



2019 **ANNUAL
MEETING**
& EXHIBIT

October 27-30
Toronto, Canada

Session 160: PRT Reinsurance in the U.S.: A Market in the Making

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PRT Reinsurance in the US: A Market in the Making

Insights from other regions

James Ciamarro, FCIA, FSA
Vice President, Longevity

October 30, 2019

Role of Longevity Reinsurance



Why longevity risk now?

- Risk
- Supply / Demand
- Expertise
- Products

Life expectancy is increasing

+1 year of life expectancy

4% Increase in reserves

50% Drop in ROI

Supply and Demand Dynamics

RGA 2018 Canadian Insurer Survey

Risk

Supply /
Demand

Expertise

Products

70% foresee total group annuity market sales in 2018 to be **> \$3.5B** (actual = 4.7B)

foresee an **100% increased appetite** to write group annuity business

85% already have or will develop a **longevity insurance** offering for pension plans

70% are willing to assume a single day transaction amount of **> \$250M**

RGA



Expertise

Understanding mortality / longevity risk is a life reinsurer's specialty!

Diversification

Life insurance

R&D

Due diligence

Global reach

Data

Product – De-risking Processes to Date



‘Warehousing’

Insurer writes a number of deals

Warehouses the risk and then seeks reinsurance

‘Quoting Partners’

Insurer receives request for quotation from plan

Reinsurance pricing sought to include in buy-out/in, longevity swap

‘Flow Treaty Agreement’

Reinsurance pricing and terms agreed in advance

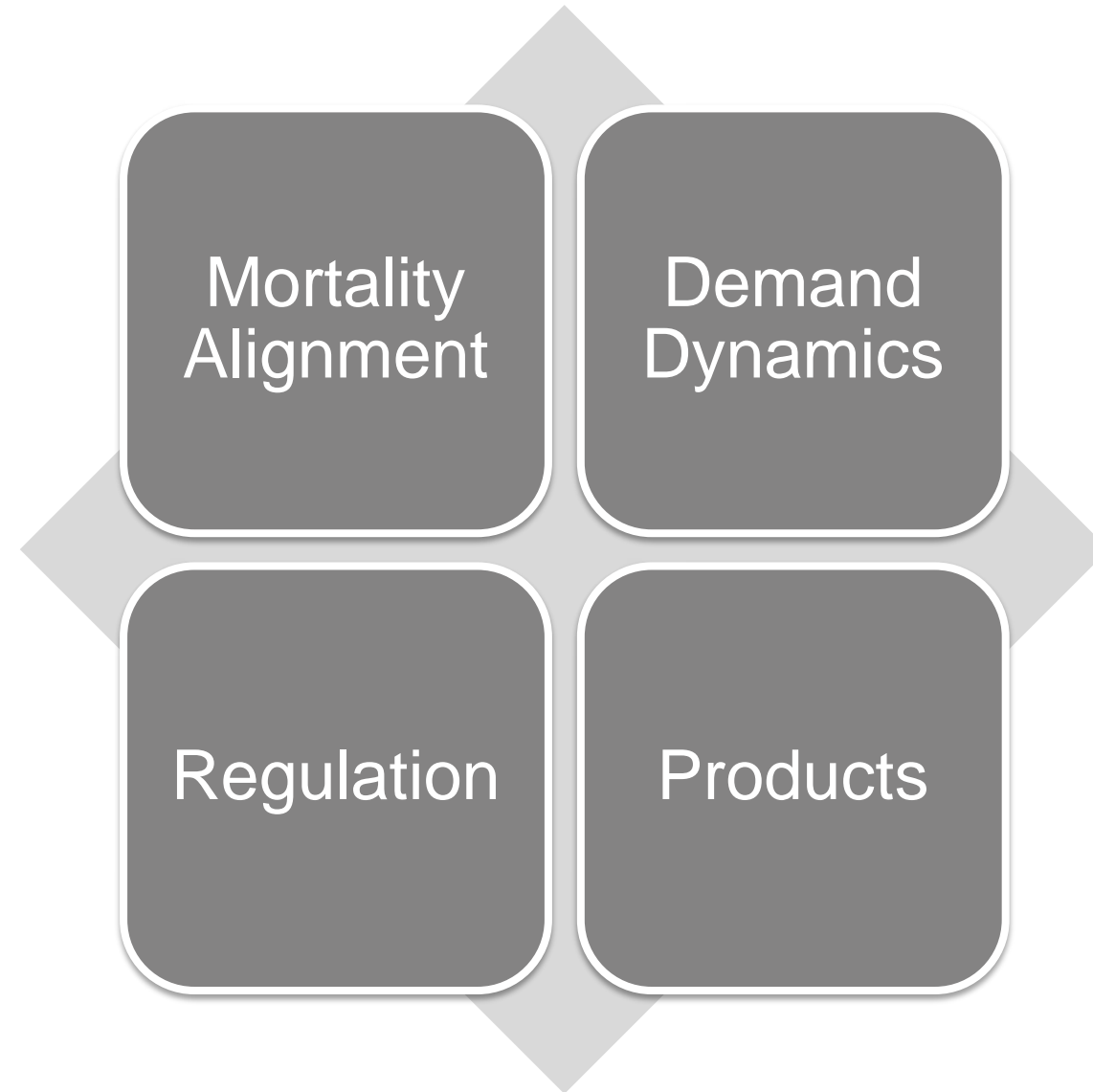
As plans are written by insurer reinsurance effected automatically

‘Going direct’

Pension plan creates insurance ‘cell’

Plan transacts directly with reinsurer

Ingredients for a successful market



Mortality Alignment

A common language for all market participants



- Continuous Mortality Investigation (CMI)
- 1924: Continuous collection of data
- 1953: Provides mortality projections alongside published mortality tables
- 2002: Projections in the form of models requiring parameterisation
- Working papers and projections
- Less mortality alignment recently (“blip” vs “dip”?)



- 2014: First-ever Canadian-specific pensioner mortality tables
- 2017: Prescribed mortality improvement scale MI-2017
- Various market initiatives to better understand longevity risk (e.g., Club Vita Canada)

Regulation – Pension

Increasing burden to administer a pension scheme



- Pensions Acts 1993, 1995 & 2004
- Introduction of a Regulator
- Tri-annual valuation & minimum funding requirement
- Pension Protection Fund



- Pension reform late 80s/early 90s
- Many regulatory jurisdictions
- Periodic valuation & minimum funding requirement
- Pension Benefits Guarantee Fund
- Recent wave of regulatory reform
 - Clarification of annuity discharge rules
 - Funding reform

Regulation – Insurance

Recent changes in capital regimes



- 1973: Solvency I
 - Factor-based system
- 2016: Solvency II
 - Principles-based system



- 1992: Minimum Continuing Capital and Surplus Requirements (MCCSR)
 - Factor-based system
- Life Insurance Capital Adequacy Test (LICAT)
 - Principles-based system

Demand Dynamics

Pension schemes' and insurers' motivations



- Healthy funding ratios
- Mortality improvement slowdown
- Insurers putting more focus on bulk annuity market
- Introduction of pension superfunds



- Healthy funding ratios
- Mortality improvement slowdown, although not as pronounced as in the UK
- Healthy (re)insurance supply including new market entrants
- “Right-risking” of pension schemes

Product Offering



Buy-out

Complete settlement of plan liability



Buy-in

Plan investment that perfectly matches liability



Longevity Risk Transfer

Converts unknown future liability into a fixed payment over time



RGIA



PRT Reinsurance in the US: A Market in the Making

The role of data can play

Erik Pickett

October 30, 2019

Club Vita

Proper noun, [kluhb vee-tuh], \ 'kləb vē-tə\



2008



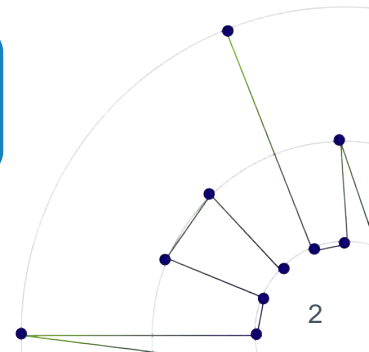
2015



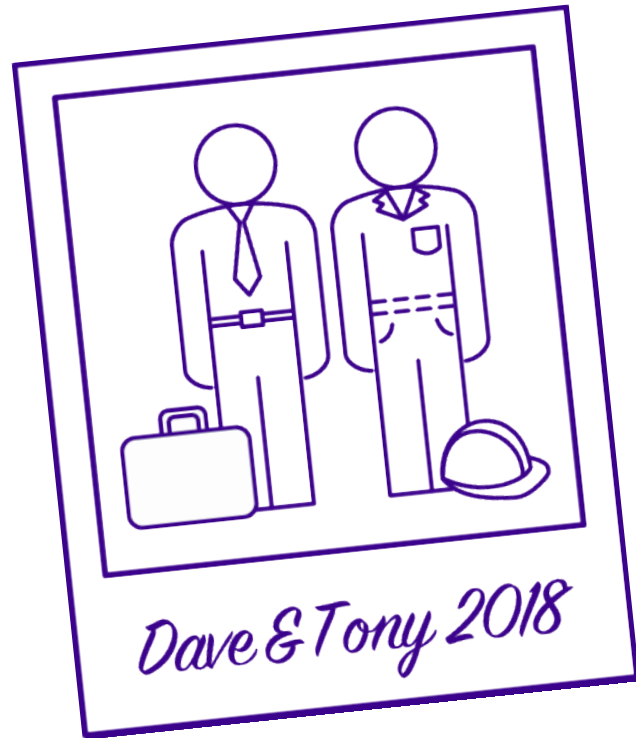
2019

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 a specialist longevity data analytics provider

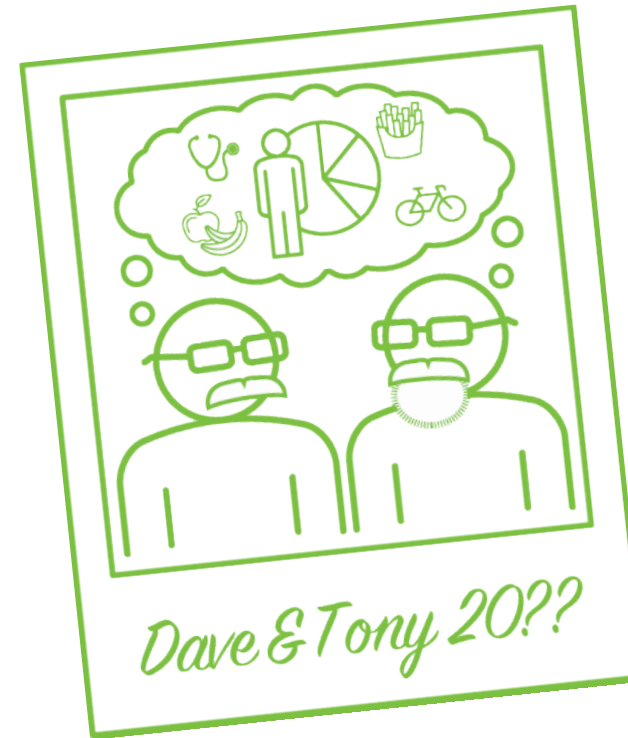


Two steps to calculate life expectancy



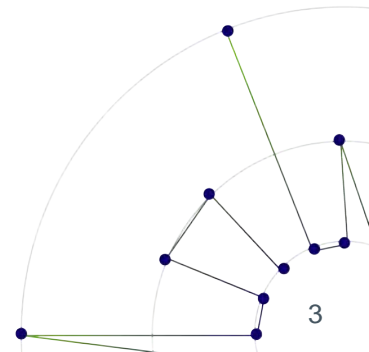
Baseline

Snapshot of current state of longevity



Future trends

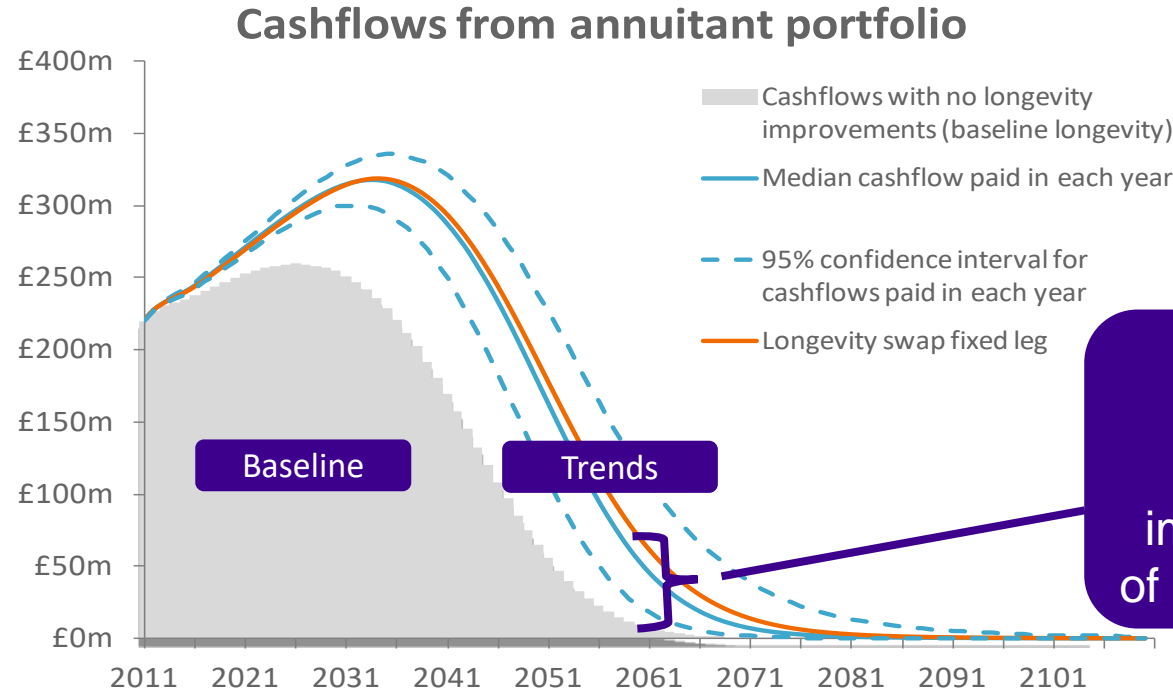
How longevity will change in the future



Thinking in cash flows

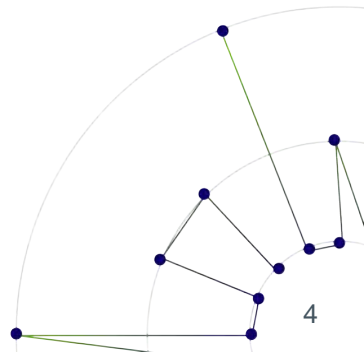
Adoption of cash flow-driven investment philosophy helped by separating baseline longevity from trends

By separating baseline from improvements you clarify your strategy and your unmanaged risks



Main source of uncertainty is the trends over time, impacting the length of the tail of the run-off

You can have high confidence in your baseline with smarter collection and analysis of survival data



Baseline: data is king

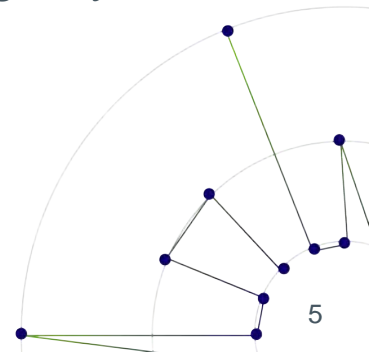
- Objective measure based on past experience
- Possible to get 'right'
- Key considerations:
 - ✓ Size of data set
 - ✓ Relevance of data set



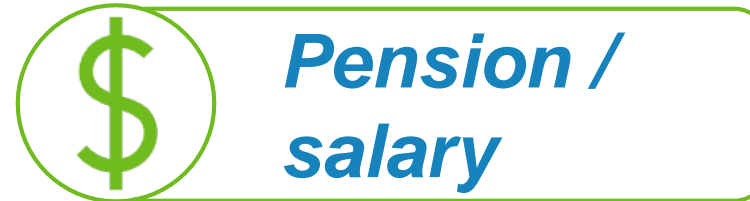
Baseline

Snapshot of current state of longevity

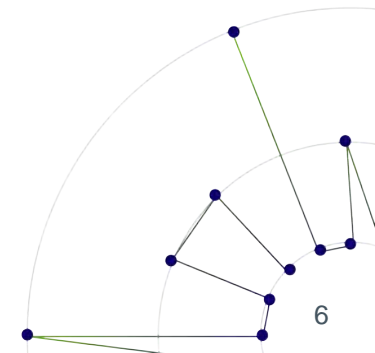
Relevance of data greatly increased by considering subgroups based on socio-economics



What affects life expectancy and what data is out there?



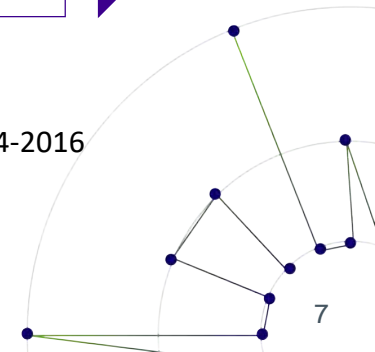
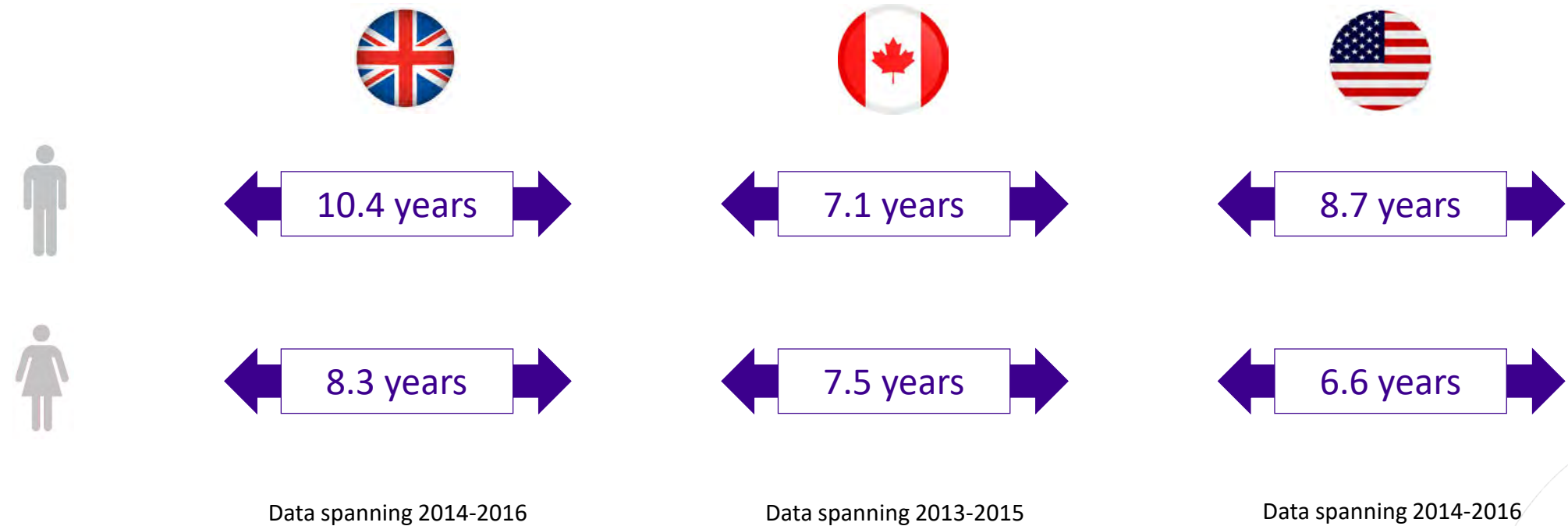
GLM used to calculate effects of each rating factor



We are all different

Baseline (period) life expectancy at age 65 for pension plan members

Gap between “unhealthy, low affluence, blue collar” and “healthy, high affluence, white collar”



Trends: one size does not fit all

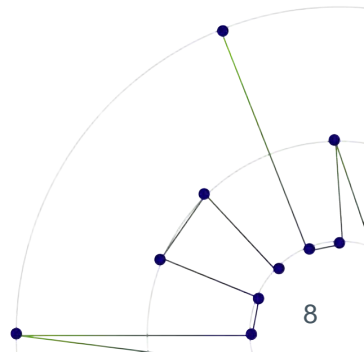
- More subjective measure
- Past experience good starting point
- Key considerations:
 - ✓ Socio-economic differences
 - ✓ Underlying drivers of trends



Future trends

How longevity will change in the future

Trends are being experienced differently by different socio-economic groups



In the news..

THE WALL STREET JOURNAL.

Life Was Short for Longevity Gains

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

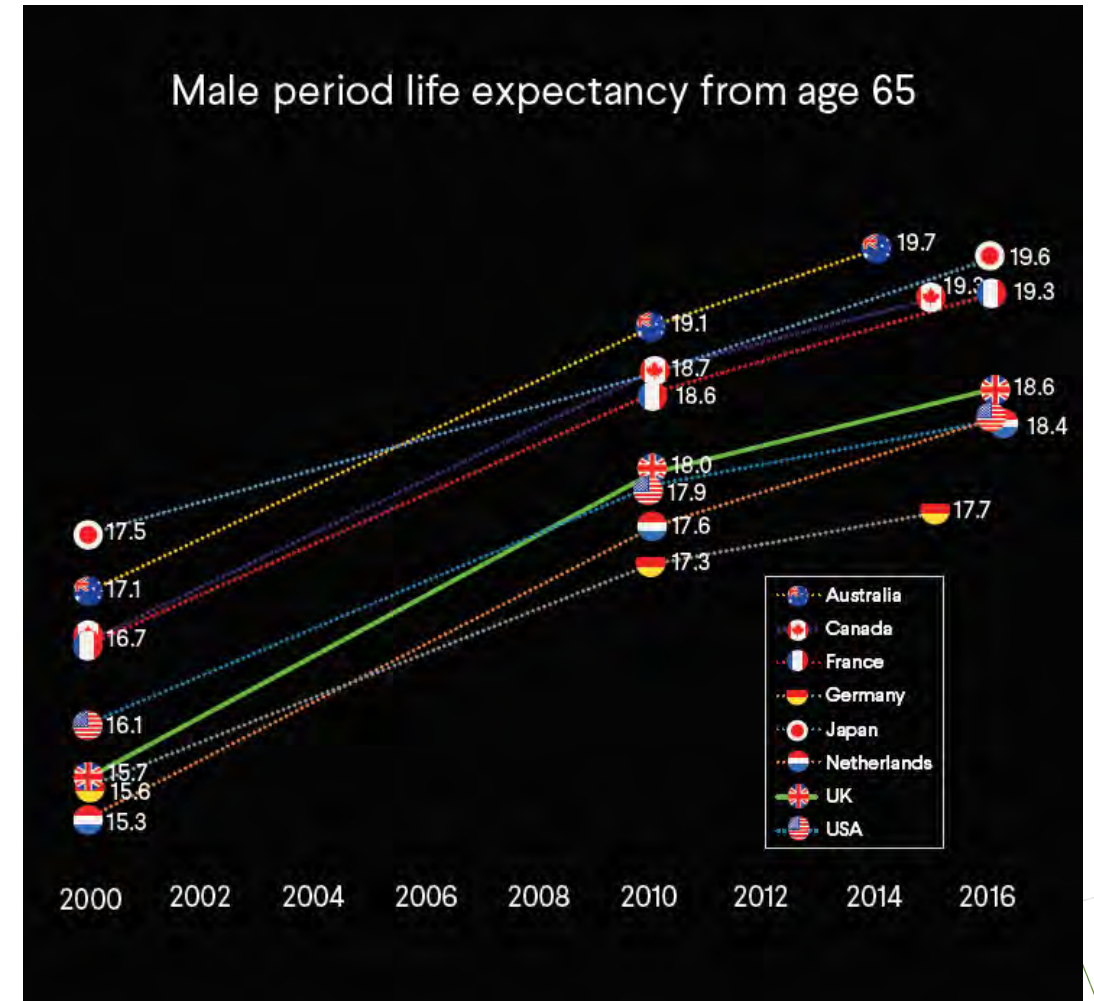
FINANCIAL TIMES

Life expectancy for Britons aged 65 falls by 5 months

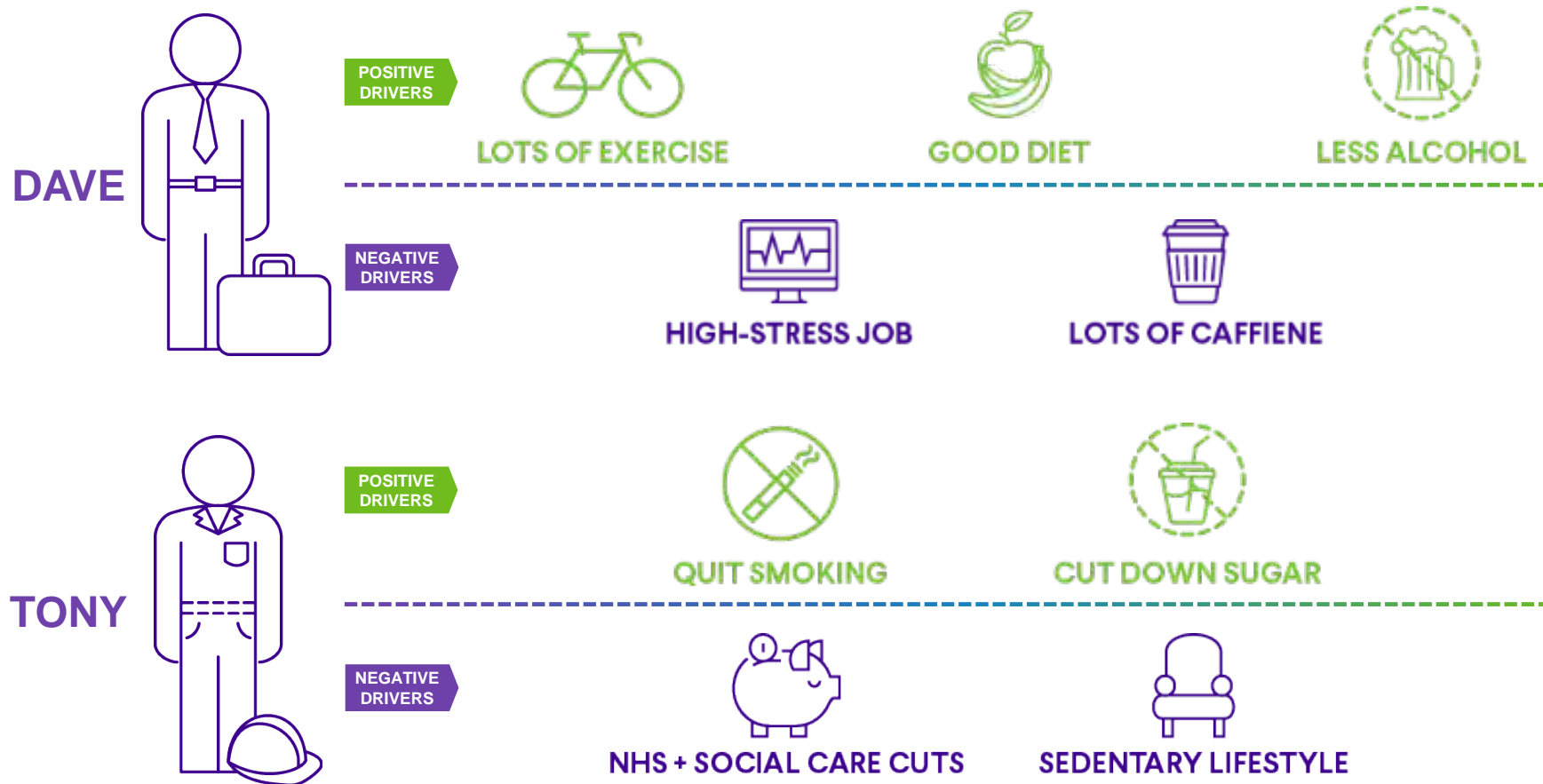
Decline has implications for pensions and insurance industry

NATIONAL POST

As life expectancy growth slows in Canada, are our lifespans hitting the 'wall of death' limit?



What influences future trends?



Different groups affected differently by underlying drivers

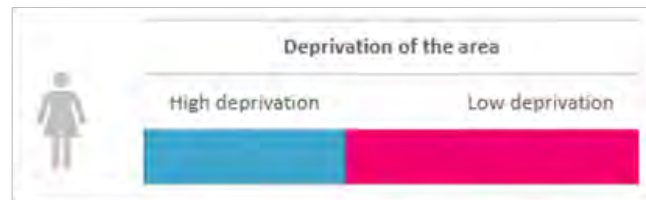
UK socio-economic trends



VITA SEGMENTS

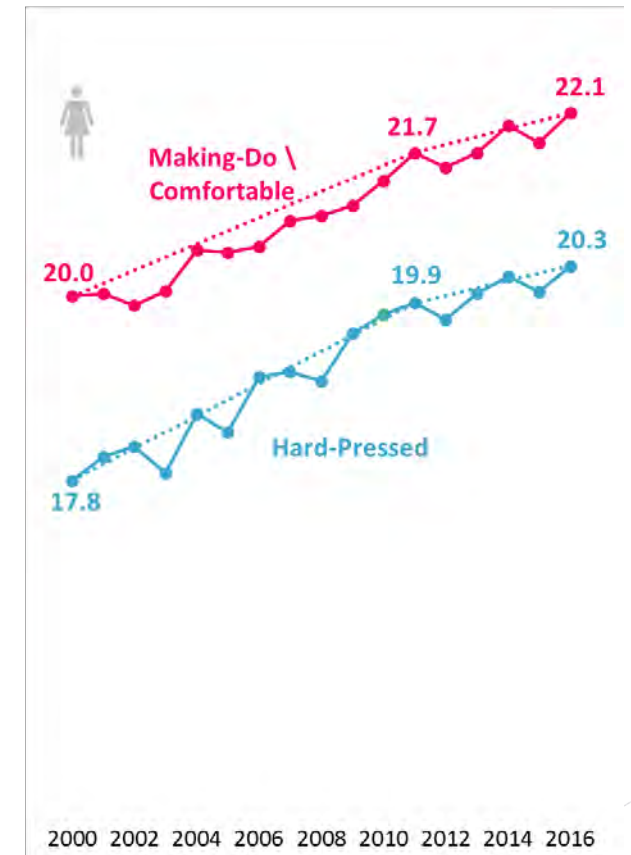
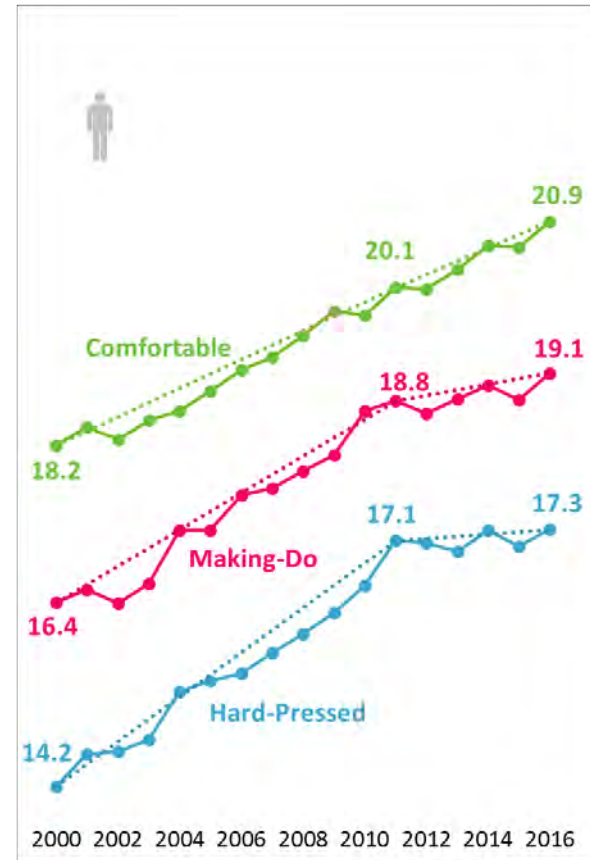


■ Hard-Pressed
 ■ Making-Do
 ■ Comfortable



■ Hard-Pressed
 ■ Making-Do / Comfortable

(Joint work with the PLSA)

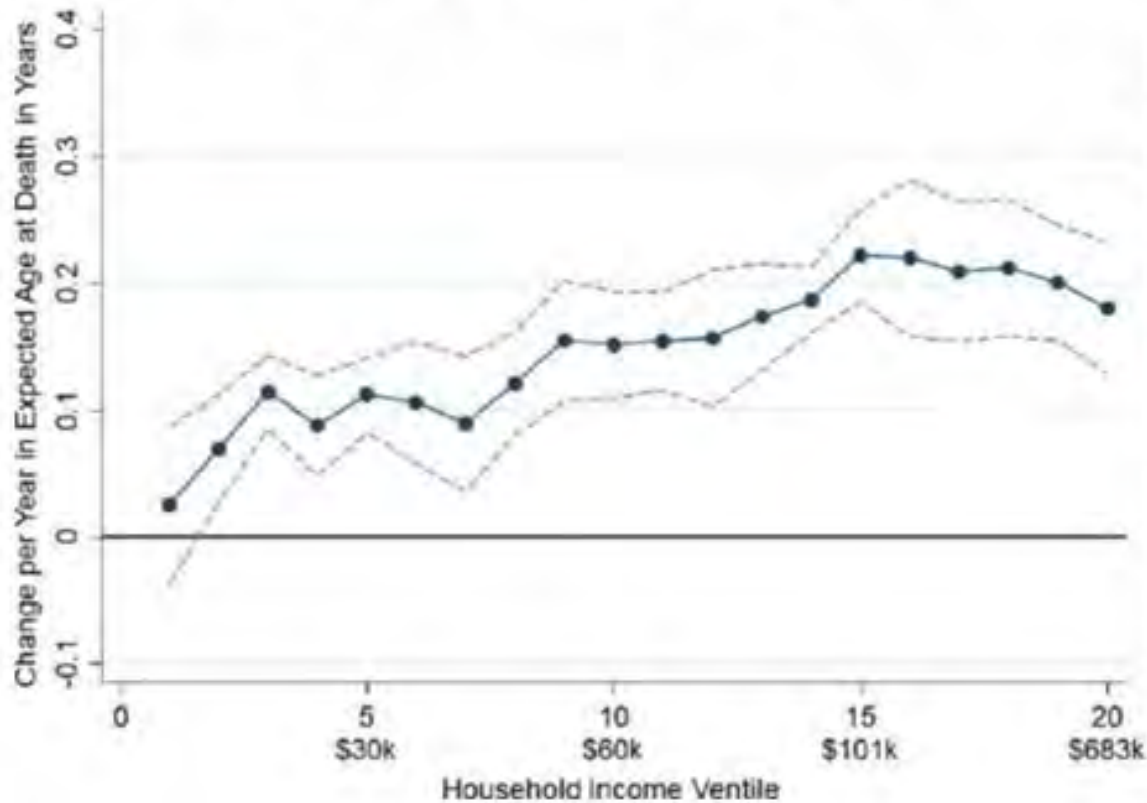


Most pension plans have liabilities dominated by comfortable group

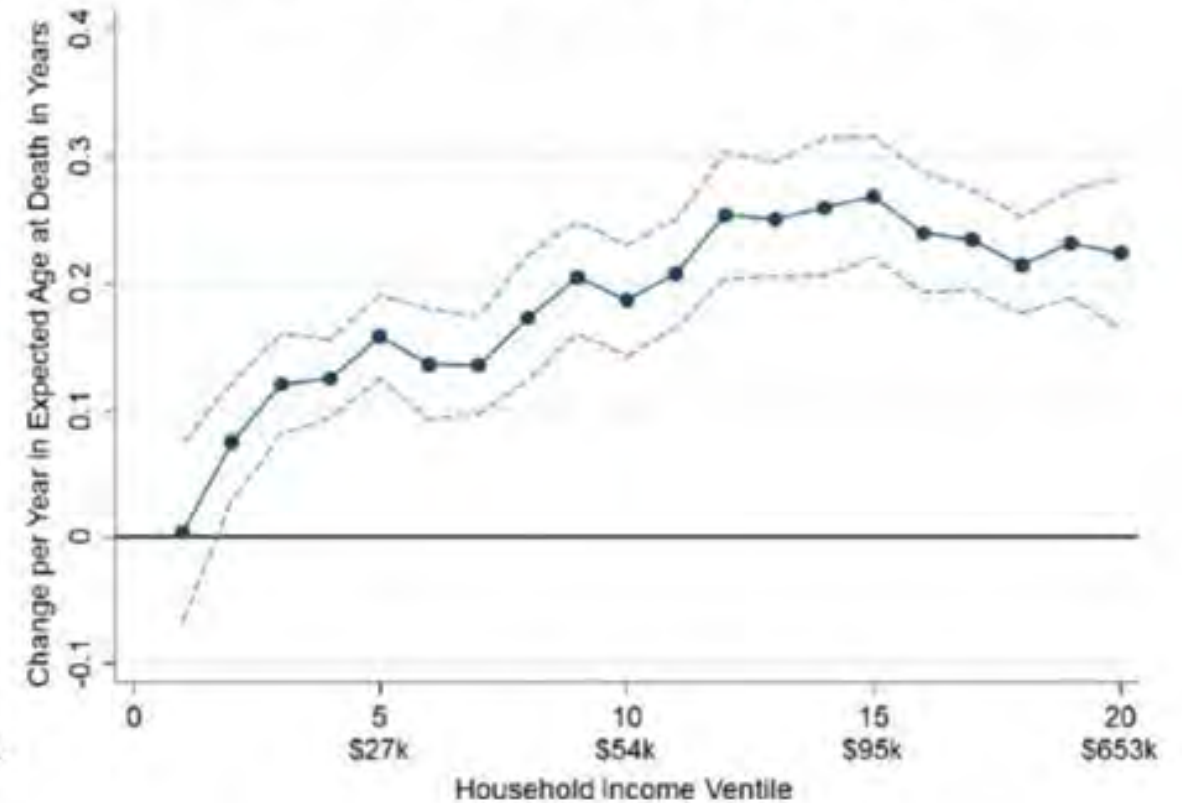
Life Expectancy Change by Income



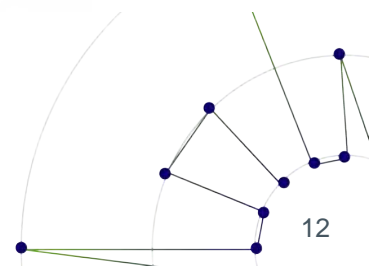
C. Average Annual Change in Life Expectancy from 2001-14 by Income Ventile, Men



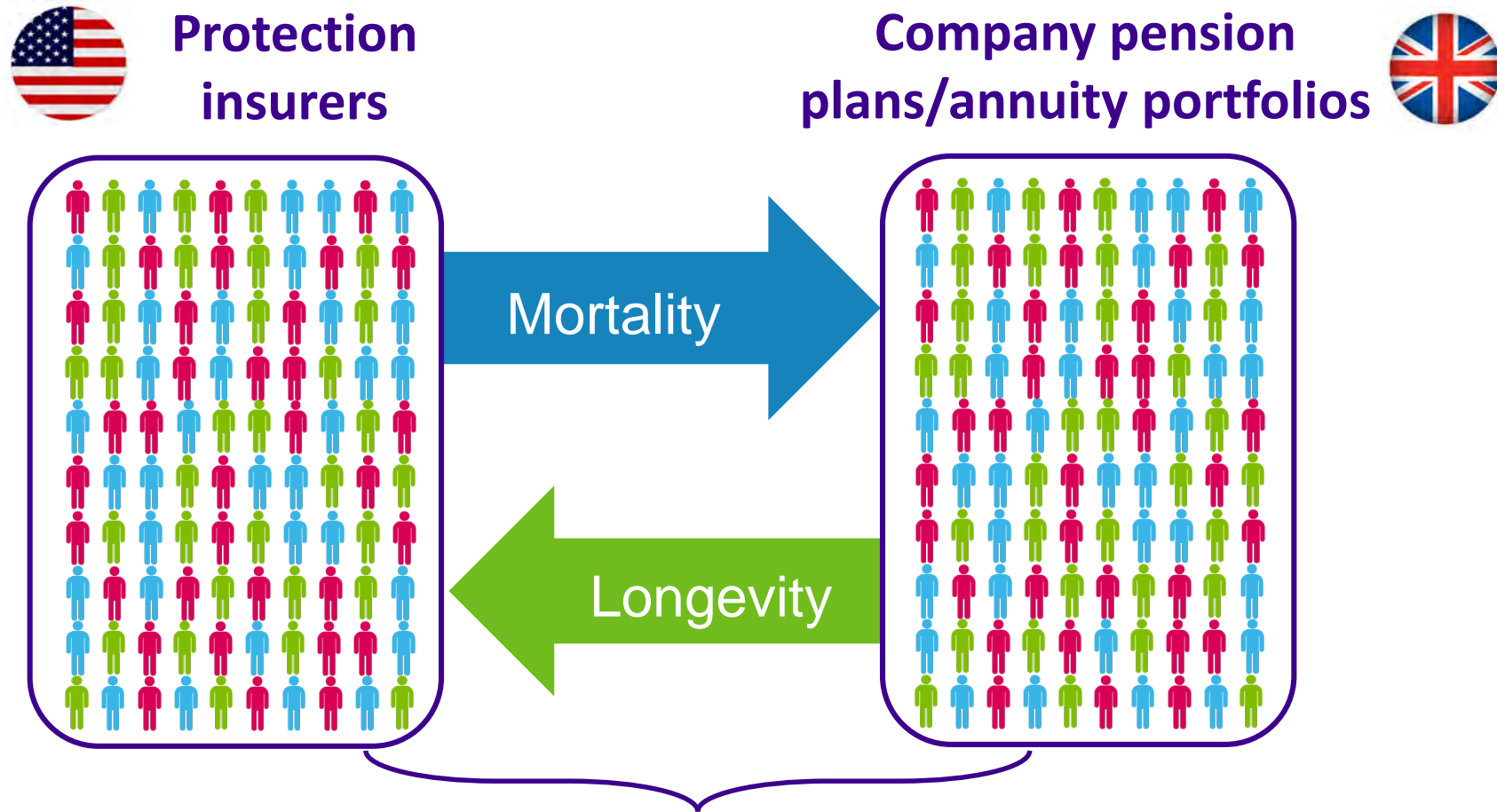
D. Average Annual Change in Life Expectancy from 2001-14 by Income Ventile, Women



Source: Chetty et al; The Association Between Income and Life Expectancy in the United States, 2001–2014

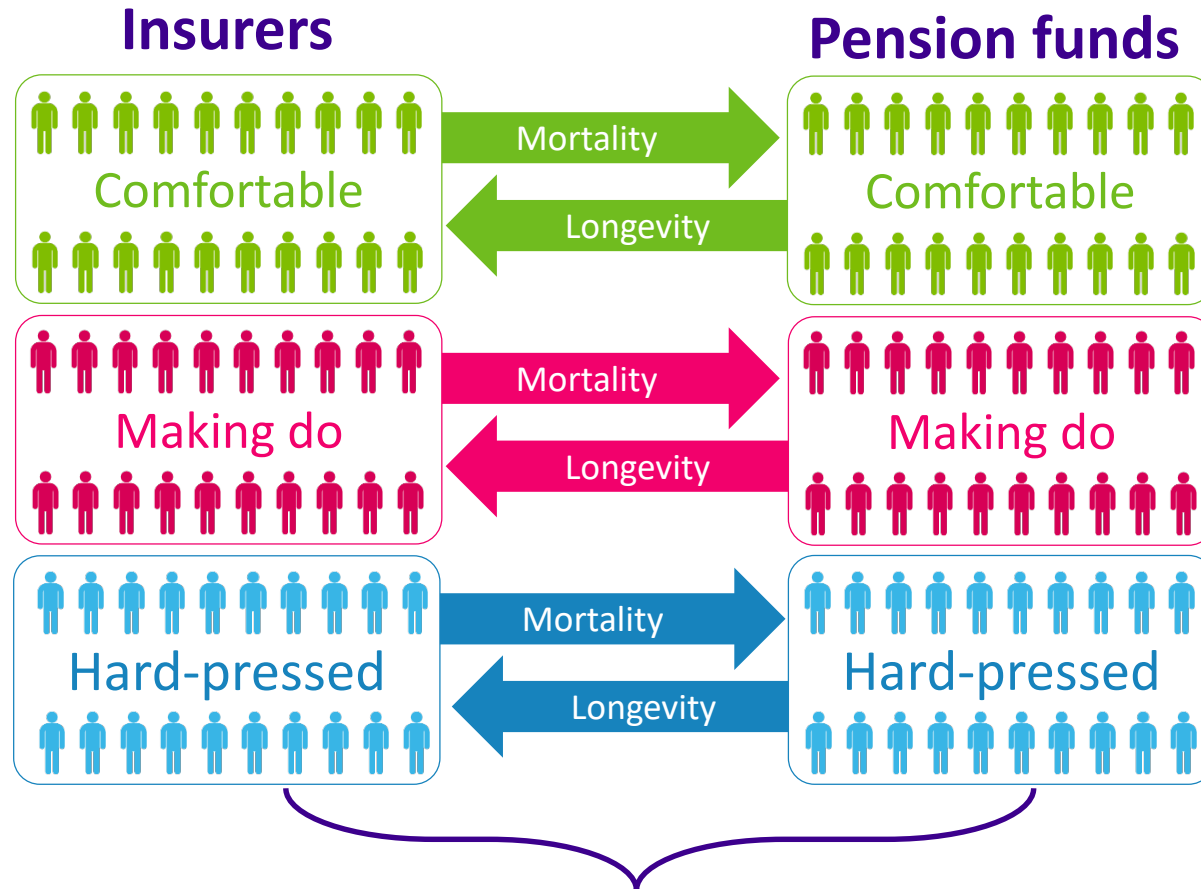


Today's "heterogeneous", transatlantic trade



The uncertainty of longevity diversity means that there is little confidence in anticipating correlation anticipated in pricing, giving a wide bid-offer spread

Enabling more homogeneous trading

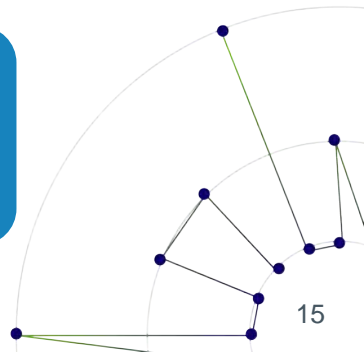


Better data increases confidence and improves pricing.
It also enables new entrants and opens up longevity to capital market investors

What next?

- ✓ Key for the United States is to **get better data**
 - ✓ Remove uncertainty around baseline
 - ✓ Better understanding of trends
 - ✓ Enable new entrants to the market
 - ✓ More efficient longevity / mortality hedges
 - ✓ Open up a liquid market in longevity risk

Club Vita US founded in 2019
Embarking on campaign to build a US Club Vita data set



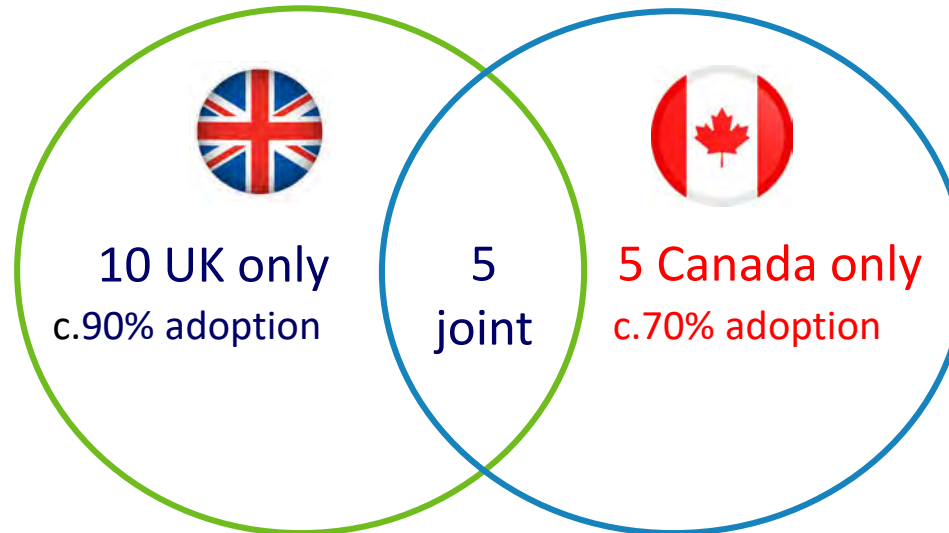
Some credentials

VITALSTATISTICS



- Founded 2008
- Over 2.9m retirees
- Equivalent to over 1 in 4 DB pensioners
- Relationships with over 230 pension schemes
- Over 1.5m death records
- Supporting 8 out of 10 longevity reinsurers and 7 out of 8 primary insurers
- Analysis of experience by Socio-economic groups (VitaSegments)
- Indicative reinsurance pricing information

Growing “currency adoption” amongst insurers



VITALSTATISTICS



- Founded 2019
- Data coming soon

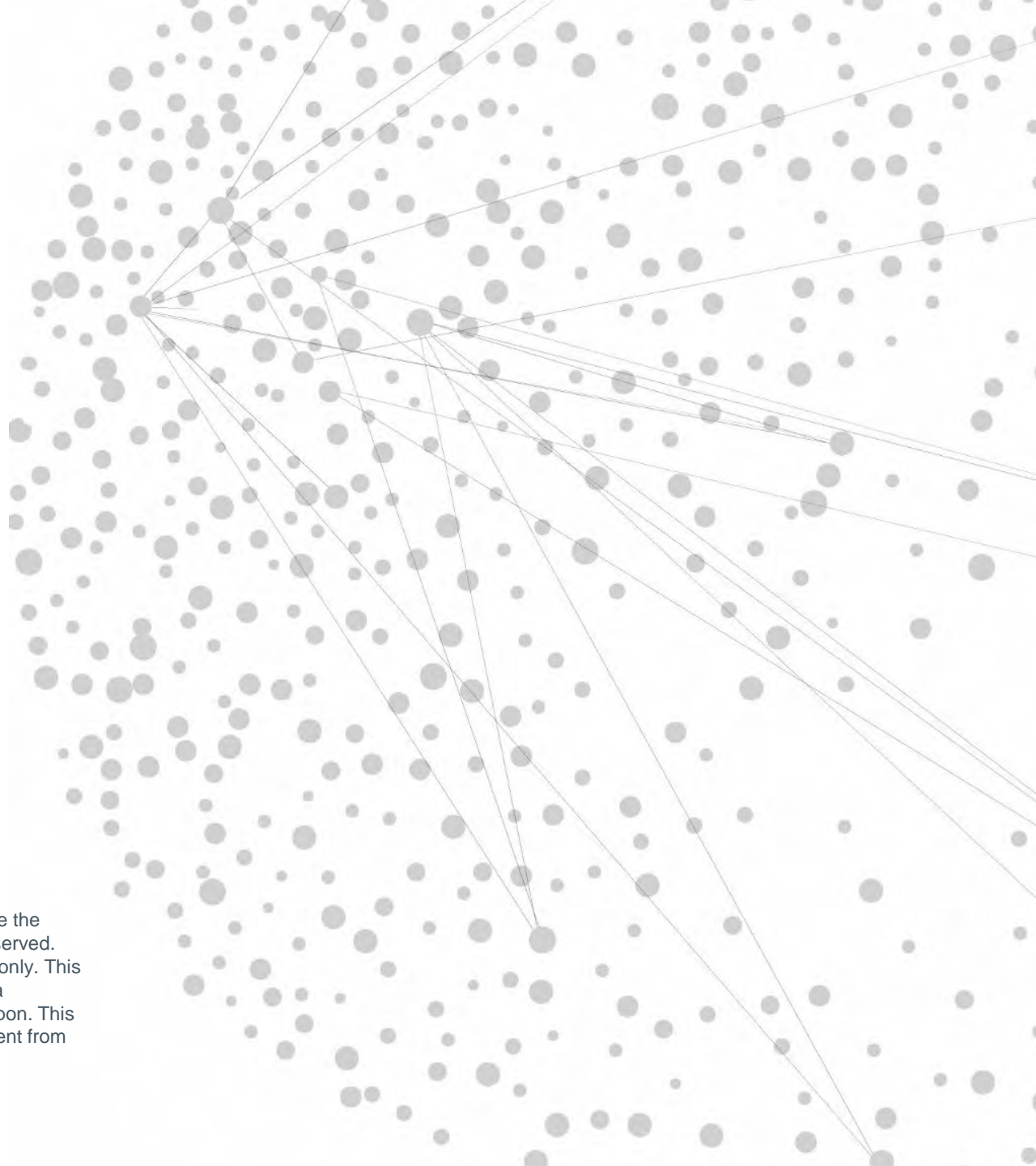
VITALSTATISTICS



- Founded 2015
- Over 750,000 retirees
- Equivalent to 1 in 4 DB pensioners
- Relationships with over 65 pension plans
- Supporting majority of the primary insurers and reinsurers participating in Canadian risk transfer market
- Performing first Canadian research into DB pensioner longevity improvement trends

Thank you

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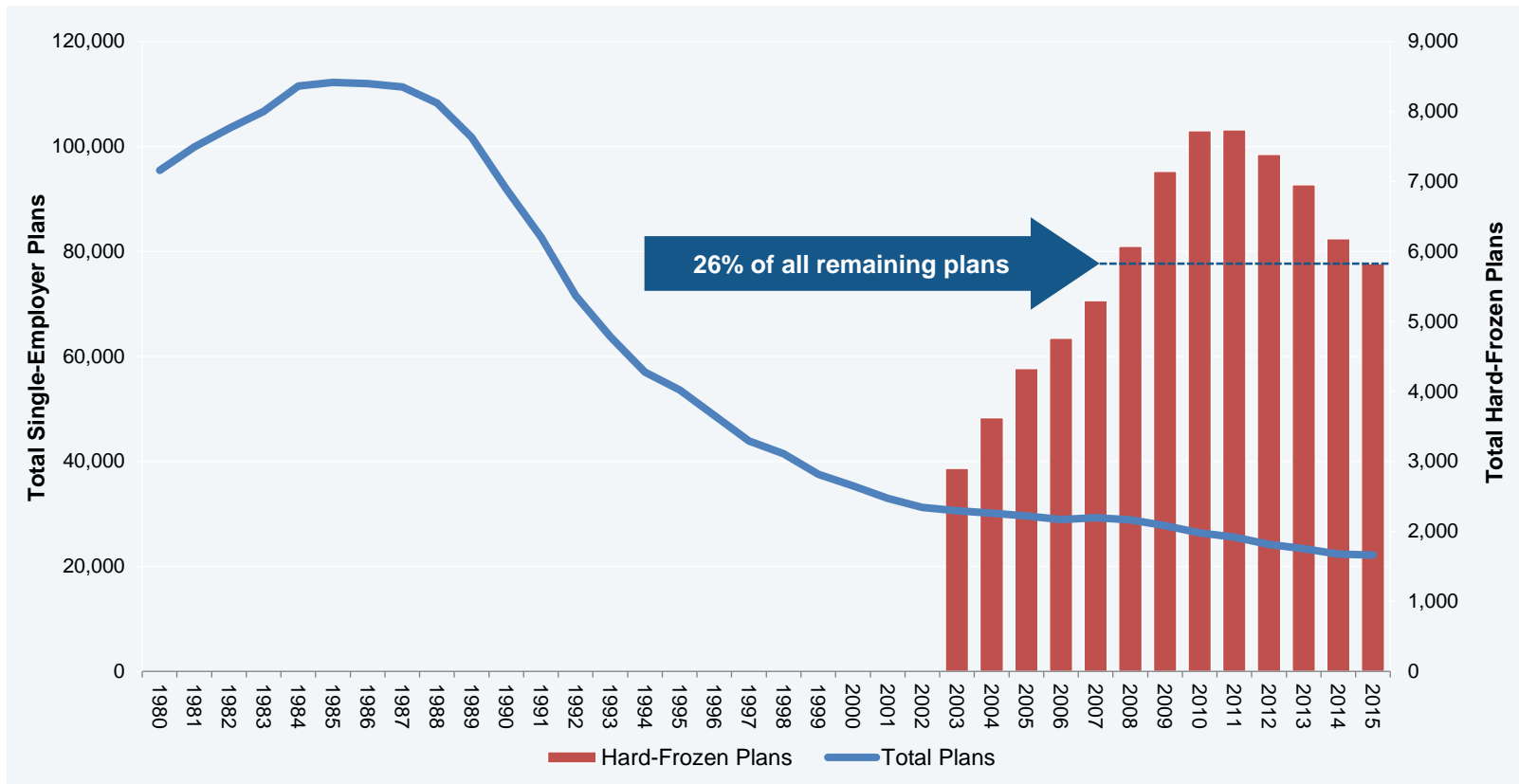
SOA Annual Meeting Session 160

PRT Reinsurance in the US: A Market in the Making

October 30, 2019

Defined Benefit Plans Are Diminishing¹

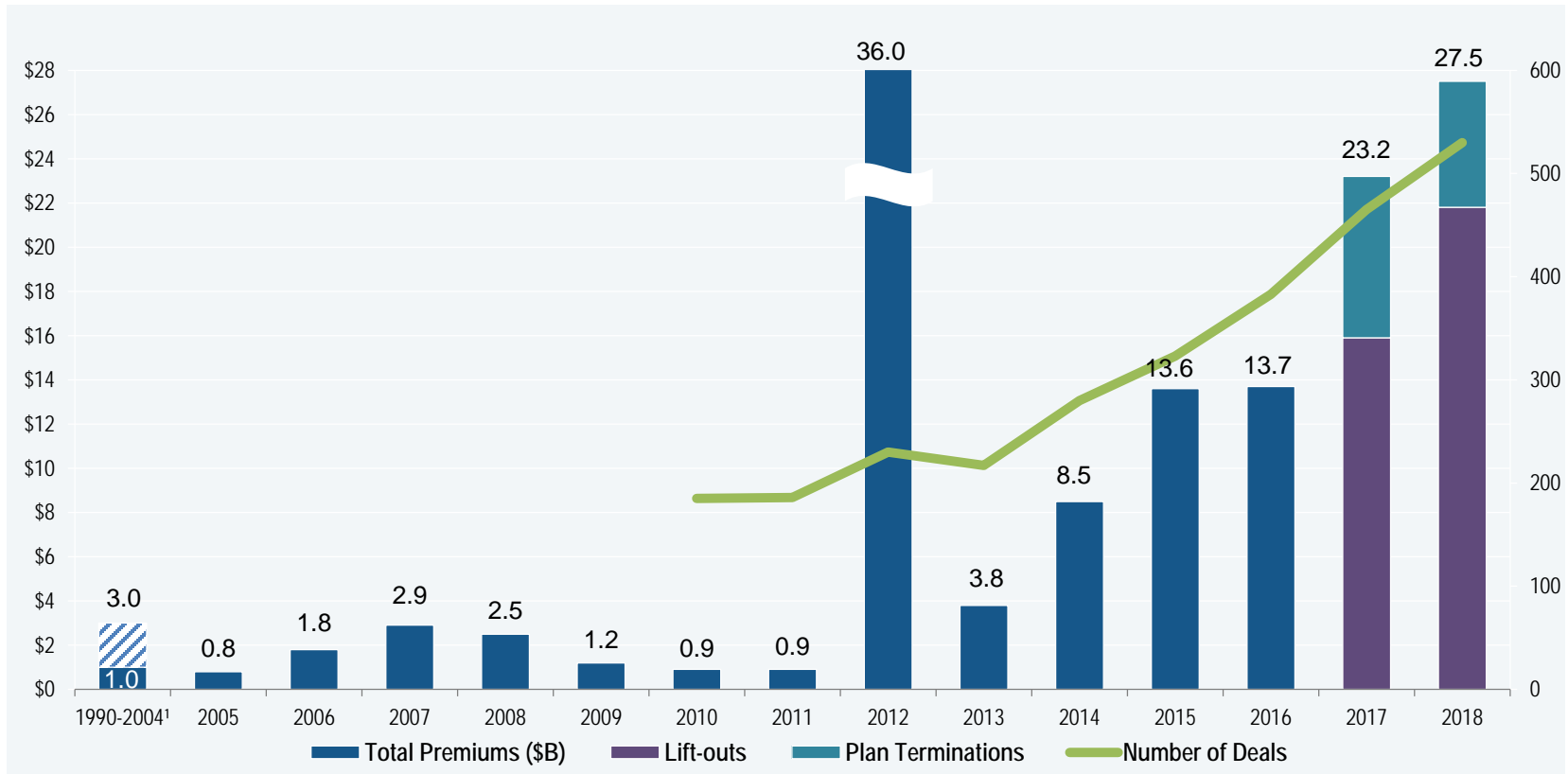
Private-sector DB Plan Assets - \$3.2 Trillion²



¹ PBGC Insured Plans Single-Employer Program sourced from PBGC 2016 Pension Insurance Data Tables. 2015 figures are most recent available estimates.

² Investment Company Institute website, 'The U.S. Retirement Market, First Quarter 2019'.

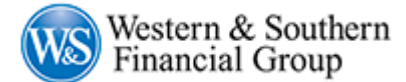
Historical Group Annuity Sales Volume Insurer Sales – Single Premium Products (\$ Billions)



¹ For 15 years between 1990 and 2004, sales were between \$1B and \$3B.

Source: LIMRA Secure Retirement Institute and BCG Penbridge. Breakdown of total premiums in 2017 and 2018 sourced from Aon 2019 U.S. Pension Risk Transfer Annuity Settlement Market Update.

Annuity Buyout Providers¹



Most recent market entrants



¹ Insurers shown on this page are currently active in the US PRT market.

Pension Risk Transfer Market Entry – Required Capabilities

1. Financial Strength:

- a) Meet standards of Department of Labor Interpretive Bulletin 95-1.
- b) 95-1 is minimum guidance. Plan fiduciaries are responsible for the choice of insurer and could use more criteria than just 95-1 guidance.

2. Investment Capabilities:

- a) Ability to manage long duration liabilities.
- b) Expertise in long duration fixed income investments and possibly alternative investments

3. Risk Assessment:

- a) Underwriting judgment to evaluate unique risk characteristics regarding mortality, participant options, and all plan benefits

4. Administrative and Operational Capabilities:

- a) Operational elements in place to administer the business efficiently and accurately
- b) Administration quality also has relevance to DOL IB 95-1

PRT Insurer Competitive Landscape

Provider	Small (<\$100M)	Mid (\$100M-\$500M)	Large (>\$500M)
Prudential	✓	✓	✓
MetLife	✓	✓	✓
New York Life	✓	✓	
AIG	✓	✓	✓
MassMutual	✓	✓	✓
Principal	✓	✓	✓
Pacific Life	✓	✓	✓
Athene		✓	✓
Securian	✓	✓	
Western & Southern	✓	✓	
Great American	✓		
OneAmerica	✓	✓	
Mutual of Omaha	✓		
Mutual of America	✓	✓	
CUNA Mutual	✓		
Legal & General	✓	✓	✓

Notes: (1) Providers ordered by size of US Life Insurance Group Assets; (2) The size breakpoints above are general guidelines. Each PRT insurer has minimum and maximum cases sizes that they will bid on. For example, an insurer with a check in the small category above may have a minimum case size of \$5 million. Another one might have a minimum case size of \$50 million. Most insurers do not disclose a maximum case size.

Reinsurance Market Development

Key Considerations

- The US is a strategic priority for many reinsurers. Key to success include:
 1. Strength of capital
 2. Size of company
 3. Credit ratings
 4. Jurisdiction of domicile of reinsurer
 5. Ability/interest in expertise and knowledge sharing
- As PRT direct writers continue to write business, we expect increasing interest in longevity reinsurance to balance their mortality/longevity books
- Creditworthiness of the reinsurers looking to provide capacity will be a front and center issue
- Reinsurers (and new fronting insurers) that are willing to offer capacity for deferred lives will have an advantage.

Reinsurance Market Development

Traditional reinsurers are considering entry into the market in two ways:

1. Reinsurance of Inforce Business

- Structures primarily include coinsurance and longevity only reinsurance.
- In coinsurance, the reinsurer shares in all of the risks (longevity, investment, etc.) with the ceding company.
- Longevity only reinsurance
 - Not contemplated when reinsurance risk transfer requirements were developed by the NAIC and FASB.
 - Need to request a statutory accounting permitted practice, but there is no guarantee that the ceding company's regulator will approve such practice.
- Increased demand for reinsurance in the future
 - Growth of longevity-based products may encourage companies to reinsure PRT transactions to balance insurance (mortality/longevity) risk profile.
 - Upcoming longevity charge for risk-based capital may also cause ceding companies to consider some form of reinsurance.

Reinsurance Market Development

Traditional reinsurers are considering entry into the market in two ways:

2. Partnering with Direct Writers¹

- There is growing interest from both reinsurers and ceding companies in these partnerships as larger pension risk transfer cases are placed.
- There are few carriers willing to participate in the \$500 million+ sector due to the size of these transactions relative to the overall size of their PRT business.
- Leveraging reinsurers' capacity, investment expertise, and capital/tax advantages may allow ceding companies to participate in and be more competitive on larger cases where they cannot today on a standalone basis.
- Coordinating and preparing a combined bid on a timely basis could be a challenge.
- Ensuring that ceding company has appropriate security for its reinsurance counterparty exposure (through a trust or some other means) is also important

¹ Reinsurers (when partnering with direct writers on new business opportunities) could also be subject to DOL IB 95-1.

Inaugural PRT Longevity Reinsurance Transaction

Deal Highlights

- The first of its kind longevity reinsurance transaction in the US was completed during the first half of 2019.
- The transaction was executed on ceding company's inforce PRT business, covering a portion of its in-payment participants with ~\$1 billion in statutory reserves.
- The ceding company had four objectives:
 1. Capacity to write more business in consideration of the balance of its risks between mortality and longevity risk;
 2. Protection against future mortality improvements being better than their expectations;
 3. An external validation of their internal view on longevity; and
 4. Receiving reserve and capital relief consistent with traditional reinsurance transactions
- These objectives were achieved.

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