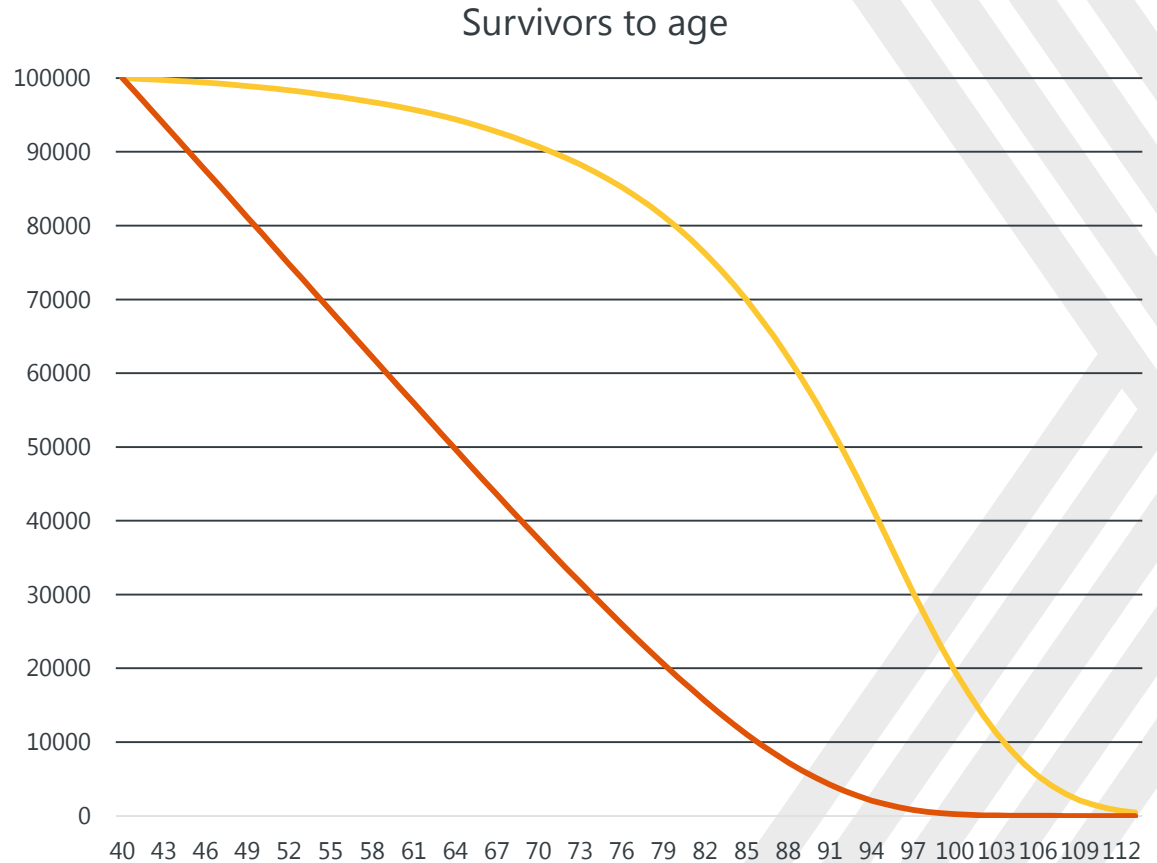


Life Expectancy

This is the same table as before, with the expected number of survivors at each age from our 100,000 healthy 40 year old females.

I have added the graph of survivors on the heavier mortality tables for the females with a traumatic brain injury.

A large number of these females will die a lot earlier.



Distribution of Deaths

Finally the same distribution of expected deaths for the healthy 40 year old females.

This time with the distribution of expected deaths for the impaired lives

Life expectancy is around half.
How do you argue for a PPO?

Or how do you argue against it?

The Ogden Tables won't help, as they are based upon population mortality that is no longer appropriate.

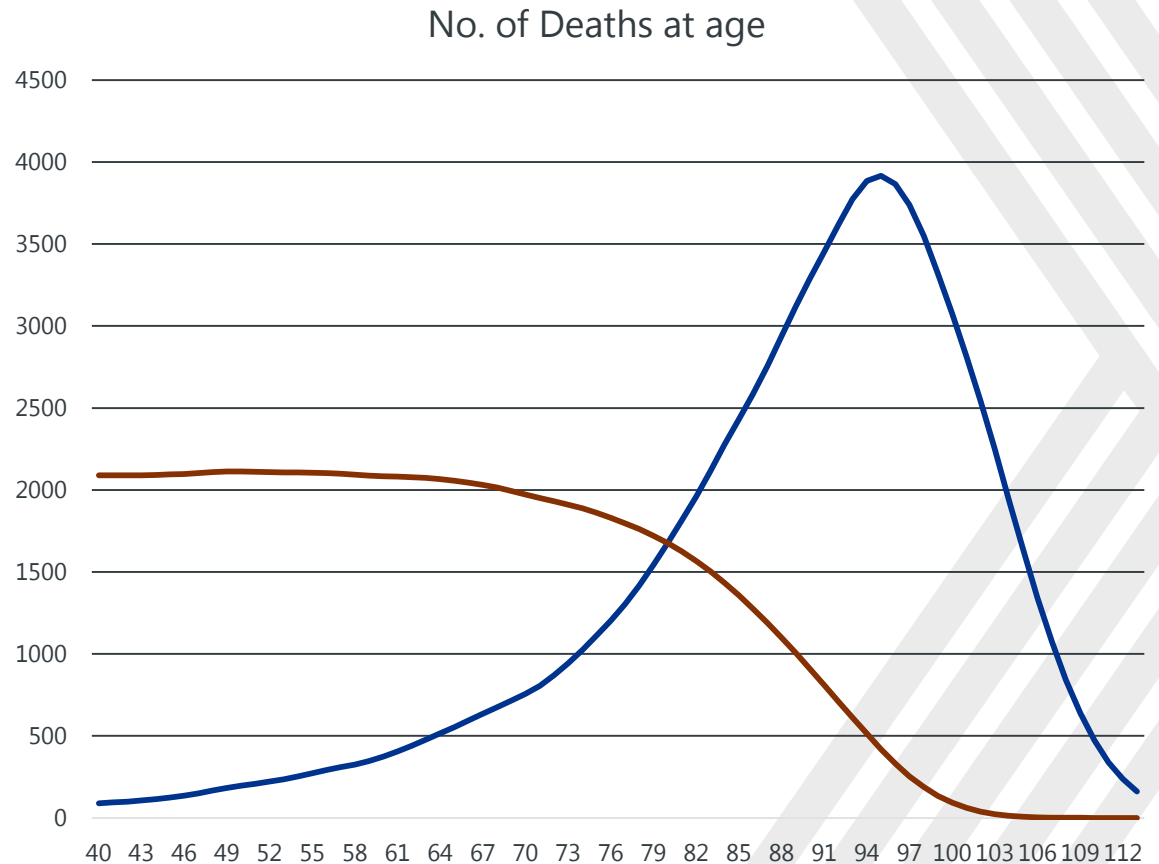


Table and text

Individual dies at age	Cost of PPO	Gain / (Loss) vs lump sum
50	£103,900	£172,100
60	£215,800	£60,200
70	£336,600	(£60,600)
80	£466,800	(£190,800)
90	£607,100	(£331,100)
100	£758,400	(£482,400)
110	£921,600	(£645,600)

The cost of the PPO's depending upon date of death are unaltered, but the lump sum equivalent **should** be very different.

A corresponding multiplier for this impaired life table is 27.6, so the suitable lump sum would be £276,000.

What if you offered a lump sum of £605,200?

If the Ogden Tables won't help, what will?

Creating impaired lives tables

- ▶ There is not enough experience at each age / level of impairment to create suitable impaired life tables
- ▶ What might a medical expert tell you?
 - ▶ The individual's life expectancy is reduced by 10 years
 - ▶ The individual has the life expectancy of someone 20 years older
 - ▶ The individual has an extra 2% chance of dying each year?
- ▶ You need details like this to get a realistic view of the adjusted life expectancy
- ▶ Then call in your friendly actuary to do the sums



Any Questions?

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