Emerging Risks: Living Benefits

Madhusudhanan Sridharan
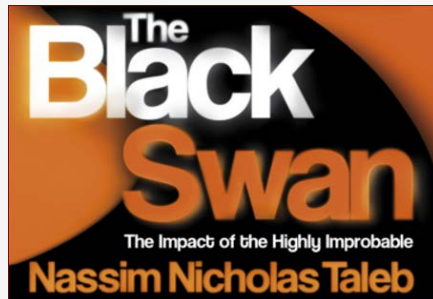Chief Pricing Actuary, Life APAC, Munich RE

4th Enterprise Risk Management Seminar, Institute of Actuaries of India, Mumbai

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Structure of the presentation

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- Some thoughts on risk

- Lessons from other markets

- Key takeaways

Recognizing When
Black Swans Aren't:
Holistically Training Management to Better Recognize, Assess and Respond to Emerging Extreme Events

Defining Large Scale Large Impact Rare Events (LSLIRE)

Contrasts LSLIRE and Black Swans

As we know, there are known knowns; there are things we know we know.

We also know there are known unknowns; that is to say we know there are some things we do not know.

But there are also unknown unknowns – the ones we don't know we don't know.

Some thoughts on risk…

Known Knowns	Things that we know we know.
	Eg: Mortality levels from a fully credible experience analysis

Known Unknowns	Things that we know we don't know.
	Eg: Future trends

Unknown Unknowns	Things that we don't know we don't know.
	Eg: Sovereign default in own currency, Impact of premium reviews, Policyholder behaviour

Unknown Knowns	Those that we intentionally refuse to acknowledge that we know
	Slavoj Žižek

Eg: Anti selection exists, Policyholder apathy cannot be the key source of profit, Underwriting cannot be replaced with pricing loads, Poor product designs cannot be priced for, Rate gtees are not necessarily good for customers…

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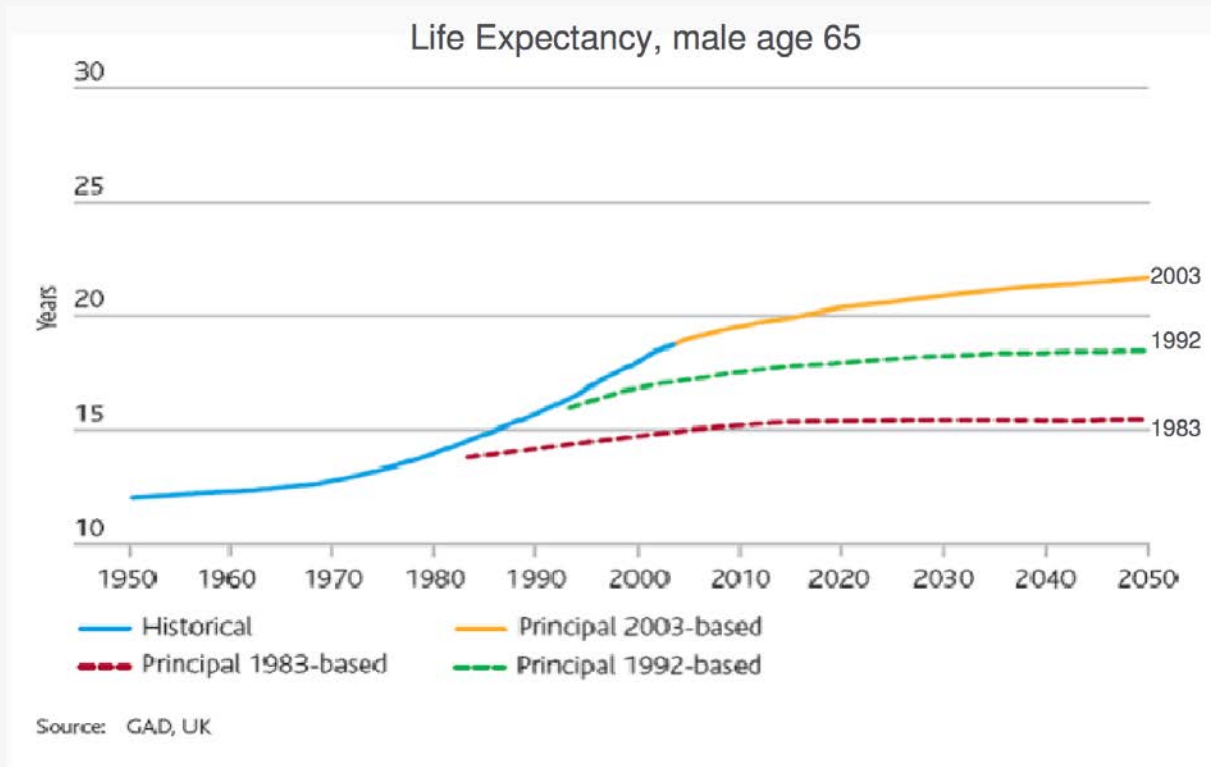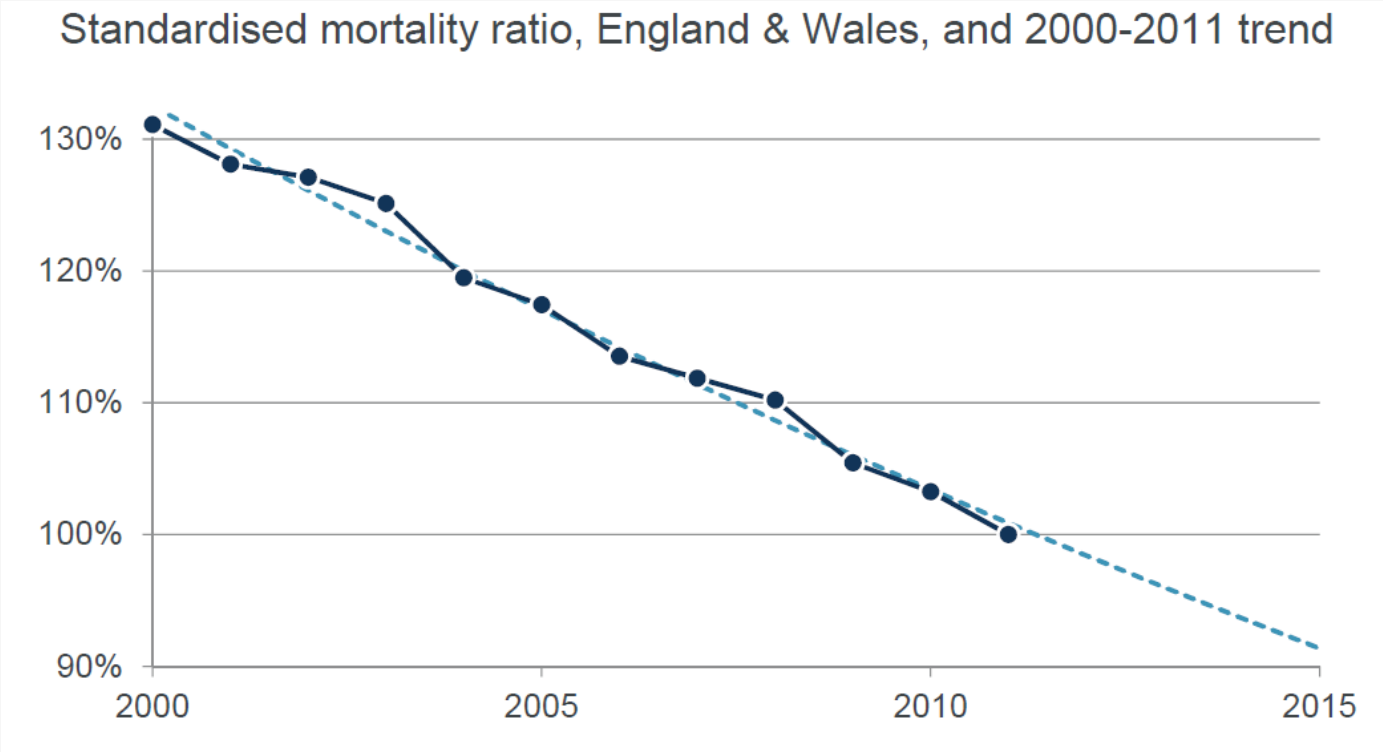| **Unknown Knowns**	Those that we intentionally refuse to acknowledge that we know
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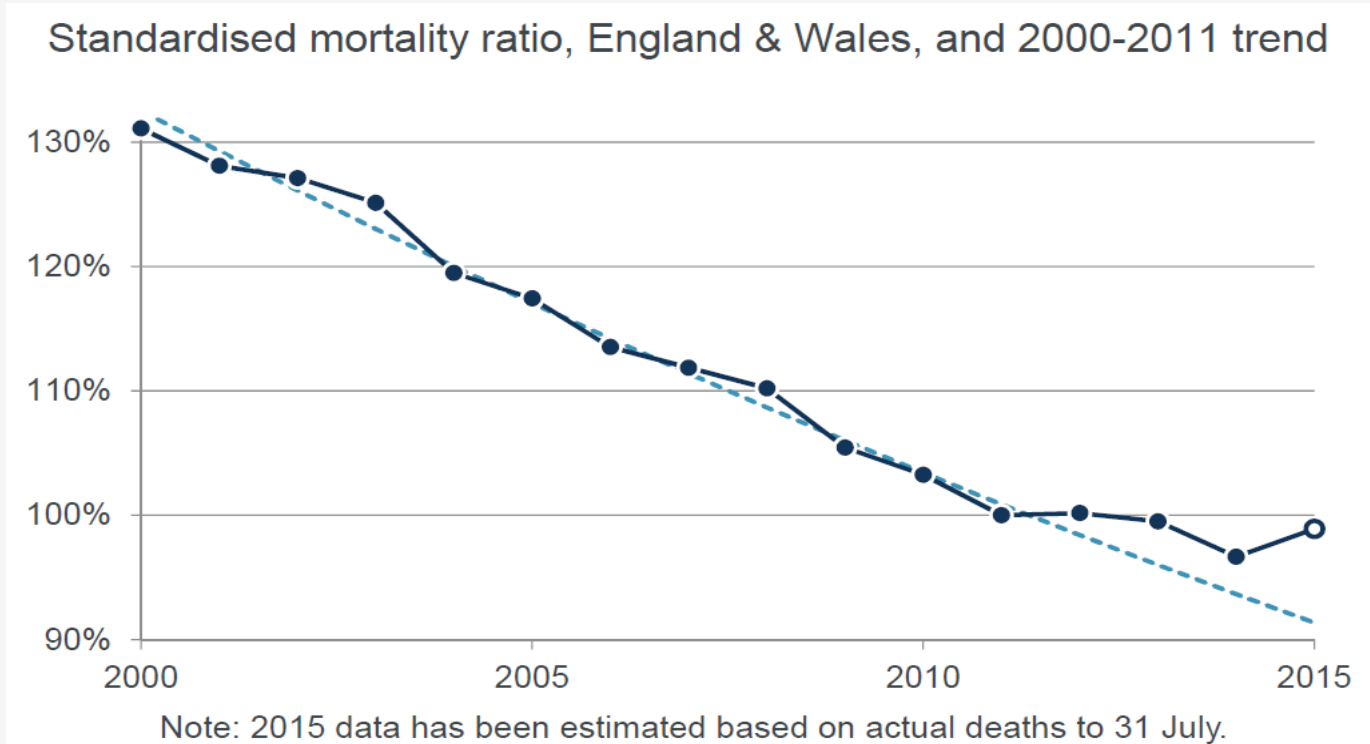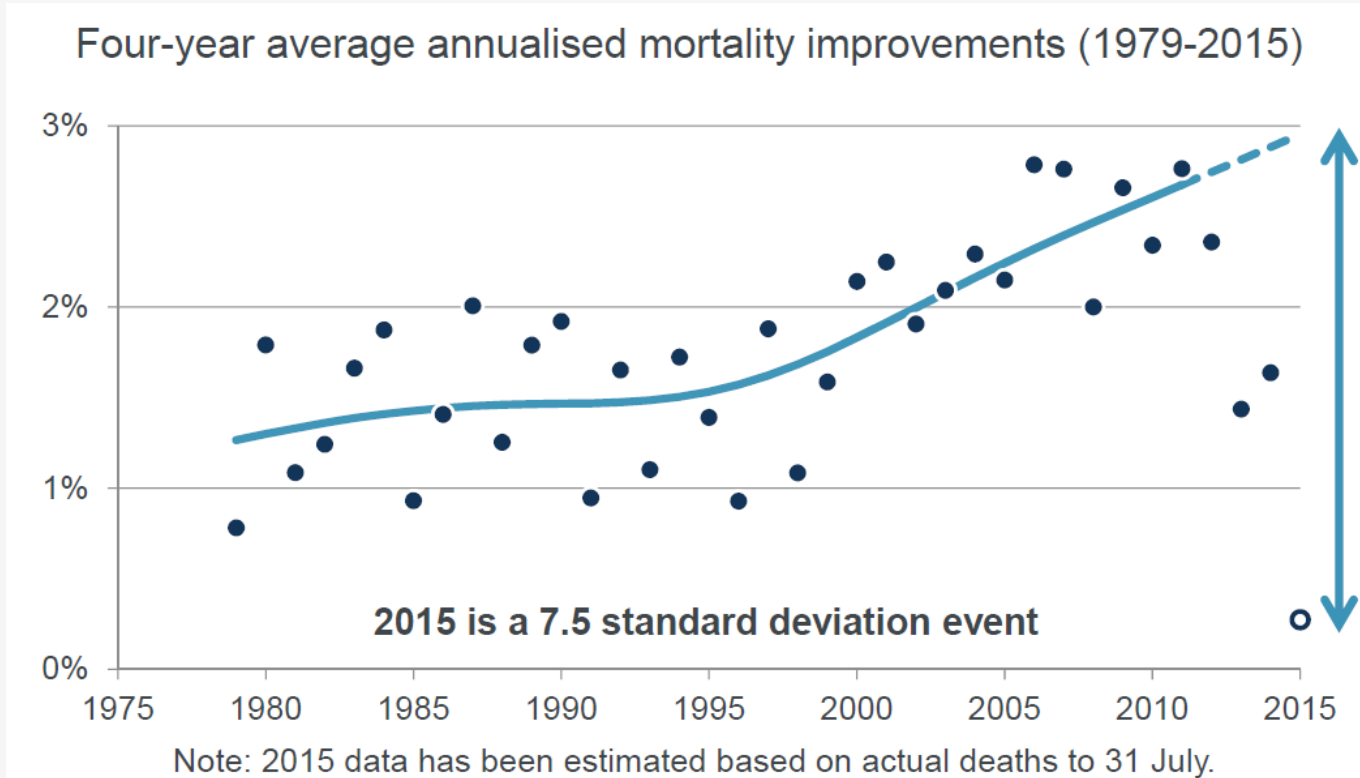
Known Unknown – Future trends
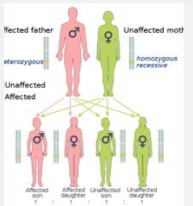
Past record in projecting life expectancy

Life Expectancy, male age 65

Source: GAD, UK

2015 UK mortality

Standardised mortality ratio, England & Wales, and 2000-2011 trend

2015 UK mortality cont'd

Standardised mortality ratio, England & Wales, and 2000-2011 trend

Note: 2015 data has been estimated based on actual deaths to 31 July.

2015 UK mortality cont'd

Four-year average annualised mortality improvements (1979-2015)

2015 is a 7.5 standard deviation event

Note: 2015 data has been estimated based on actual deaths to 31 July.

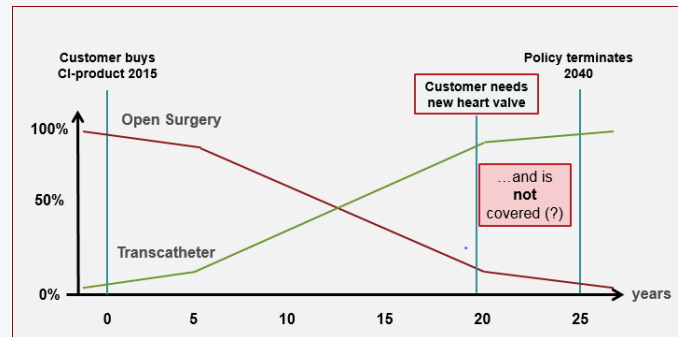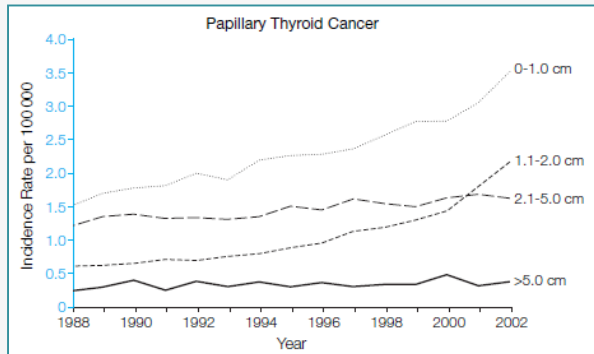# What about trends in other critical conditions?
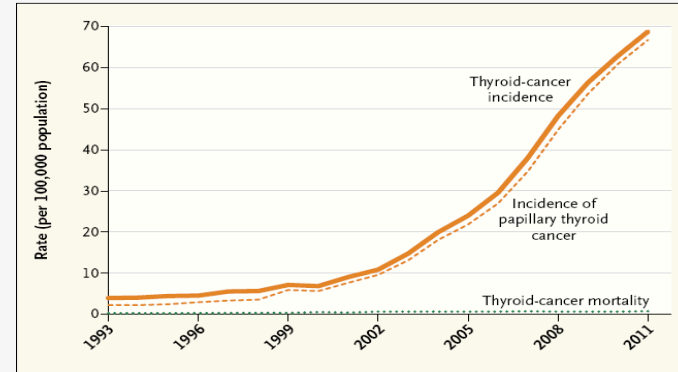
Genetics:
The investigation of the roles, functions and patterns of inheritance of single genes

Genomics:
The investigation of the function and structure of an entire genome and its interaction with environmental or lifestyle factors

Pharmacogenomics:
How an individual's genetic makeup or inheritance affects the body's response to certain drugs

Papillary Thyroid Cancer

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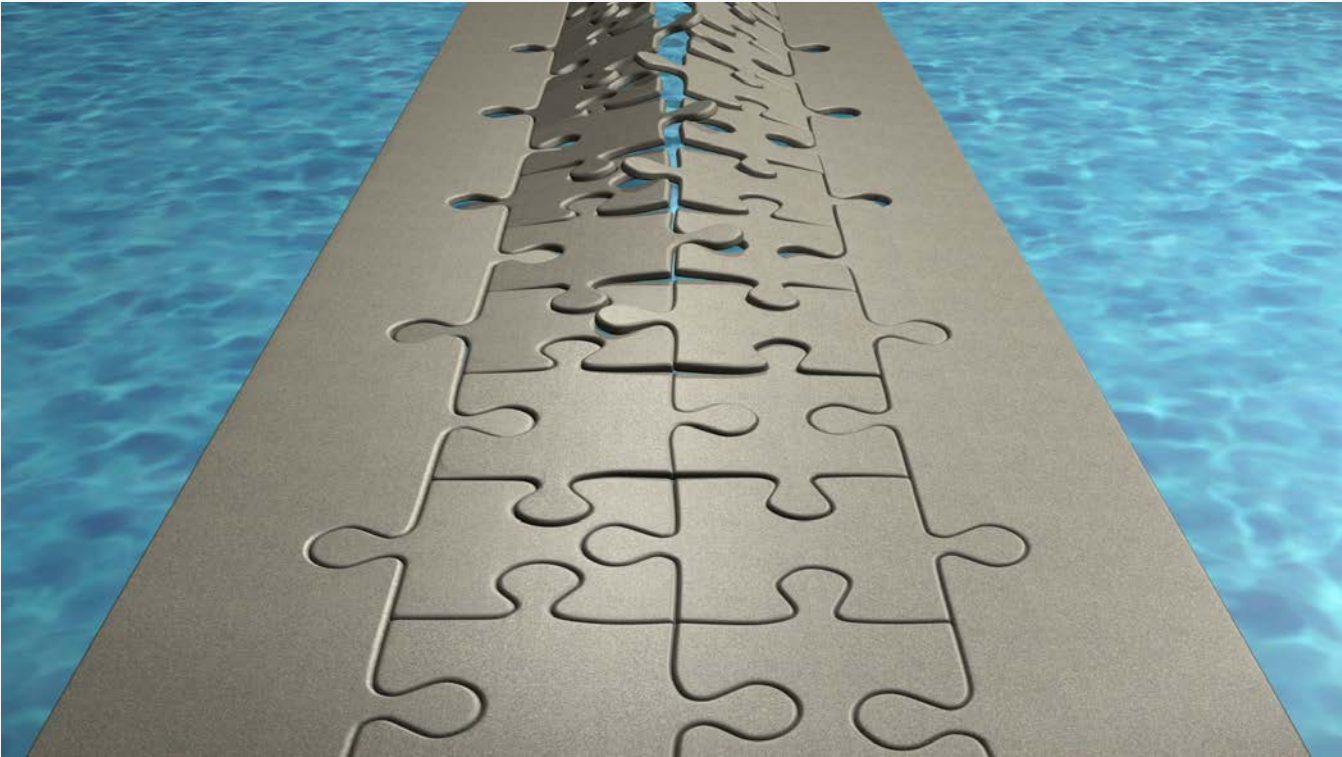
Anti Selection

Let us arrange the following based on expectation of anti-selection (lowest to highest)

1. Accident Death and Disablement product

2. Critical Illness product

3. Endowment / Investment linked product

4. Guarantee issue term product

Anti Selection

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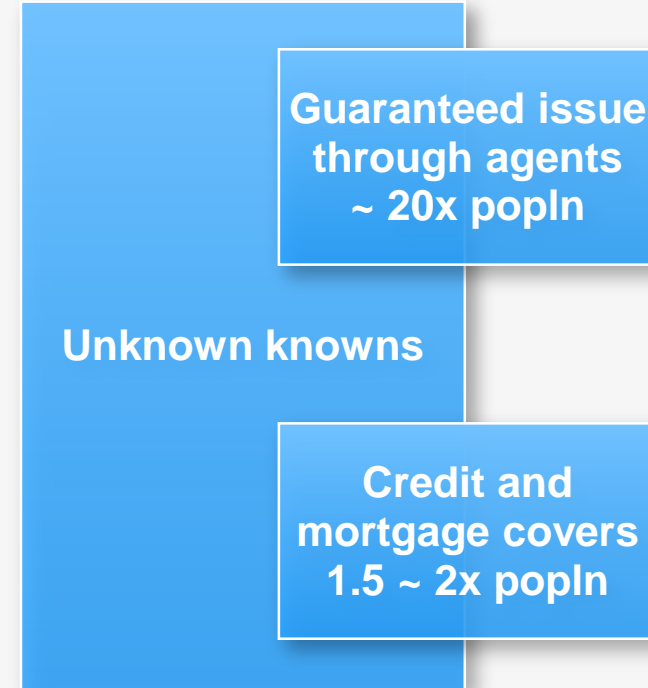
1. Accident Death and Disablement product – Anti selection in China PA

2. Endowment / Investment linked product – Anti selective Lapses in Increasing Term

3. Critical Illness product – Impact of reduced benefit periods and windfall benefits

4. Guarantee issue term product

Guaranteed Issue

Guaranteed Issue experience

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|	
Underwriting	Carefully chosen target market which are pre-underwritten as a group
Simple product	Lean benefits; simple and clear claim triggers
Distribution	Tightly controlled; time bound; restrict declined lives from re-entering; no agents or inbound
Claims	Clear lean list of claim documentation; efficient claims underwriting
Monitoring	Weekly or monthly; lapse and claim tracking; strong feedback loop

Unknown knowns

Guaranteed issue through agents ~ 20x popln

Credit and mortgage covers 1.5 ~ 2x popln

Personal Accident

PA products in China

|	Age 18 - 74	Age 75+
Death & TPD	Max(105% ROP, CV)	Max(105% ROP, CV)
ADB & TPD	100% of SA	50% of SA
Traffic ADB & TPD – Public Transportation	1000% of SA	500% of SA
Traffic ADB & TPD – Private Cars (optional)	2000% of SA (upto 70 yrs)	400% of SA (70 +)
Natural Diaster – Death / TPD	110% / 120 % of premiums paid	110% / 120 % of premiums paid
Survival Benefit	110% / 120 % of premiums paid	110% / 120 % of premiums paid

Anti Selection?

Anti Selection and Expected Long Term Levels
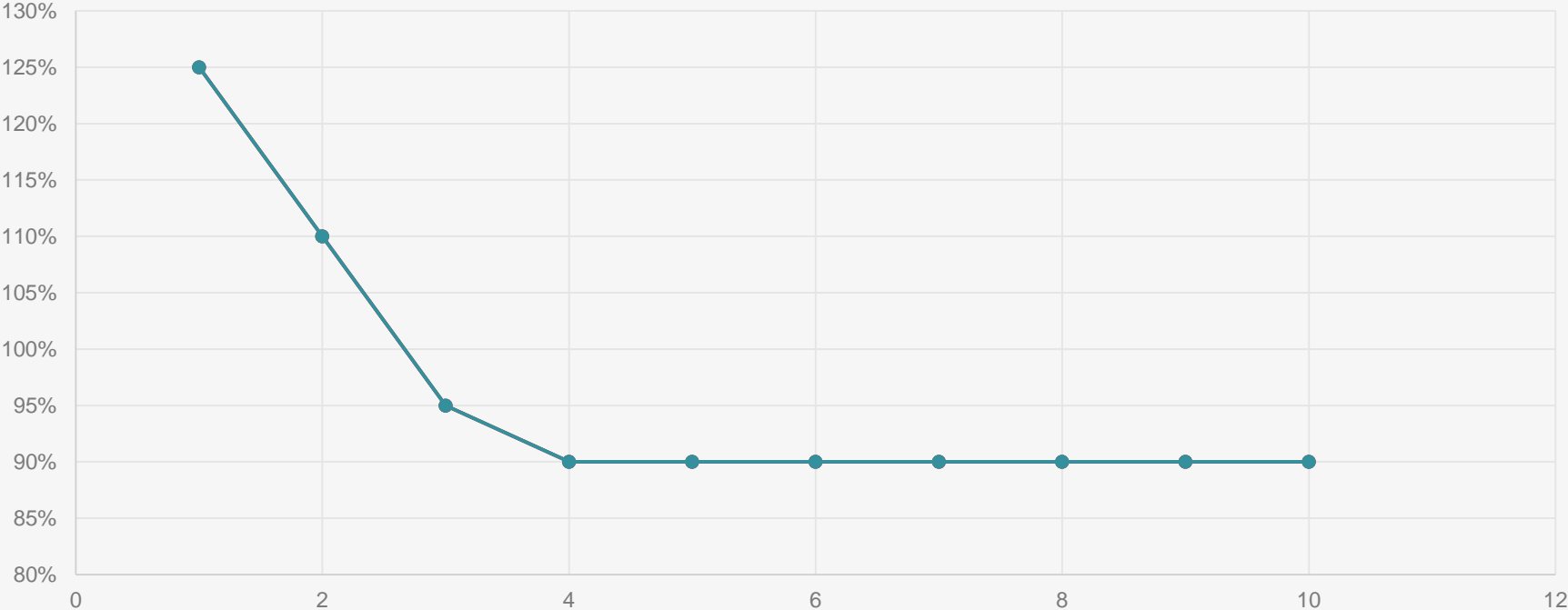
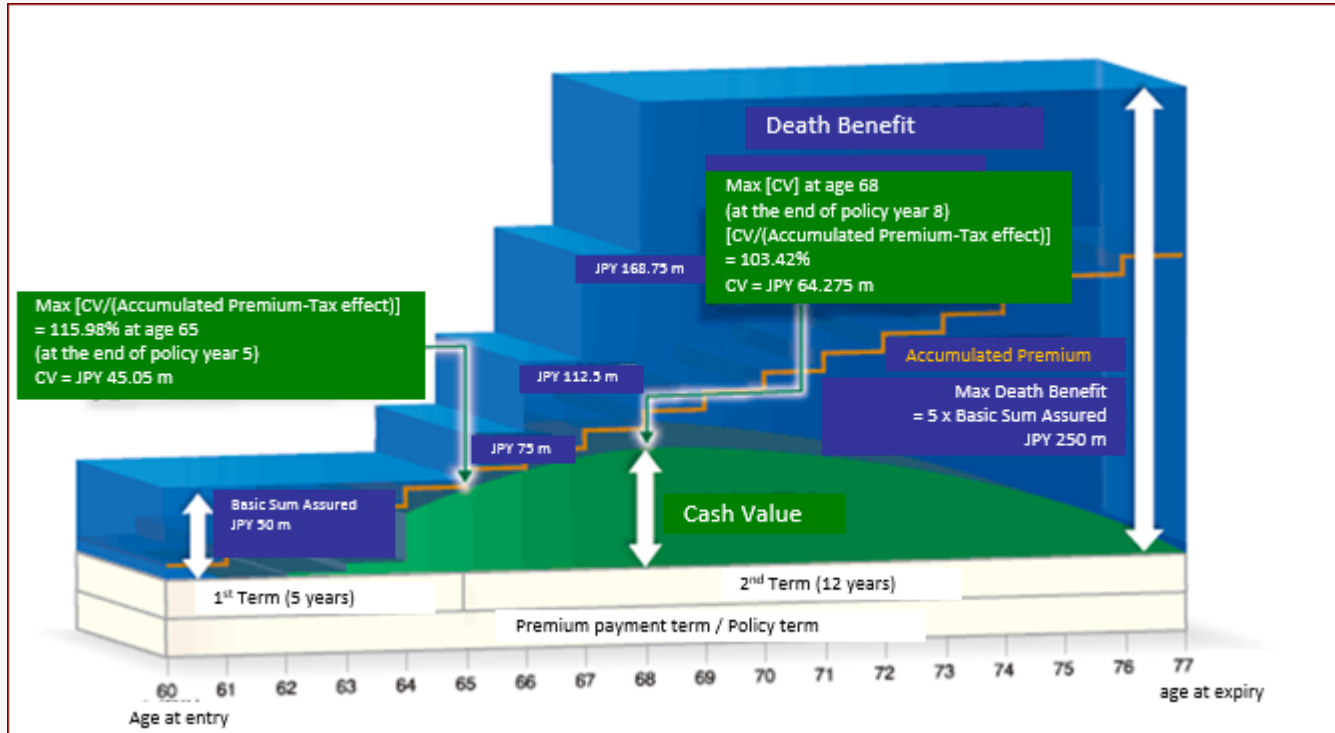# Anti Selection or Continuing Moral Hazard?

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Anti Selection and Expected Long Term Levels
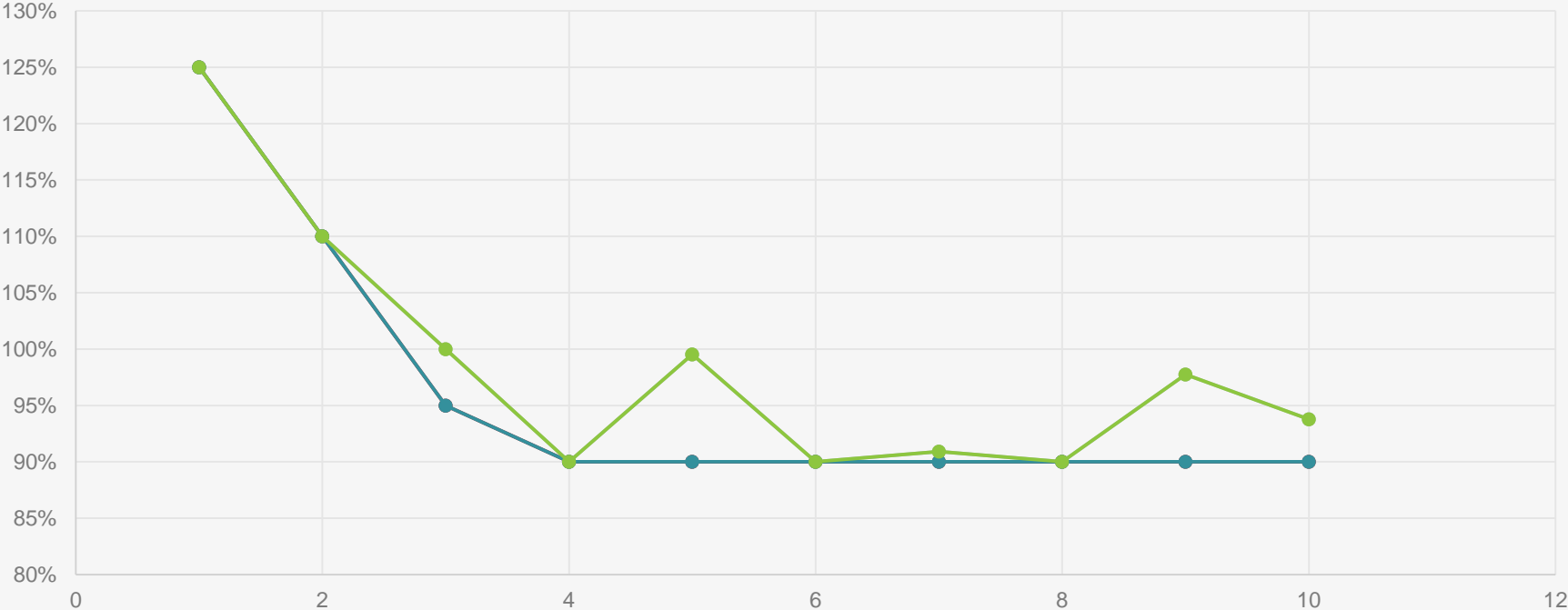
(Increasing) Term Product sold as a savings product

Japanese Increasing Term Product – Example

Increasing term product

Periodically increasing term cover

- Level Term till 90 / 100 also with high CSV sold as savings product

- Marketing material with GSVs indicating optimum surrender date

- Premiums are funded by employers; tax benefits

Anti Selection

- Prime motivation is to surrender on the optimum surrender date

- Healthy lives will surrender; substandard lives would prefer increasing covers without underwriting and no increase in premiums

- Optimum surrender date – peak CSV or at the inflexion point in the "incremental value per dollar premium" curve

Impact of Anti Selective Lapses

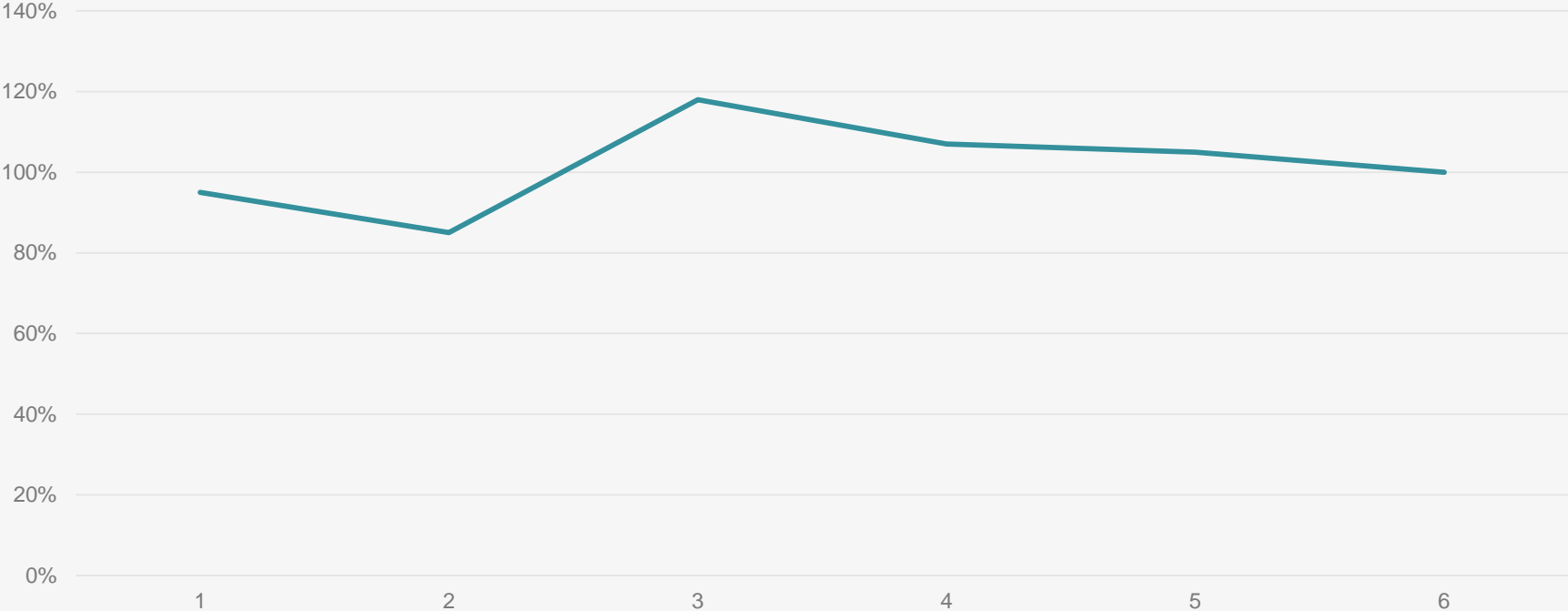AS load heavily dependant on various factors. For illustrative purpose only

ERM Seminar, IAI Mumbai, Madhu Sridharan   **25**
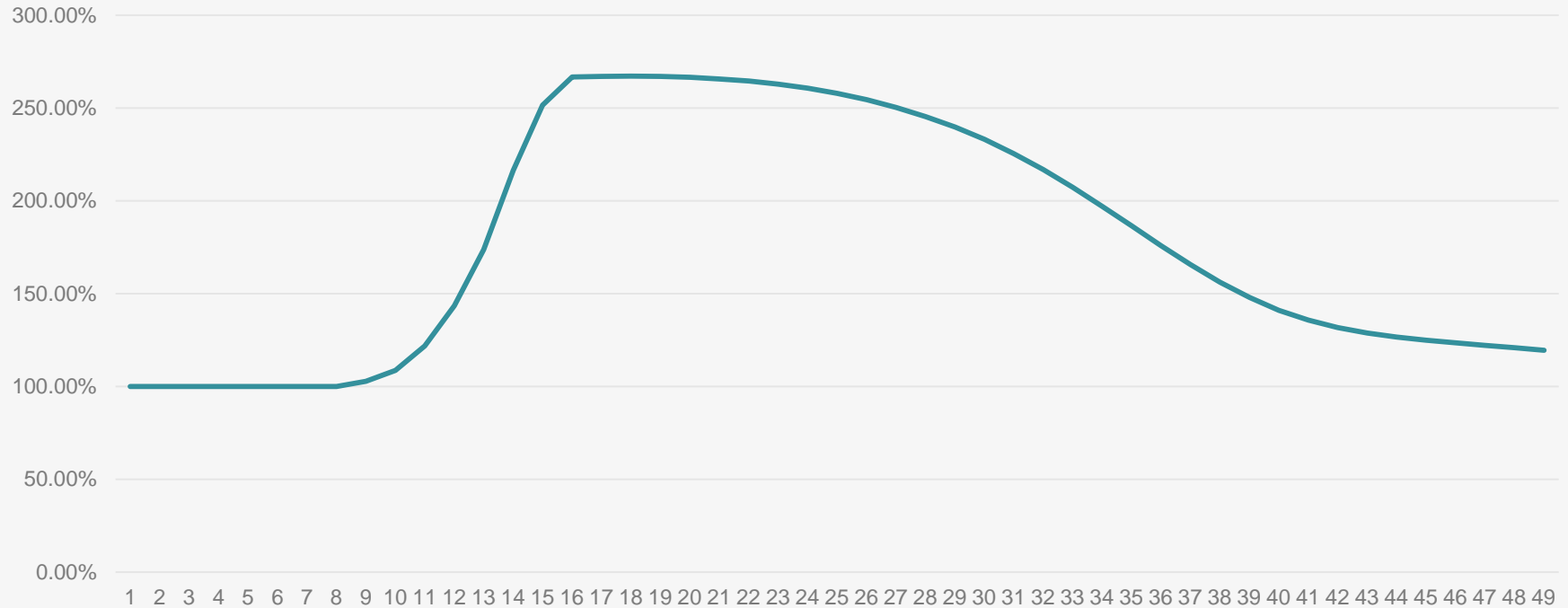
Cancer products

Korea – Cancer Product Example

	During Reduced Benefit Period	After Reduced Benefit Period
Regular Cancer	50%	100%
Breast	20%	40%
Genital	20%	40%
CIS	10%	20%
BLT	10%	20%
Other Skin Cancer	10%	20%
Thyroid Cancer	10%	20%
Colon	50%	100%
Prostate	50%	100%
Liver	56%	112%
Lung	56%	112%
Stomach	50%	100%
Other Specific Cancer	56%	112%
Gallbladder etc	50%	100%
HMEC	66%	132%
Regular Cancer	50%	100%

Anti Selection after reduced benefit period - Korea

Anti selection after reduced benefit period

Windfall benefits - Korea

Impact of windfall benefits on experience
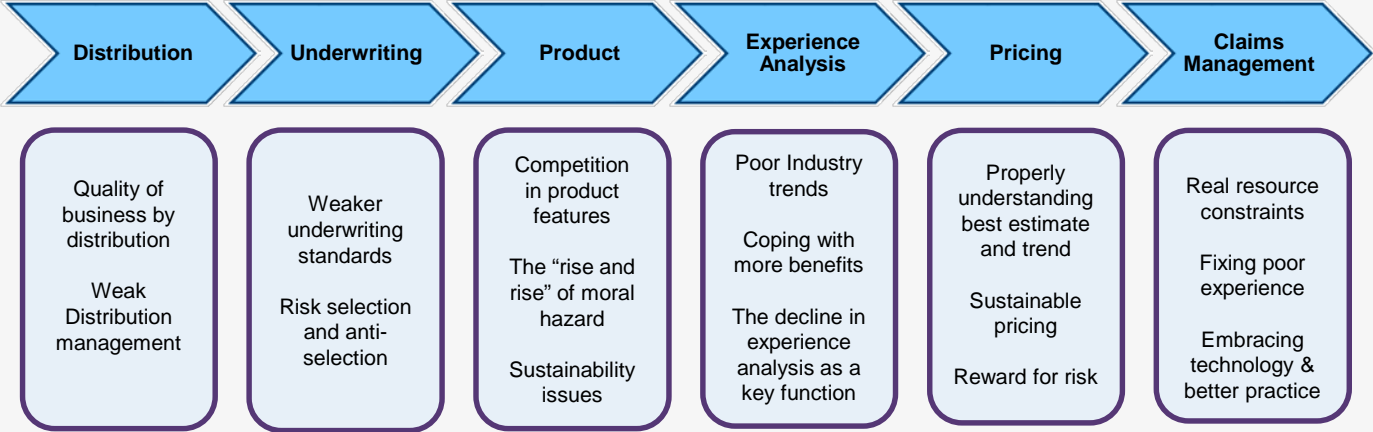
Munich RE
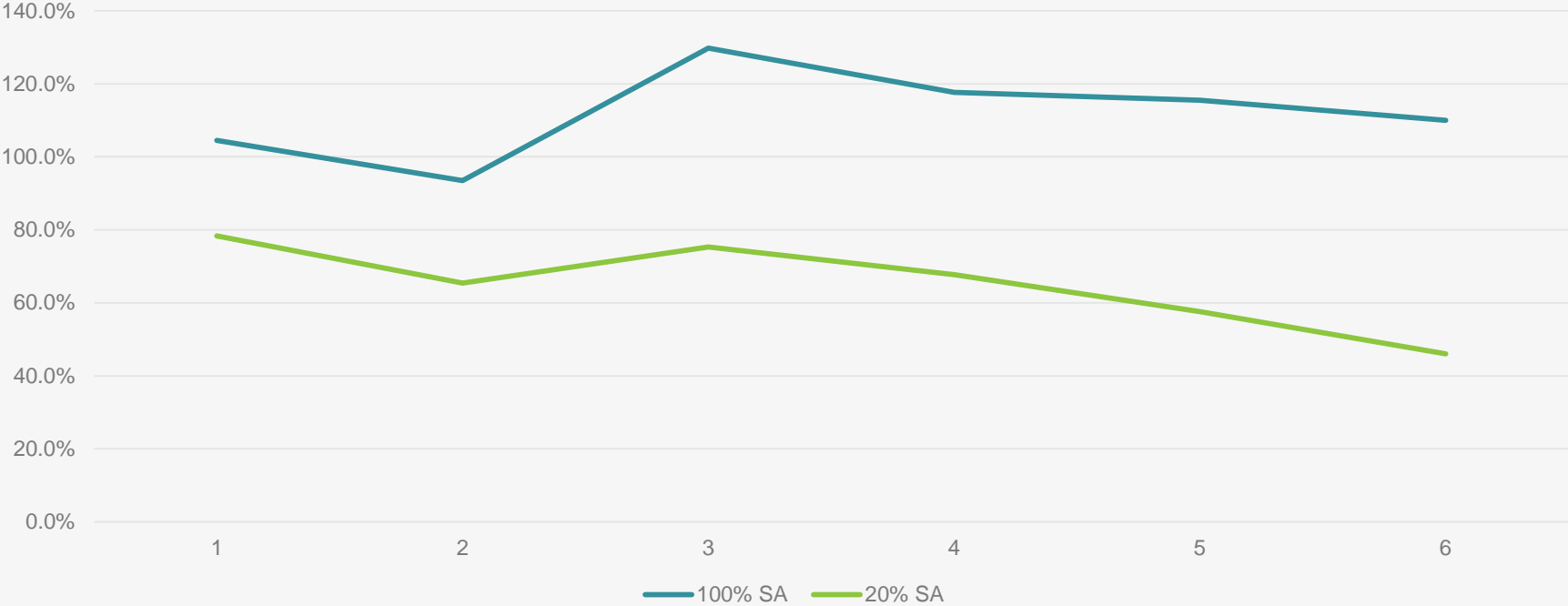
Deadly concoction – Australian DI

Distribution	Underwriting	Product	Experience Analysis	Pricing	Claims Management
Quality of business by distribution Weak Distribution management	Weaker underwriting standards Risk selection and anti-selection	Competition in product features The "rise and rise" of moral hazard Sustainability issues	Poor Industry trends Coping with more benefits The decline in experience analysis as a key function	Properly understanding best estimate and trend Sustainable pricing Reward for risk	Real resource constraints Fixing poor experience Embracing technology & better practice

General themes across the value chain

(Poor) Data focus

(Weak) Monitoring, MI and Reporting

(A poorly embedded "holistic") Risk Culture

Unknown knowns – Australian DI

| Distribution | Underwriting | **Product** | Experience Analysis | Pricing | Claims Management |

- Higher Replacement Ratios (moral hazard)
- Generous benefit limits, tapering and offsets
- Generous claims triggers e.g. 20% income rule
- Generous indexation
- Day 1 Accident and ancillary benefits
- Agreed values
- Design creep and ratings houses influence

Possible replacement ratio in year 1 of claim
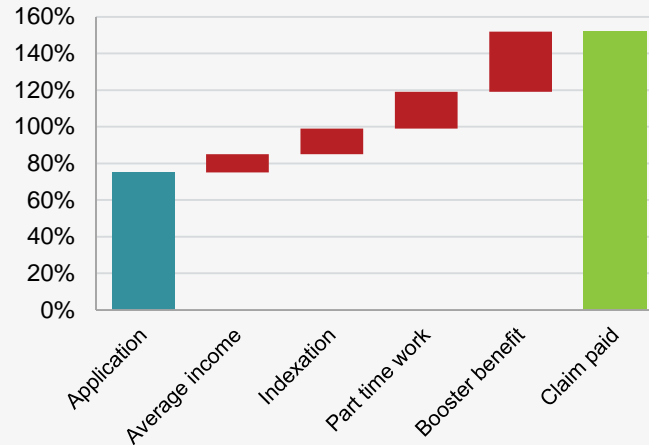
- Increase in product benefit coverage have increased the ease to claim and stay on claim
- Products have progressed to a stage where it no longer 'just' replaces income

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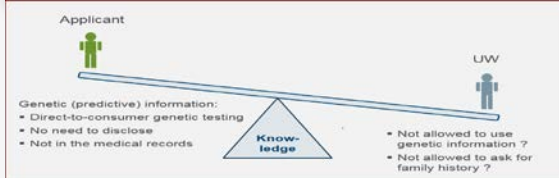## PREDICTIVE MEDICINE

WEARABLES

Asymmetry of information

Applicant

UW

Genetic (predictive) information:
- Direct-to-consumer genetic testing
- No need to disclose
- Not in the medical records

Know-ledge

- Not allowed to use genetic information ?
- Not allowed to ask for family history ?

**Ignoramus et Ingnorabimus?
Opportunity to underwrite?**

Early detection and Over diagnosis

**More payouts on minor; lesser payouts on severe conditions
Impact on product design**

Incentives and Penalties

Healthy will disclose for an incentive; unfavourable will not but get standard rates
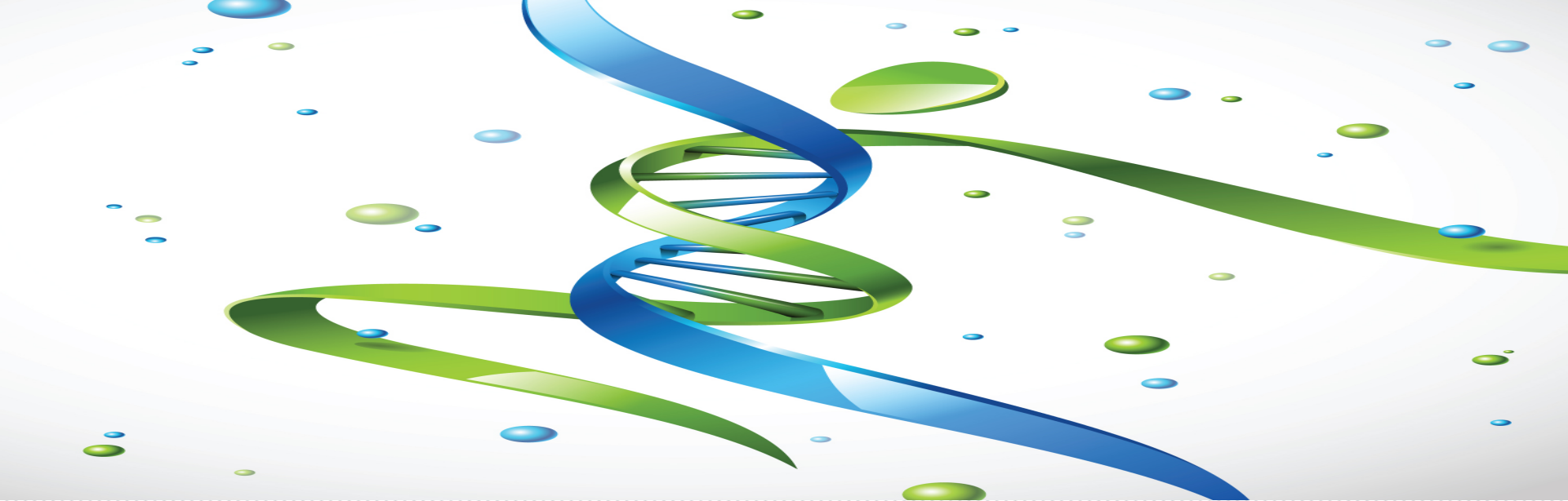
What do we learn from all these?

Key takeaways

Newer risks can arise from known unknowns or unknown unknowns.

In all the lessons from the various markets, a common theme is the presence of unknown knowns.

Unknown unknowns by definition are not "in the model" but can give rise to both risk and opportunity.

... Need to be aware of emerging risks and be able adapt.

To be ahead of the curve to convert risks into opportunity while not losing sight of lessons learnt from the past.

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