



Longevity: *A new lease of life for the actuarial career path?*

Douglas Anderson, Club Vita Founder

Mark Sharkey, Head of Client Delivery

Staple Inn Actuarial Society, 2 December 2020

A little bit about us...







Source: FaceApp

The future?





Turning back the clock ...



2015: Mark graduates from Heriot-Watt Edinburgh and joins the world of actuarial consulting



What will we cover today



A short primer on longevity philosophy



How longevity actuaries add value



A healthy niche for career specialisation?



Your questions







1 A quick primer on longevity

Dividing up baseline and trends



6

analysis of survival data



Mortality risk or longevity risk?







Three sub-risks

Individual Risk

16%

14%

Idiosyncratic risk (or individual risk)

The risk that certain members of a population live significantly longer (or shorter) lives than that predicted, driven by the natural variation in a population (where some people may just be (un)lucky with how long they live).

Basis (or baseline) risk

When calculating the longevity for a given population, this is the risk of how much the given population differs from the population used to calculate the baseline longevity assumption.

Trend risk

The risk that mortality rates decrease (or increase) at a different rate to that assumed, resulting in people living for different lengths of time than predicted.



Lexicon of Longevity

A glossary of Longevity terms

8

https://www.clubvita.net/glossary

Club Vita

 2008
 2015
 2019

Proper noun, [kluhb vee-t*uh*], \'kləb vē-tə\

- 1. Center of excellence for improving understanding of human longevity.
- 2. Community of organizations with a shared interest in longevity and belief that the 'bigger' the data, the lower the (statistical) noise.
- 3. Provider of longevity risk informatics to support pension funds' risk management strategies and enable market innovation.

Club Vita is an independent data utility, supporting pension funds, advisors, insurers & asset managers





2 Longevity actuaries adding value

Combine actuarial techniques with real world knowledge



Low life expectancy

KAS

KA18 2

KA6 5



Understand the commercial consequences



Period life expectancy from age 65



"..." £2bn windfall to the life sector."

12

THE WALL STREET JOURNAL.

me World U.S. Politics Economy Business Tech Markets Opinion Life & Arts

MARKETS | HEARD ON THE STREET

Life Was Short for Longevity Gains

Life expectancy at 65 is falling and that means cash windfalls for insurers

At the population level, longevity improvements have slowed in the last decade



Look under the bonnet ...



Exploring the socioeconomic spectrum can uncover the true story



Broaden your horizons



Note: The first decile represents the 10 percent of the population in counties with the lowest SISs and the 10th decile represents the 10 percent of the population in counties with the highest SISs.

https://www.soa.org/globalassets/assets/files/resources/research-report/2020/mort-socioeconomic-cat-report.pdf

Inter scheme diversity

Standard tables only capture a fraction of the diversity of pension plans in the US

Fewer than 50% of plans in our initial calibration of VitaCurves are close to Pri-2012 expectations

And only a small minority have enough data to create experience adjustments.



Source: Club Vita analysis of c100 single employer plans

Very few plans that you insure have enough to perform experience analyses.



Intra scheme diversity





Identify potential societal trends

Lower longevity improvements



Short term risk of COVID-19

There is a risk that we see further waves of infection as social distancing measures are relaxed



Long term risk of COVID-19 Disease could continue to be a risk without finding an effective vaccine.



Impaired long-term health

The long term health of those who were infected with COVID-19 but survived the virus might be damaged.

Disruption to non-COVID care



Global recession



A global recession may impact future public sector spending in health care.

Higher longevity improvements

Survivorship bias

The average health of the surviving population could be higher in the years following the outbreak.

Reduced circulation of flu Change in social behaviour (e.g. increased handwashing) may reduce prevalence of flu and other infectious diseases in future.

Reduction in air pollution

Change in social behaviour may result in the reductions to air pollution persisting.



Reduction in smoking Disease may have encouraged existing smokers to stop

Health/social care funding increase Issues with funding unearthed during the

pandemic may be more likely to be addressed



 $(\mathbf{+})$



Quantify effect of scenarios on each scheme



Visualise the shapes effects



Consider how future scenarios would impact scheme cashflows



Source: Club Vita COVID scenario analysis of a sample pension fund. The scenario is for illustration only, no probability is assigned to the likeliness of these effects. Impact figures rounded to nearest integer.



3 Healthy career prospects?

Study history





Learn from crises







Know your limitations



Understand our interconnected world ...



Maths has replaced the microscope





Genomics is set to revolutionise medicine





Longevity follows lifestyle





- Research suggests lifespan is less than 20% genetic
- Lifespan (from birth) driven more by nurture than nature
- But genetics is used to study pace of ageing

Biological age estimation

New data points that could enable product innovation and leading indicators of emerging health trends



ELYSIUM



Buy Index Products Company Index **Discover Your Biological Age** Index, a revolutionary at-home test developed by Elysium Health, tracks how fast you've been aging using the latest generation technology in the science of epigenetics. With Index you'll receive: • Biological Age, a measure of the average age at which your body is expected to function • Cumulative Rate of Aging, the pace at which your body has aged for every year you've been alive Science-backed lifestyle recommendations you can use to adopt healthier habits • Exclusive pricing for Basis subscribers starting at \$299 Buy Now \$499

RAND EUROPE

Incentives and physical activity

An assessment of the association between Vitality's Active Rewards with Apple Watch benefit and sustained physical activity improvements

Marco Hafner, Jack Pollard, Christian van Stolk https://www.rand.org/content/dam/r and/pubs/research_reports/RR2800/R R2870/RAND_RR2870.pdf





Our next big challenge





The role of geography







https://www.clubvita.us/news-and-insights/zooming-in-on-zipcodes

Falling interest rates increase importance of longevity



Each one year increase (or reduction) in life expectancy now costs (or saves) 4% of reserves for a typical 65 year old.
Mis-estimates from current blunt practices are increasingly costly, causing opportunity costs in a range of pension decision-making.

Investment applications

Sensitivity of liability benchmarks to changing longevity



Sensitivity of PV01 to Longevity Risk



Sensitivity of IE01 to Longevity RIsk





Illustrative based upon a highly simplified approach to estimating LE01 as applied to liability PV01s for example scheme

Longevity skills travel

VITACURVES			İ.		İ	
Total spread	🛑 12 y	vears	🔶 10 y	vears	91/2 y	ears ^a
Gender specific spread	10½	81 /2	◆ 7 ◆	71/2	8 ¹ / ₂	6 ¹ / ₂
Retirement health	21/2	3	1/2	2	1	1
"Normal health" spread	8	51 /2	6 ¹ ⁄ ₂	6	71 /2	6
Lifestyle	4¼	41/2	2¾	31/2	3¼ ^a	3½ ^a
Affluence	31/2	1/2	2	21/2	3¼	11/2
Occupation	1/4	1/2	1¼	<1/4	1¼	1



Effects shown are the impact of changing one rating factor in isolation. Precise impacts depend on order of changing variables and so above reflects broad quantum and therefore relative importance of each variable. Sums may not add due to rounding. UK and Canada calibrated to data from both public and private sectors, which show no material difference when salary and postcode are known (the first generation US calibration only used private sector data). (a) Anticipating a wider US spectrum in 2020 release as salaries are introduced as measure of affluence.

RIP: CAPS 1984-2016

Financial News

ASSET MANAGEMENT

Caps no longer fits BNY Mellon

Bank's Combined Actuarial Performance performance data service is to be closed down after a fall in subscriptions

By Mike Foster

Thursday February 25, 2016 8:55 pm

The business was started by investment consultants Watson Wyatt, Bacon & Woodrow and Mercer in 1984. For several years, its data-fed benchmarks set the targets managers and pension schemes needed to beat.

A Caps subscriber said: "The firm has lost out because its subscriber base became too low. It's been overtaken by eVestments and Mercer's GIMD performance service."



https://www.fnlondon.com/articles/caps-closes-bny-mellon-20160225



Increases demand for "cultural translators"



Think of Club Vita like the demographic equivalent of an investment performance benchmarking service



Many other actuaries are specializing in longevity



Longevity influences many situations

- ✓ Acquiring mortality risk exposures as an asset
- ✓ Holistic well-being (financial, physical health, mental health, work)
- Evaluation of index-based longevity risk transfers
- ✓ Financing social care for elderly
- Equity release mortgage portfolio management
- Managing portfolios of social housing stock

How many longevity actuaries in 10 years?





4 Your questions