How Insurance Correlates with Social Security, End of Service Indemnity and Retirement

Charles S. Shamieh, Chairman, General Re Corporation
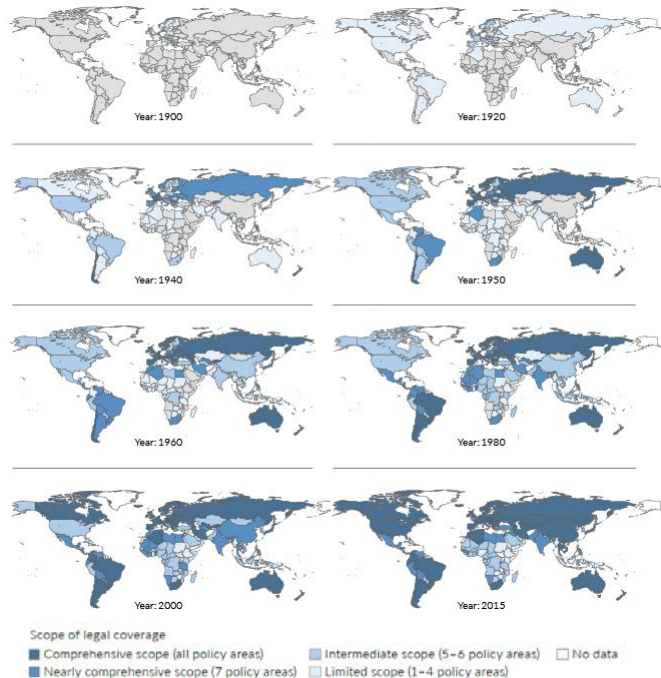
Agenda

- Social Security Systems Around the World
- Demographic & Macroeconomic Trends
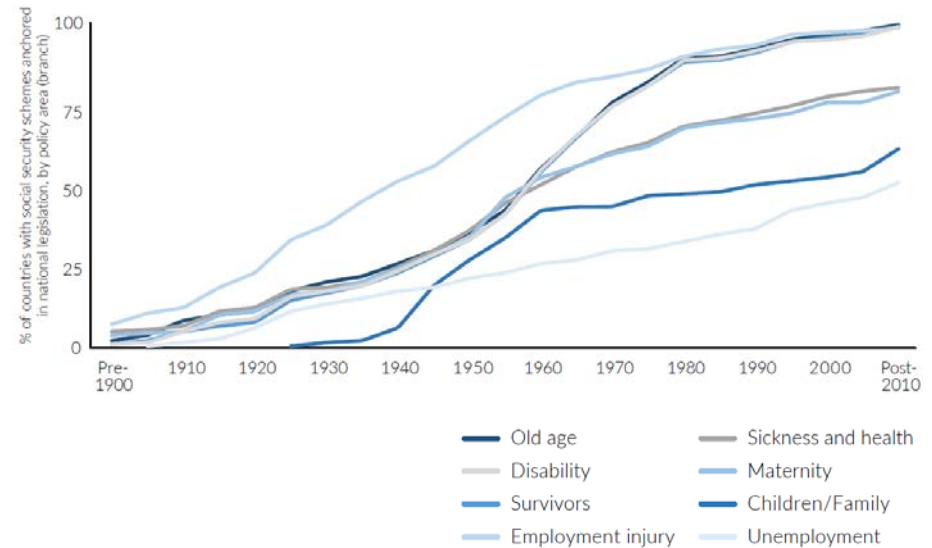- Needs in Retirement and Long Term Care
- Needs in Disability

Evolution of Social Security Systems Around the World

Expansion of scope of social protection since 1900
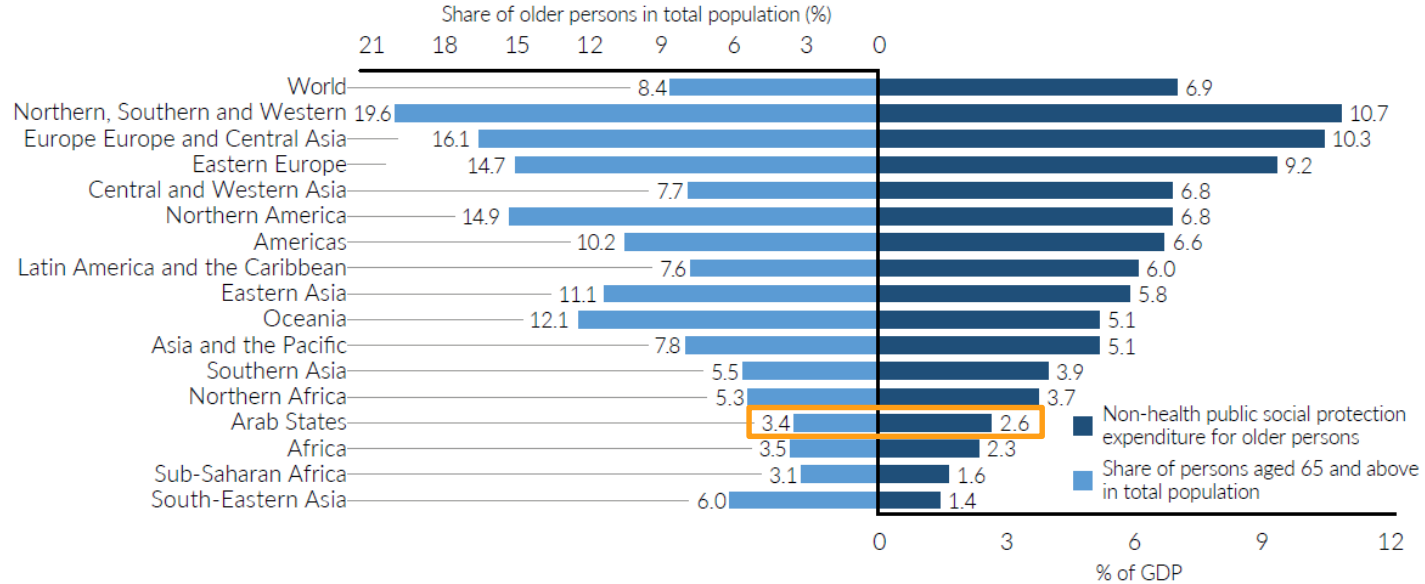

Typical evolution: employment injury, retirement, disability, survivors, sickness & health, maternity, children, unemployment

Source: International Labour Organization, *World Social Protection Report, 2017–19: Universal social protection to achieve the Sustainable Development Goals*

Support for Retirement (Old Age Pension Excl. Health)

Share of older persons in total population (%)

Region	Share of persons aged 65 and above	Non-health public social protection expenditure
World	8.4	6.9
Northern, Southern and Western Europe	19.6	10.7
Europe and Central Asia	16.1	10.3
Eastern Europe	14.7	9.2
Central and Western Asia	7.7	6.8
Northern America	14.9	6.8
Americas	10.2	6.6
Latin America and the Caribbean	7.6	6.0
Eastern Asia	11.1	5.8
Oceania	12.1	5.1
Asia and the Pacific	7.8	5.1
Southern Asia	5.5	3.9
Northern Africa	5.3	3.7
Arab States	3.4	2.6
Africa	3.5	2.3
Sub-Saharan Africa	3.1	1.6
South-Eastern Asia	6.0	1.4

Non-health public social protection expenditure for older persons

Share of persons aged 65 and above in total population
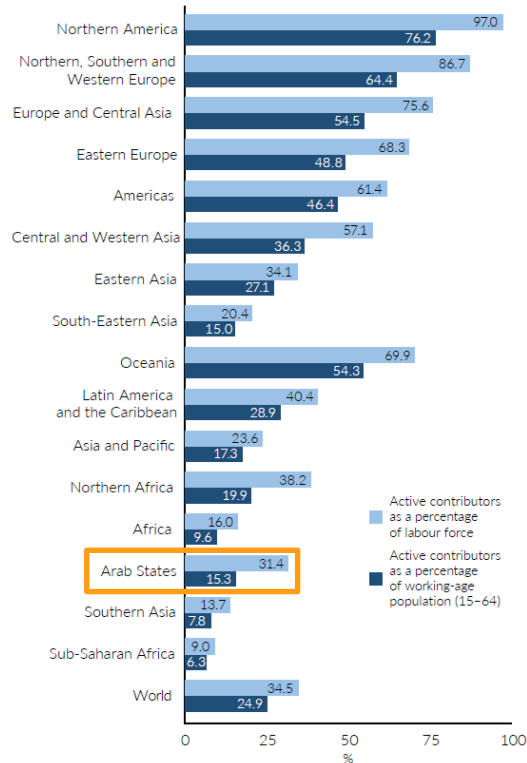
% of GDP

Arab States have unusually low (~3-4)% of persons above age 65, compared with North America (~15%) and Europe (~20%)

Accordingly, expenditure on old age pensions is modest (2.6% of GDP) compared to those countries (6.8% for NA and 10.7% for Europe)

Source: International Labour Organization, *World Social Protection Report, 2017–19: Universal social protection to achieve the Sustainable Development Goals*

Old Age Pensions in Arab States – Low Coverage

Active contributors as a percentage of labour force

Active contributors as a percentage of working-age population (15–64)

Region	as a percentage of labour force	as a percentage of working-age population
Northern America	97.0	76.2
Northern, Southern and Western Europe	86.7	64.4
Europe and Central Asia	75.6	54.5
Eastern Europe	68.3	48.8
Americas	61.4	46.4
Central and Western Asia	57.1	36.3
Eastern Asia	34.1	27.1
South-Eastern Asia	20.4	15.0
Oceania	69.9	54.3
Latin America and the Caribbean	40.4	28.9
Asia and Pacific	23.6	17.3
Northern Africa	38.2	19.9
Africa	16.0	9.6
Arab States	31.4	15.3
Southern Asia	13.7	7.8
Sub-Saharan Africa	9.0	6.3
World	34.5	24.9

- Low effective coverage (31%) due to:
  - Coverage often only for workers with regular contracts
  - Low female labor market participation rates

- Compares with 97% of labor force in North America and 76% in Europe

- Over 35% of workers in Arab States are migrants – majority are from South and South East Asia

- Migrant workers in Arab States remit over $110B annually to home countries

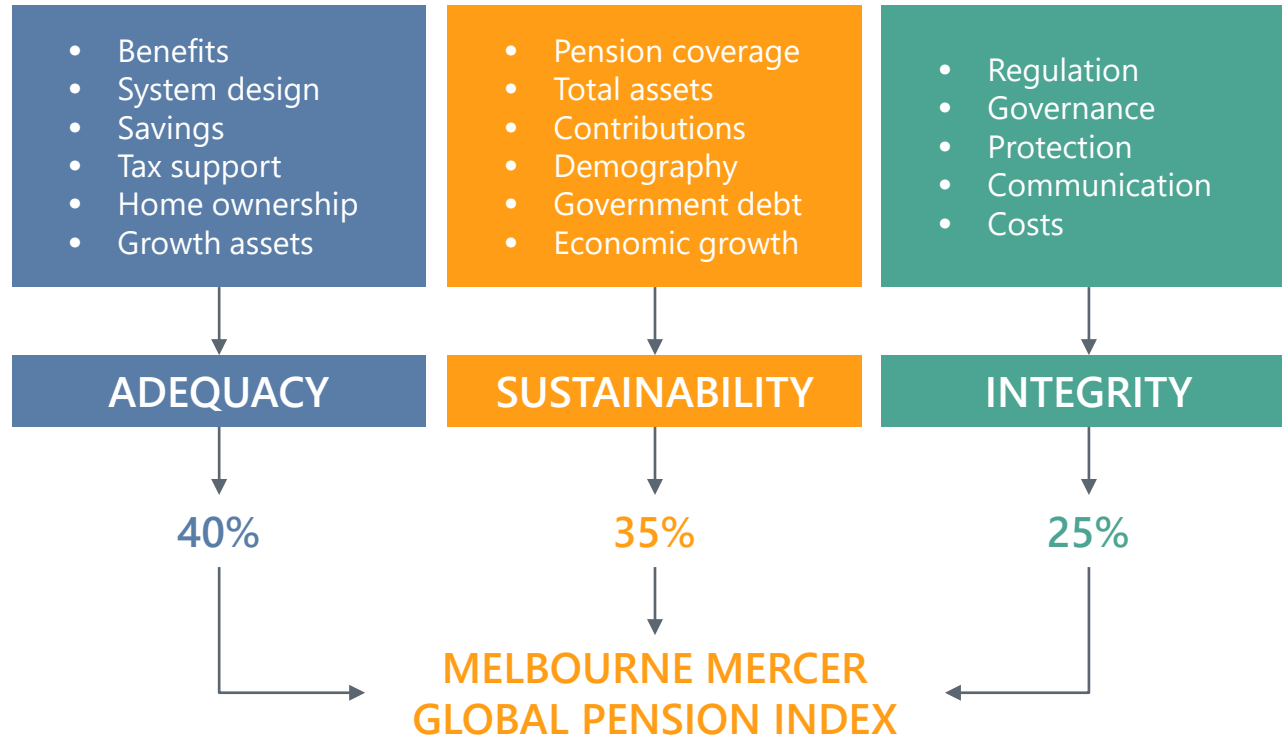# Turbo-Charging Coverage for Retirement – China

- China tripled coverage between 2009–2013

- State pension system includes three plans – urban workers, civil servants, rural and urban workers not covered by other two plans

- Key innovation – flat rate government – funded benefit was made available for those already above age 60, if:
  - They could self-fund the shortfall (15 years vesting); or
  - Their children made up the shortfall via "family-binding" arrangements

Expansion of old-age pension coverage, 2001–13
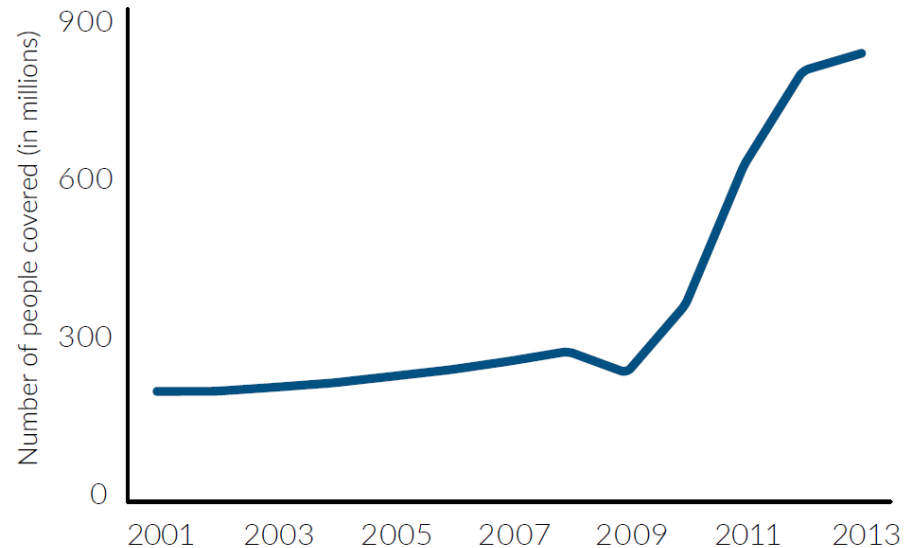
Source: International Labour Organization, *World Social Protection Report, 2017–19: Universal social protection to achieve the Sustainable Development Goals*

Quality Matters – Global Pension Systems Compared

• Benefits • System design • Savings • Tax support • Home ownership • Growth assets	• Pension coverage • Total assets • Contributions • Demography • Government debt • Economic growth	• Regulation • Governance • Protection • Communication • Costs
ADEQUACY	**SUSTAINABILITY**	**INTEGRITY**
40%	**35%**	**25%**

MELBOURNE MERCER GLOBAL PENSION INDEX

Source: Mercer, *Melbourne Mercer Global Pension Index 2018*

Insurance Industry Can Fill the Gaps of Social Systems

Global Grades

| Grade	Index Value	Countries		Description
A	>80	Netherlands Denmark		A first class and robust retirement income system that delivers good benefits, is sustainable and has a high level of integrity.
B+	75–80	Nil		
B	65–75	Finland Australia Sweden Norway Singapore Chile New Zealand	Canada Switzerland Ireland Germany	A system that has a sound structure, with many good features, but has some areas for improvement that differentiates it from an A-grade system.
C+	60–65	Colombia UK Peru France		A system that has some good features, but also has major risks and/or shortcomings that should be addressed. Without these improvements, its efficacy and/or long-term sustainability can be questioned.
C	50–60	Saudi Arabia USA Malaysia Brazil Hong Kong SAR Spain	Poland Austria Indonesia Italy South Africa	
D	35–50	Japan Korea (South) China	Mexico India Argentina	A system that has some desirable features, but also has major weaknesses and/or omissions that need to be addressed. Without these improvements, its efficacy and sustainability are in doubt.
E	<35	Nil		A poor system that may be in the early stages of development or non-existent.

Example – Mercer's Ranking of Saudi Arabia

- Retirement income system comprises an earnings-related pension or an earnings-related lump sum retirement benefit for individuals who do not fulfil any of the retirement conditions.

- The Saudi Arabia index value in 2018 was 58.9, but could be increased by:
  - improving the minimum level of support for the poorest aged individuals
  - increasing the labor force participation rate at older ages as life expectancies rise
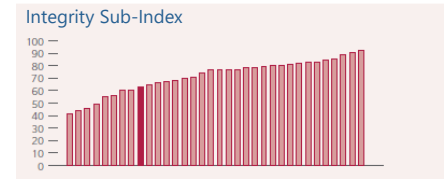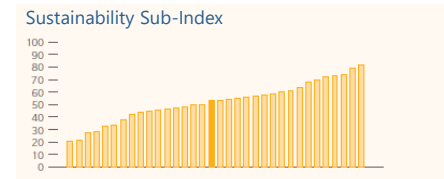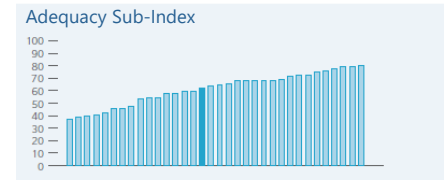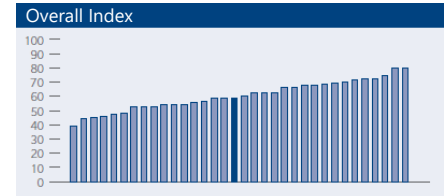
Source: Mercer, *Melbourne Mercer Global Pension Index 2018*

Future Gross Replacement Rates for Full-Career Average-Wage Workers in OECD and G20 Countries

Source: OECD, *Pensions at a Glance 2017: OECD and G20 indicators*
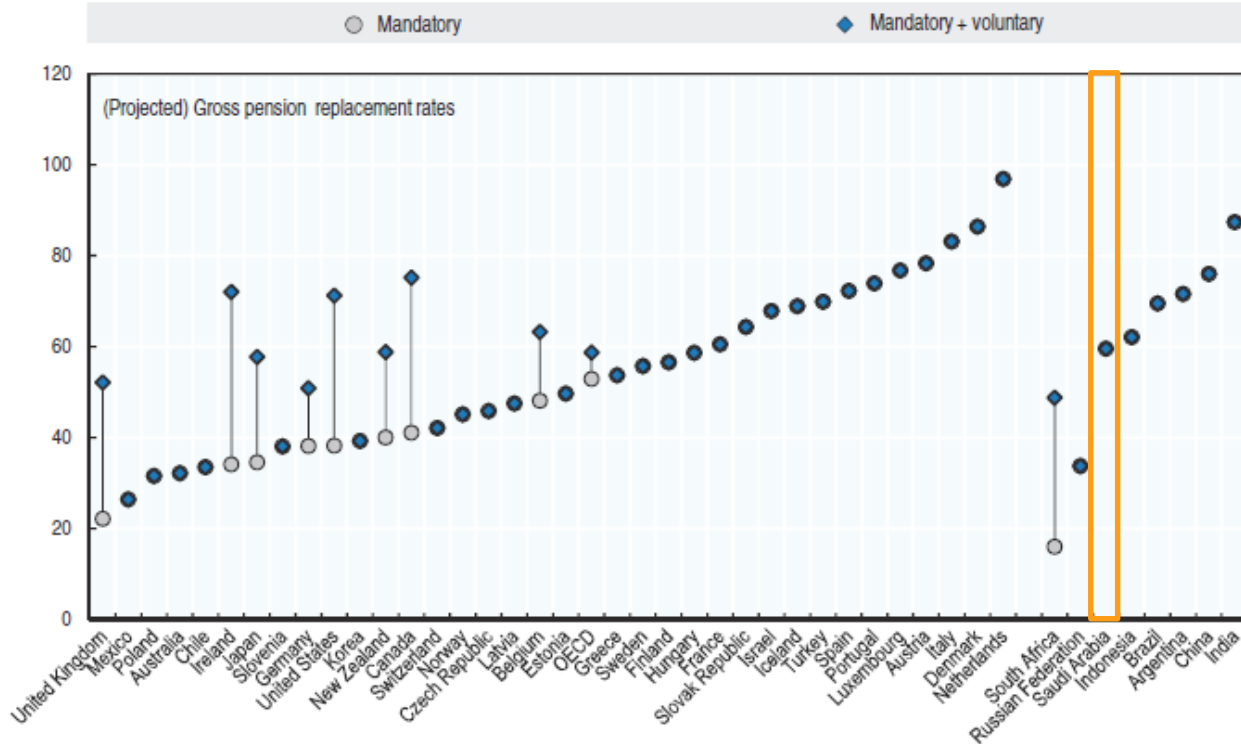
Key roles of insurance in retirement:

- Supplement mandatory schemes for average wage workers

- Increase replacement rates for higher income workers

- Provide longevity protection without excessive annuitization

- Provide inflation protection

GCC Countries Have Attractive Replacement Rates But Very Low Minimum Retirement Ages

Gross Replacement Rates			
15 years of service	20 years of service	25 years of service	30 years of service
Bahrain 33.0%	44.0%	55.0%	66.0%
Kuwait 65.0%	75.0%	85.0%	95.0%
Oman 45.0%	60.0%	75.0%	80.0%
Qatar 75.0%	100.0%	100.0%	100.0%
Saudi Arabia 37.5%	50.0%	62.5%	75.0%
United Arab Emirates 60.0%	70.0%	80.0%	90.0%

	Normal Retirement Age	Minimum Early Retirement Age	Years of Service Required for Pension
Bahrain (private)	Males 60/Females 55	Any age	20 (age less than 60) & 15 (age less than 55)
Kuwait	Age 51 (gradually rising to age 55 by 2020)		15
Oman (private)	Males 60/Females 55	45	Males 20/Females 15
Qatar	Males 60/Females 55	40	15
Saudi Arabia	60	Any age	20-25
United Arab Emirates	60	Males 55/Females 50	20

Source: Labour Market Trends GCC and East/Central Africa, *Ibrahim Muhanna*, November 2018

Cohort-Component Method for Population Projections

MODEL INPUT

| Population Data | Mortality Data | Fertility Data | Net Migration Rate |

Mortality Improvement

Fertility Rates

Base Year Population → **- Deaths** → **+ Births** → **+/- Migration** → **= Projected Population**
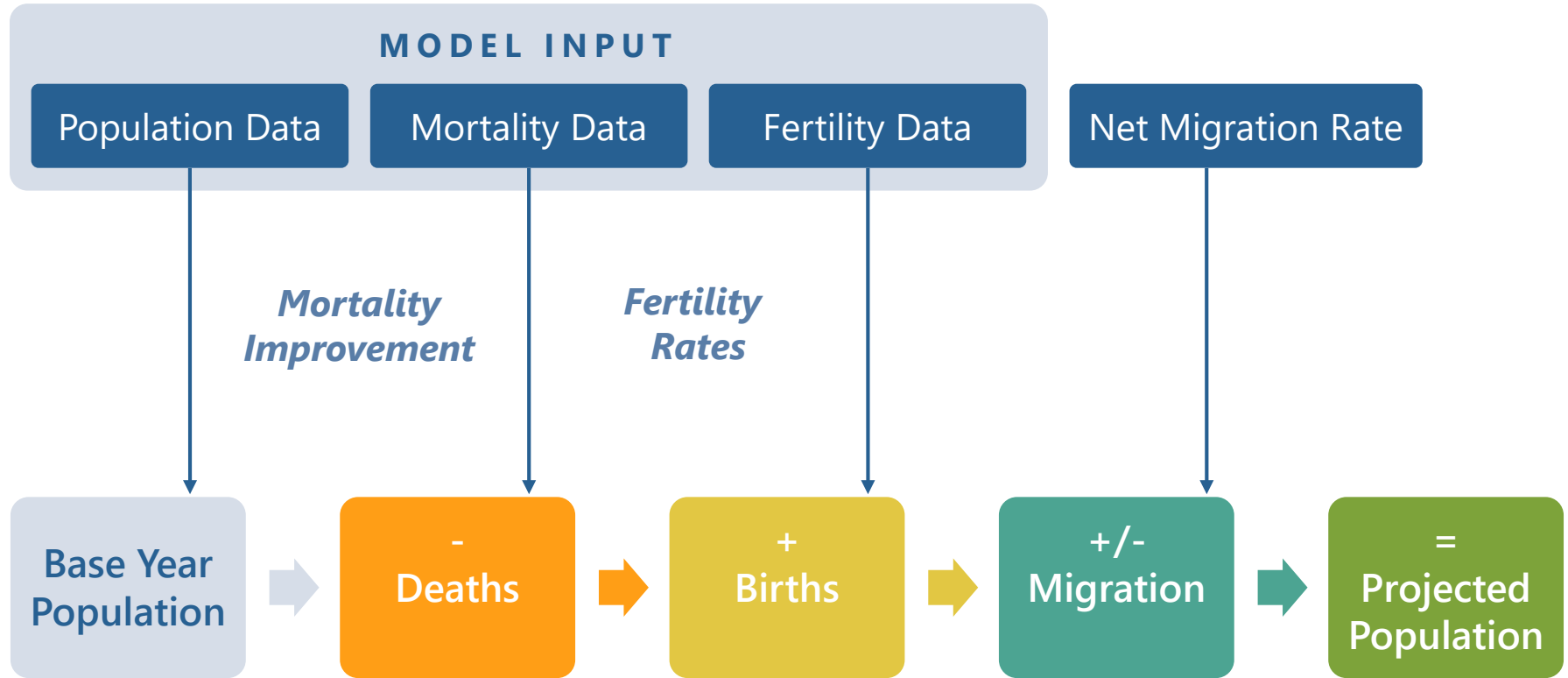
Population Growth Last 50 Years – GCC Spotlight

Growth (1967-2017)

CHN 84%
DEU 7%
GBR 20%
JPN 26%
USA 64%
WLD 117%
GCC 707%

Net Migration Rate

(Line chart, 1967–2017, y-axis -5% to 20%)

Annual Population Growth

(Line chart, 1967–2017, y-axis -2% to 8%)

Legend: CHN, DEU, GBR, JPN, USA, WLD, GCC

Fertility Rate

(Line chart, 1967–2017, y-axis 0 to 8)
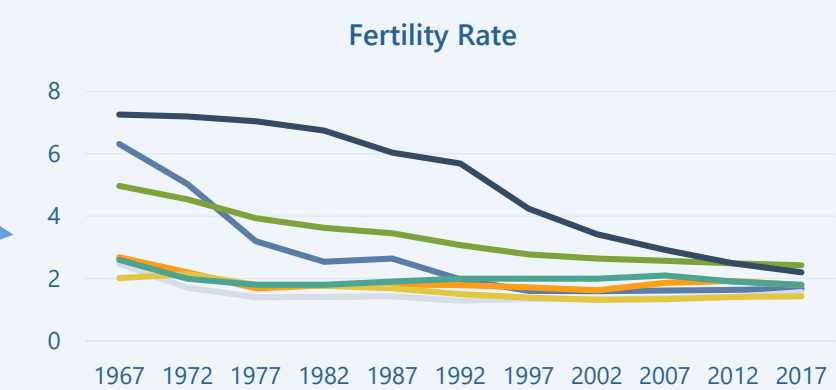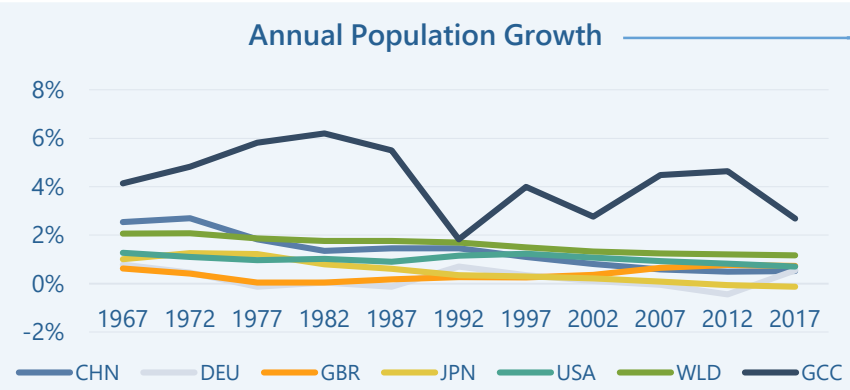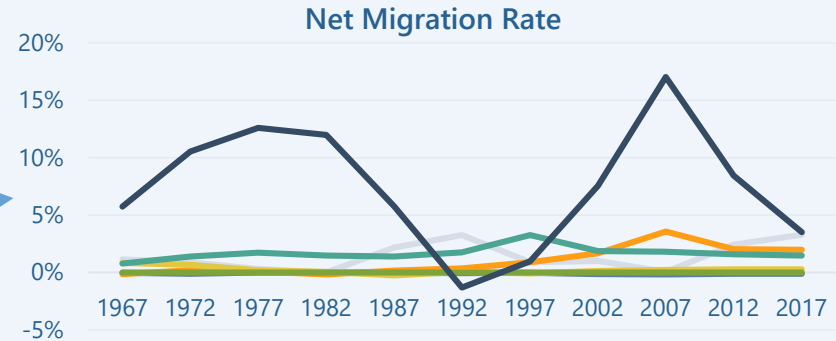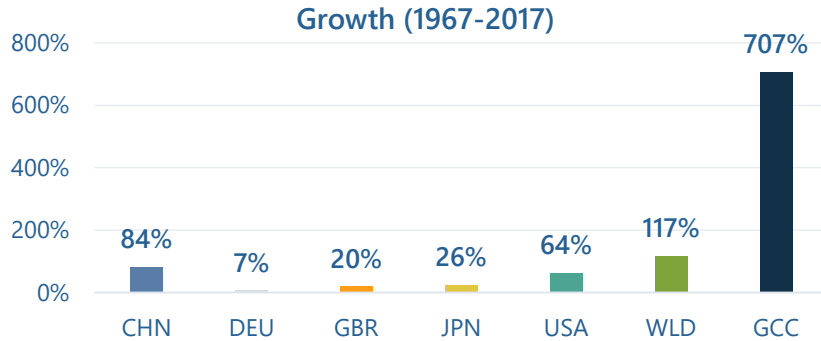
Source: World Bank Data, 1962-2018

Arab States Have Favorable Dependency Ratio Outlook

Distribution of population by age group based on estimates and projections, 1950–2050 (percentage)
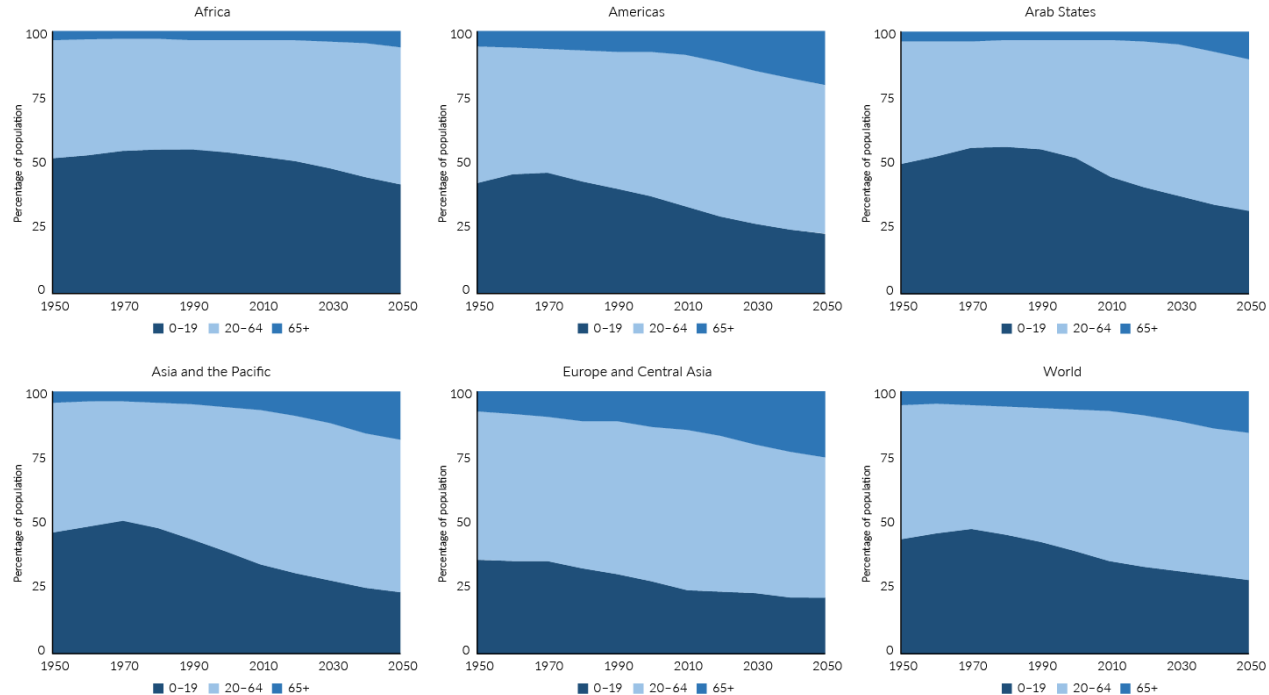
Source: International Labour Organization, *World Social Protection Report, 2017–19: Universal social protection to achieve the Sustainable Development Goals*

But Labor Market Exit Ages Need to Keep Pace with Life Expectancy Increases

Changes in labor market (LM) exit ages and life expectancy (LE) at the age of 65 among men and women since 1975, average over 24 OECD countries in years
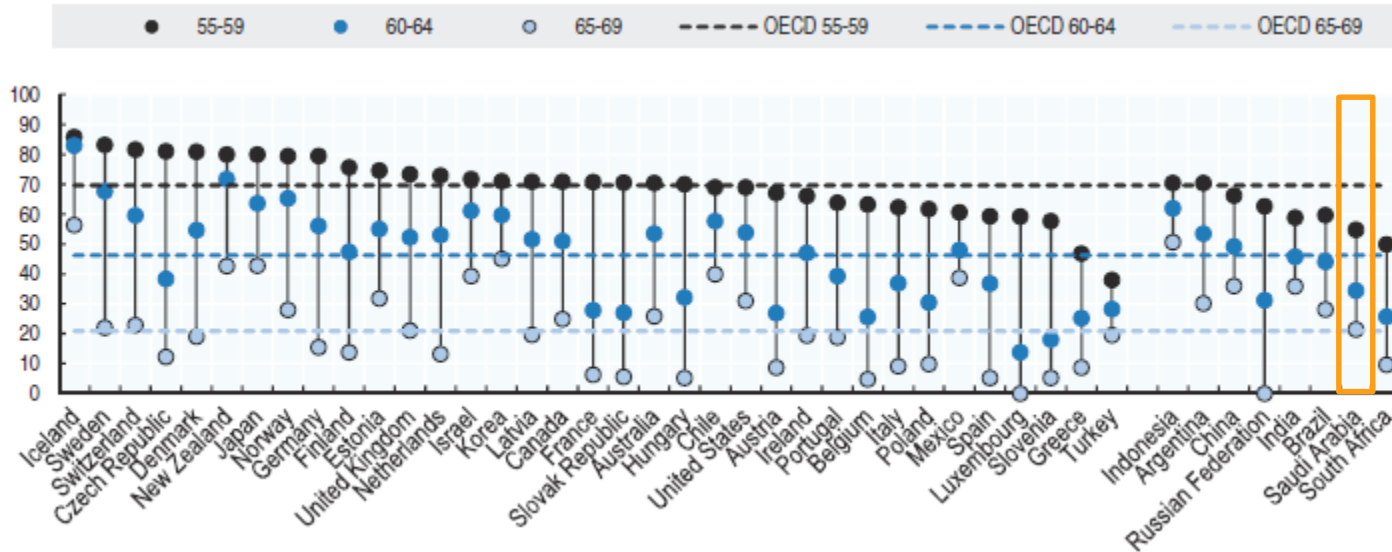

Legend: Labour market exit age men — Labour market exit age women — LE at age 65 men — LE at age 65 women
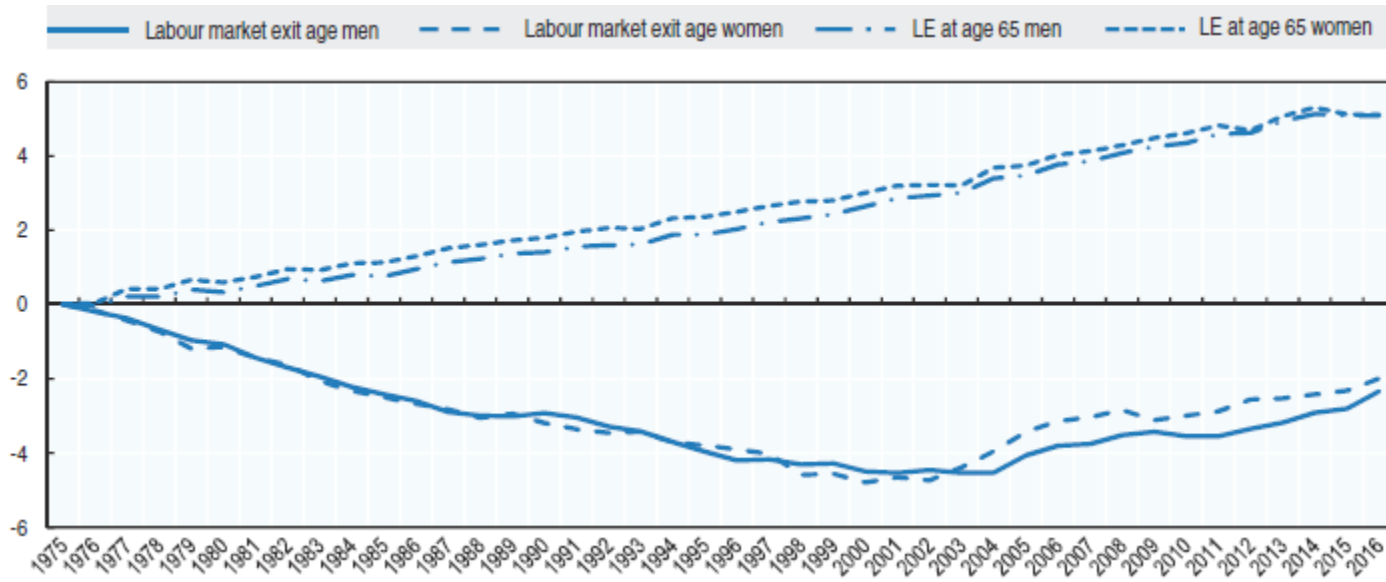
Employment Above Age 65, Too Low in Most Countries

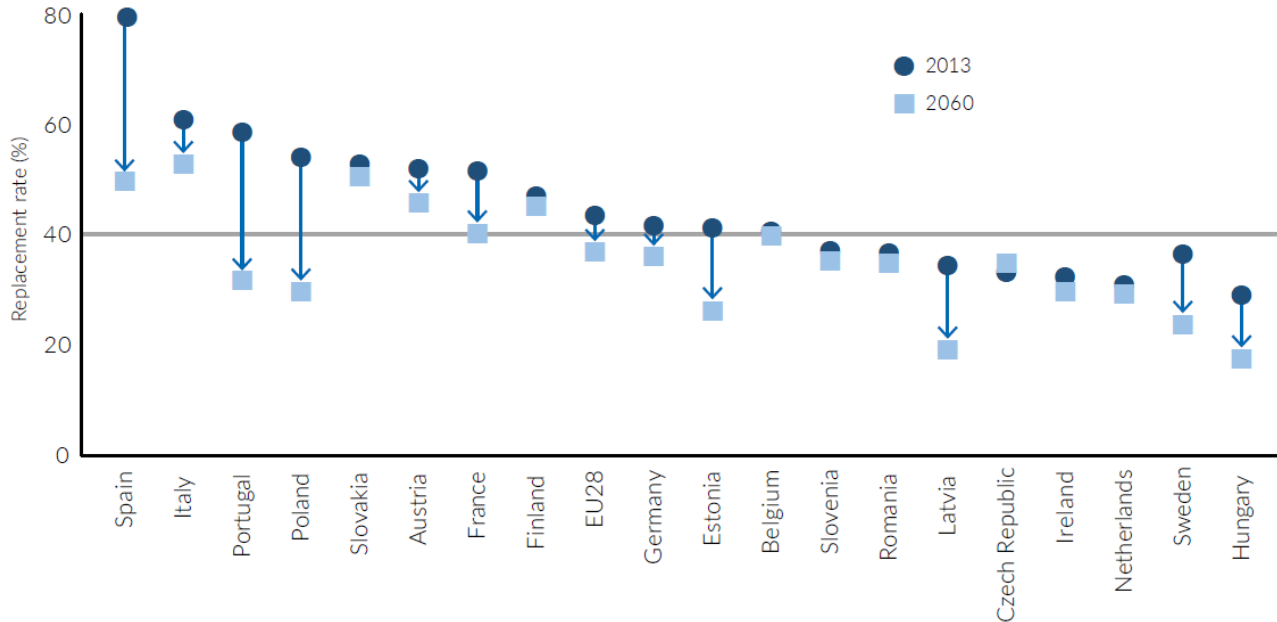**Employment rates of workers aged 55 to 59, 60 to 64, and 65 to 69 in 2016**

Spotlight on Sustainability...Europe

Average replacement rates at retirement in public pension schemes, selected European countries, 2013 and projected for 2060 (percentage)

Source: International Labour Organization, *World Social Protection Report 2017–19: Universal social protection to achieve the Sustainable Development Goals*

Spotlight on Sustainability...USA

Social Security Act Covers:

- Old Age & Survivors (OASDI) – 52M beneficiaries; $837B (2018)

- Disability Insurance – 10M beneficiaries; $141B (2018)

- Supplementary (SSI) – 8M beneficiaries; $47B (2018)

Present Value of NCFs:

- Over next 75 years – open group measure

- Projected Deficit of $13.2T

- Represents >60% of GDP

- Current projected tax revenues can only support ~74-79% of benefits

- Payroll taxes would need to increase by ~2.8% to afford current benefits

Sensitivities:

- Reduce Fertility Rate from 2.0 to 1.8 – Deficit increases by 11.4%

- Increase Mortality Improvement from 0.8% to 1.2% – Deficit increases by 20.5%

- Reduce Net Migration Rate by 25% (to 952K) – Deficit increases by 6%

- Real Wage Excess of CPI decreases from 1.2% to 0.6% – Deficit increases by 18%

- Real interest rates decline by 0.5% – Deficit increases by 22%

Source: USA Social Security Administration, *Agency Financial Report Fiscal Year 2018;* November 9, 2018

Insurers Can Help Societies Address These Issues

- Many countries' demographics pose significant challenges for pay-as-you-go systems

- Improving mortality brings additional challenges for health care systems for the aged

- Working populations can't assume indefinite ability of governments to support current systems

- Education on motives to save – to avoid outliving savings; to deal with emergencies arising from health risks; to accumulate resources for heirs

- Education on myopic and instant gratification saving decelerators:
    - Expected higher future income and opportunity
    - Lessened ability to enjoy consumption in the future
    - Short life expectancy perspective
    - Adopted lifestyle

- Understanding the needs of different socioeconomic and educational groups

- Leveraging behavioral economics to guide wise insured population choices
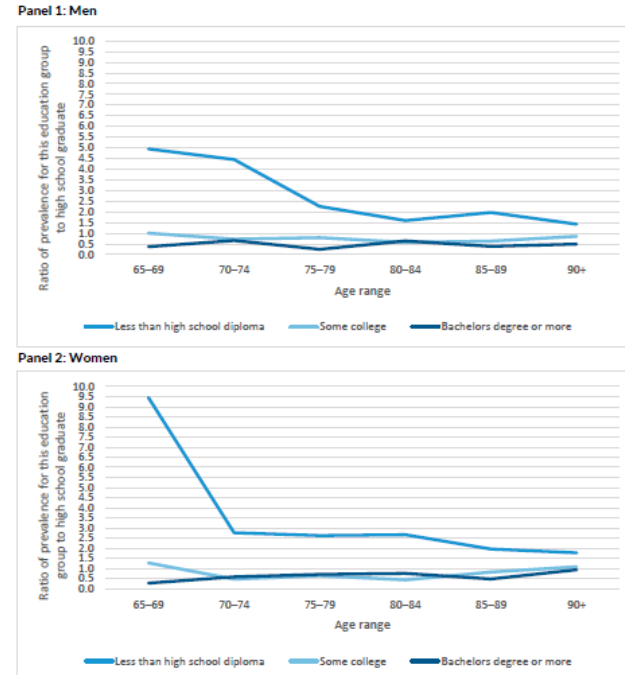
Insurance Underwriting/ Pricing Should Consider Mortality and Morbidity Differences – Example

U.S. relative mortality ratios for retired workers by age, sex and quintile of lifetime earnings in 2015
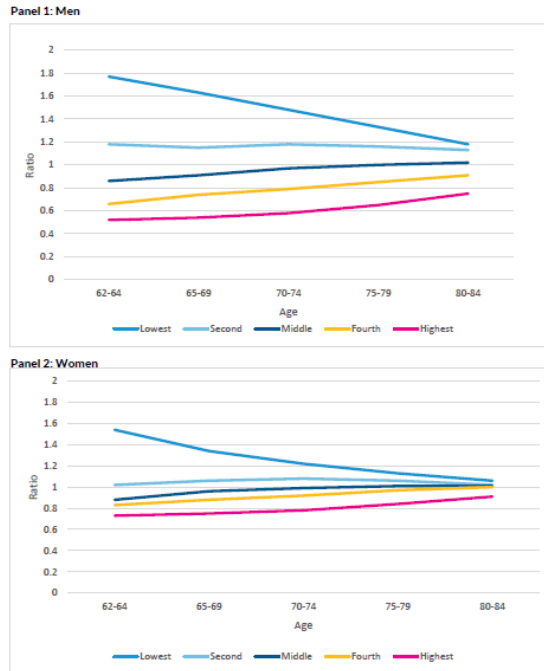
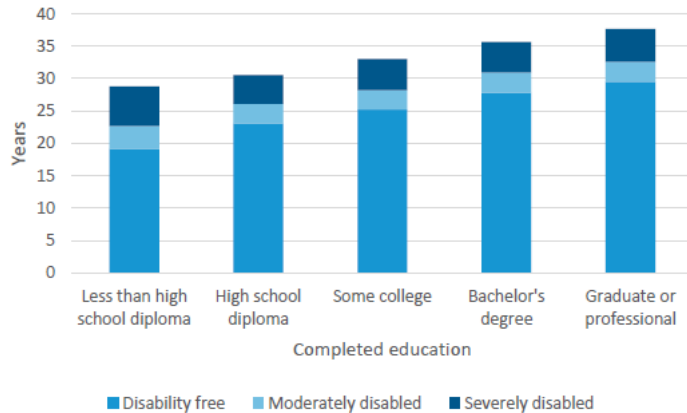**U.S. relative dementia ratios by age, sex and education in 2010**

Source: Urban Institute, *Socioeconomic Disparities in Disabled and Disability-Free Life Expectancy: Implications for Our Fiscal Future,* March 2019

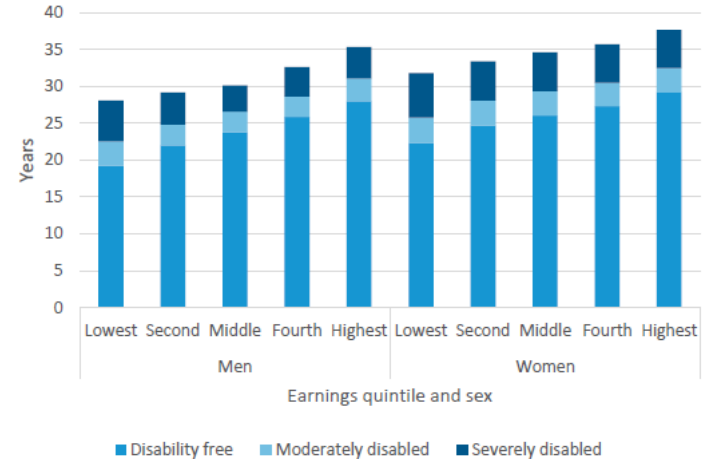# Insurance Products Should Be Tailored to Demographics

Example: U.S. disabled and disability-free life expectancy from age 51 by education and lifetime earnings and sex for people born in 1966-1970, by severity of disability

Panel 1: Education

Panel 2: Sex and Family Lifetime Earnings Quintile

Notes: Disability durations are sensitive to small changes in definitions.
Source: Urban Institute, *Socioeconomic Disparities in Disabled and Disability-Free Life Expectancy: Implications for Our Fiscal Future,* March 2019

Higher Income Classes Often Consume Smaller Medicare Dollars but Higher Retirement Dollars

Social Security and Medicare experience from age 51 to death with severe disabilities and disability-free life expectancy from age 51, by lifetime earnings and sex for people born in 1966–1970

Notes: All computations in real (2019) dollars. Present values are evaluated as of age 51 using a real discount rate of 2.7 percent, consistent with the Social Security Trustees Report. Family earnings are defined as the average of own and spouse annual earnings when married and one's own earnings in years when unmarried. Quintile breaks are calculated for 5-year birth cohorts. Assumes scheduled Social Security benefits. Figure excludes late-arriving, unauthorized, and short-term immigrants.

Source: Urban Institute, *Socioeconomic Disparities in Disabled and Disability-Free Life Expectancy: Implications for Our Fiscal Future,* March 2019

Public Expenditure on LTC per Person 65 Years+, Very Low in Most Countries[1]
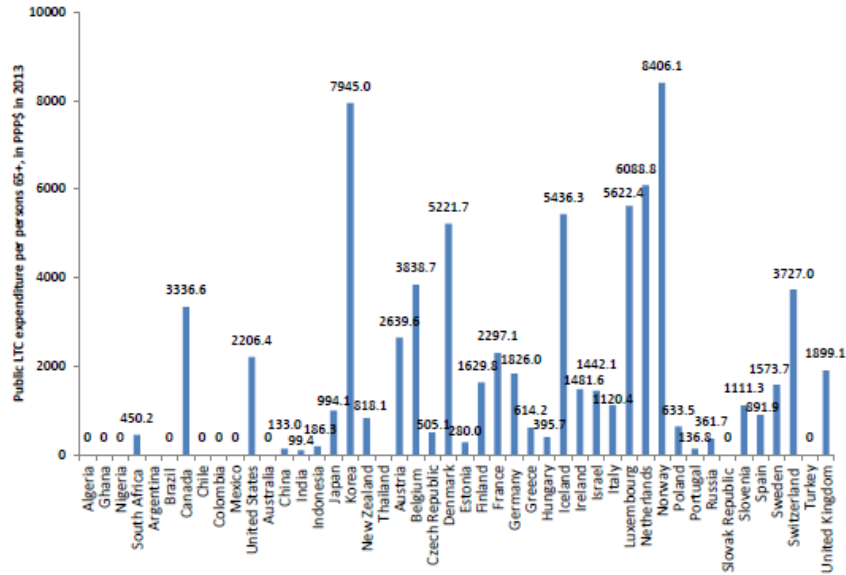
- **0 and 200 PPP$ per year and persons aged 65+:**
  - Africa: Algeria, Ghana and Nigeria
  - Americas: Brazil, Chile, Colombia, and Mexico
  - Asia: Australia, China, Indonesia and India
  - Europe: Portugal, Slovakia, and Turkey

- **200 and 500 PPP$ per year and person aged 65+:**
  - Africa: South Africa
  - Europe: Estonia, Hungary, and Russia

- **500 and 1,000 PPP$ per year and person aged 65+:**
  - Asia: Japan and New Zealand
  - Europe: Czech Republic, Greece, Poland, and Spain

- **1,000 and 5,000 PPP$ per year and person aged 65+:**
  - Americas: Canada and USA
  - Europe: Austria, Belgium, Finland, France, Germany, Ireland, Italy
  - Israel, Slovenia, Sweden, Switzerland, and the UK

- **5,000 PPP$ and more per year and person aged 65+:**
  - Asia: Korea
  - Europe: Denmark, Iceland, Luxembourg, Netherlands, and Norway

Note (1): Expressed in $PPP (Purchasing Power Parity) USD, 2013, per person aged 65+
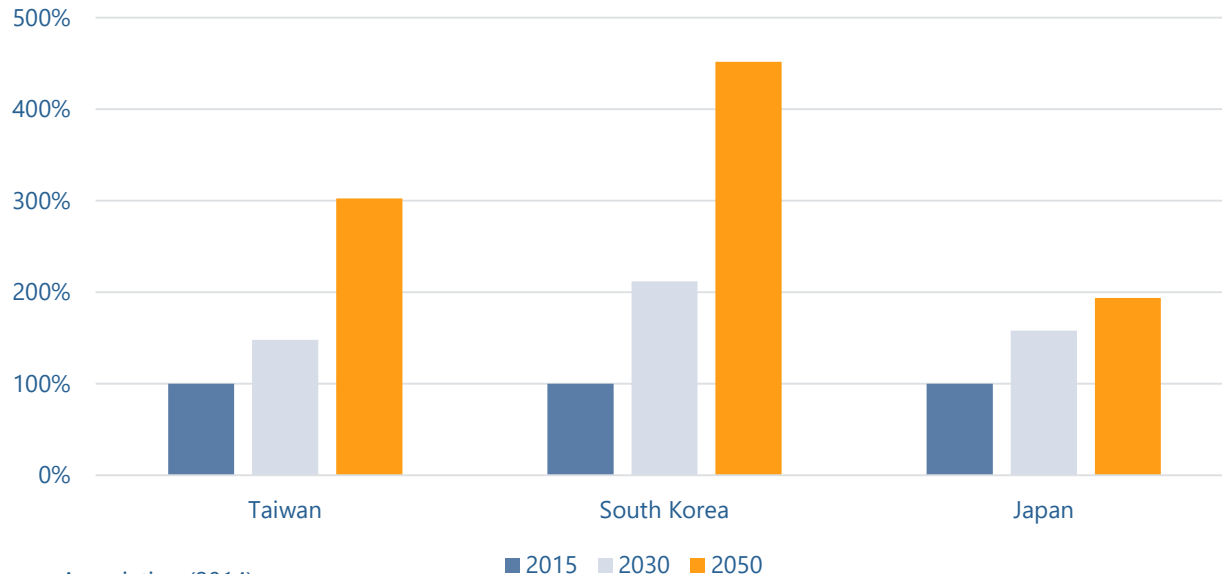
Source: International Labour Organization, *Long-Term Care Protection for Older Persons: A Review of Coverage Deficits in 46 Countries, Scheil-Adlung*, 2015

LTC Case Study – Japan and South Korea

Care needs is a growing problem in Japan and South Korea, mainly driven by dementia

Relative growth of number of dementia cases

Legend: ■ 2015 ■ 2030 ■ 2050

Taiwan Alzheimer's Disease Association (2014)
South Korea Ministry of Health and Welfare (2015)
Japan Ministry of Ministry of Health, Labor and Welfare (2015)

The Growing Number of Dementia Sufferers in Japan Hold a Vast Pool of Idle Wealth

> " The pile of captive capital held by sufferers of Alzheimer's and other forms of dementia in the country swelled to ¥143 trillion ($1.3 trillion) in the year ending March 2018, according to research by Dai-Ichi Life Research Institute Inc. That's equivalent to more than a quarter of the size of the overall economy. "
>
> – *Japan Times, 2018*

Source: https://www.japantimes.co.jp/news/2018/10/19/business/japan-growing-number-dementia-sufferers-hold-vast-pool-idle-wealth/#.XONR3vZuLDc

Long Term Care Solutions in Japan

Dementia product is booming

Dai-ichi Life Group

"With the contribution of dementia insurance launched in late December, the three domestic life companies saw the value of new business grow, Dai-ichi Life said." (Source: BestWire)

Sold 100,000 policies in the first 5 months

Services are a key feature of the product:

- Prevention & Early Detection:
    - Smartphone application to identify symptoms of dementia, checking brain conditions, and promoting habits of walking, brain training, and eating

- Visiting service by security company to the insured

- Support of claim procedures

- Whole Life or Term product

- Issue age 40–85 for Whole Life product

- Underwriting: only 4 questions

- Waiting period – 2 years

- Lump Sum Benefit shall be paid if the insured is:
    - diagnosed as suffering from dementia, and
    - approved as LTC Level 1+ in the public LTC scheme

UK Immediate Needs Annuity (INA) – Product Features

- Lifetime annuity to pay for care costs

- Lump sum purchase

- Annuity paid directly to care provider

- Variations

  - *Income escalation*
  - *Capital protection*
  - *Annuity deferral*
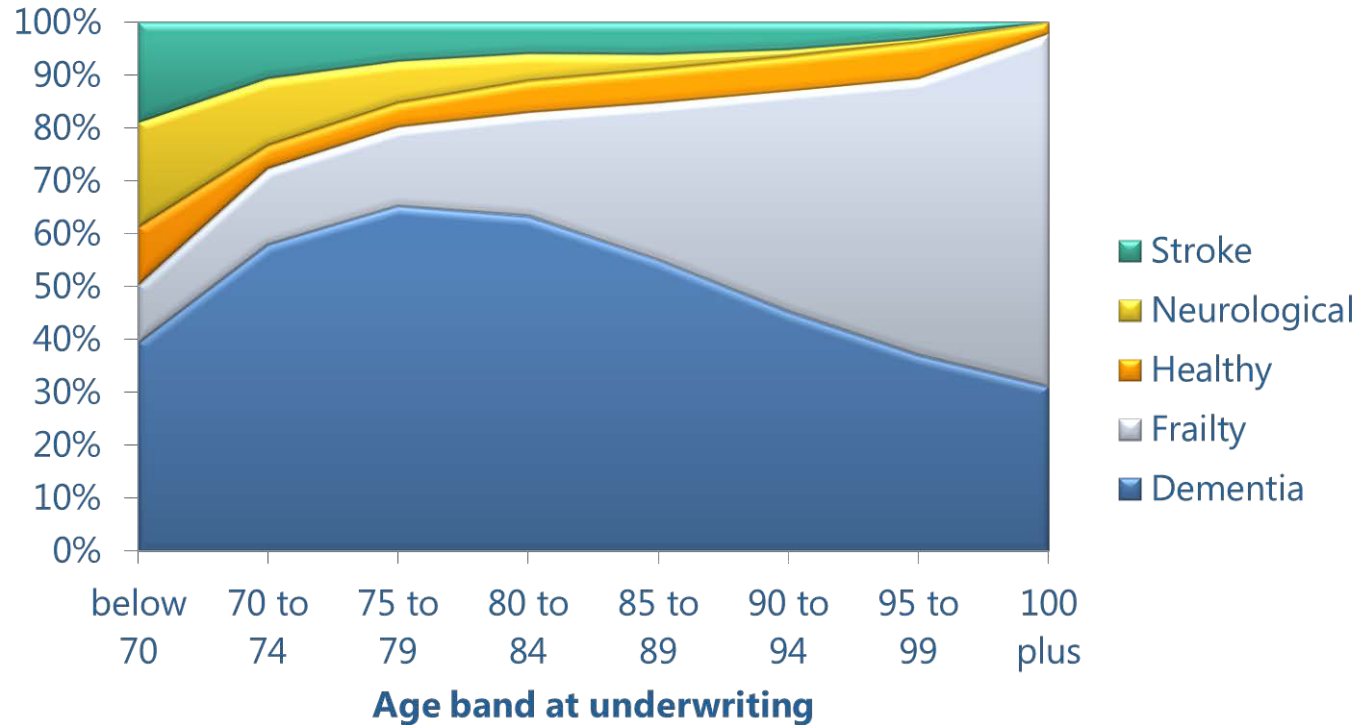
INAs – Average Age at Underwriting Is 87
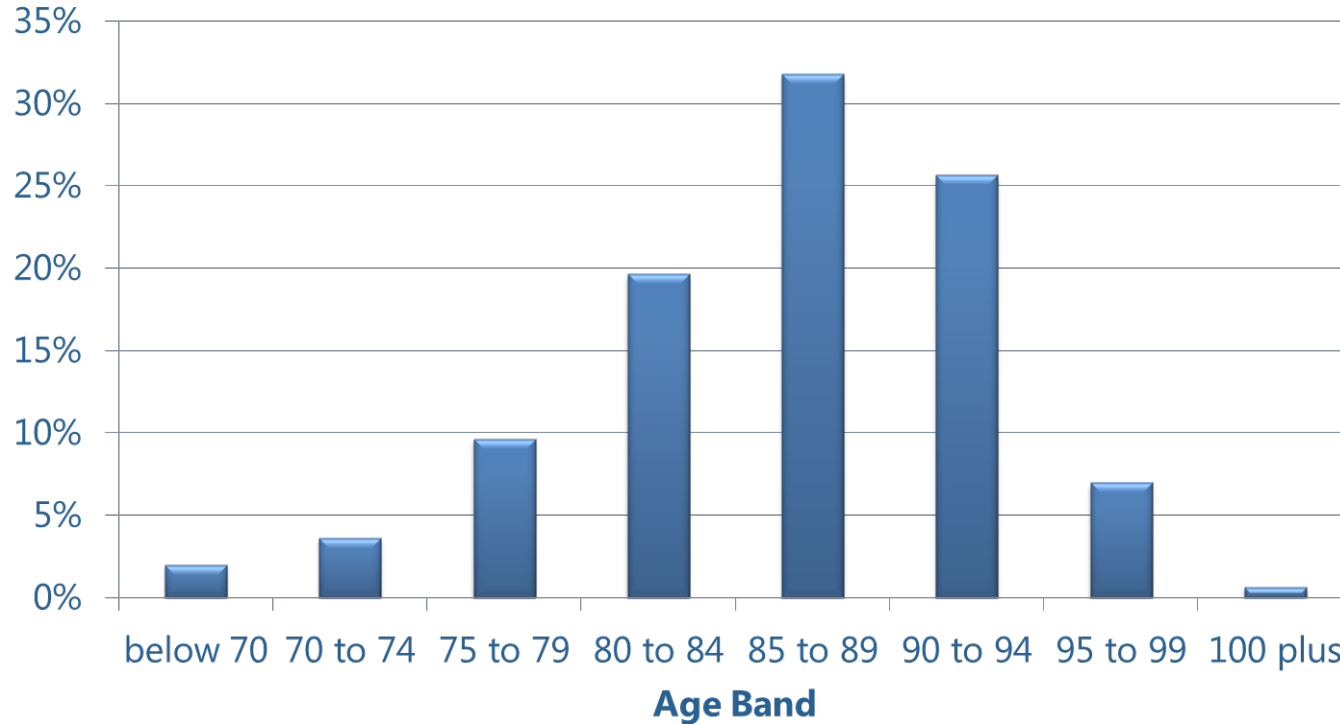
Source: Gen Re data

INAs – Average Annuity Amount

- £2,400 per month

- £144,000 lump sum
  - Assuming 20% annual mortality rate and level income

- £78,114 average lump sum for all in-force policies in 2014
  - Association of British Insurer statistics
  - Underwriting years 2000+

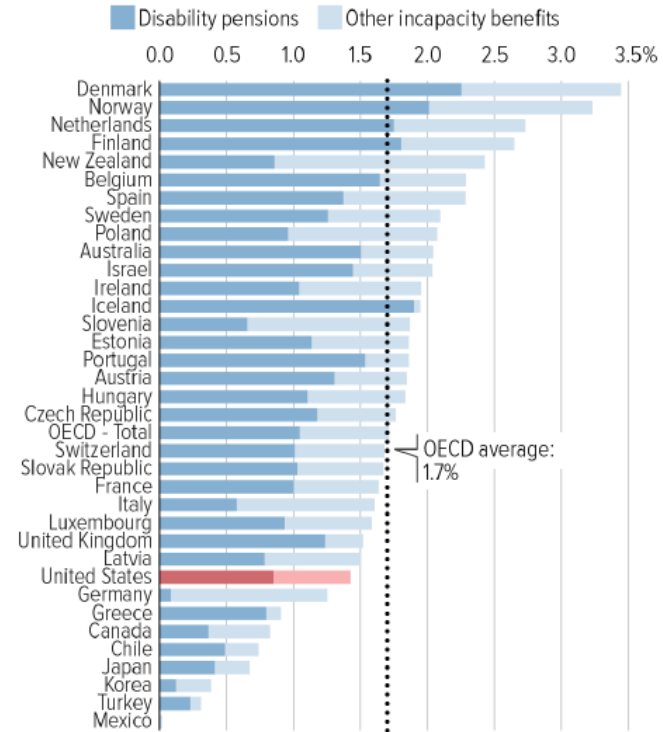# INAs – Nature of Medical Impairments Vary by Age

Legend: Stroke, Neurological, Healthy, Frailty, Dementia

X-axis: Age band at underwriting (below 70, 70 to 74, 75 to 79, 80 to 84, 85 to 89, 90 to 94, 95 to 99, 100 plus)

Many Governments Provide Inadequate Funding for Disabilities

Example: U.S. Spending Less than 1.5% of GDP
Percent of gross domestic product (2011-13 average)

Note: Incapacity benefits comprise public disability pensions, pensions for occupational injury and disease, publicly paid sick leave, means-tested disability benefits, and other cash benefits. In the United States, "disability pensions" chiefly means Social Security Disability Insurance; "incapacity benefits" include Disability Insurance, workers' compensation, Supplemental Security Income, and paid sick leave for government employees. Data for Greece and Poland are for 2011–2012.
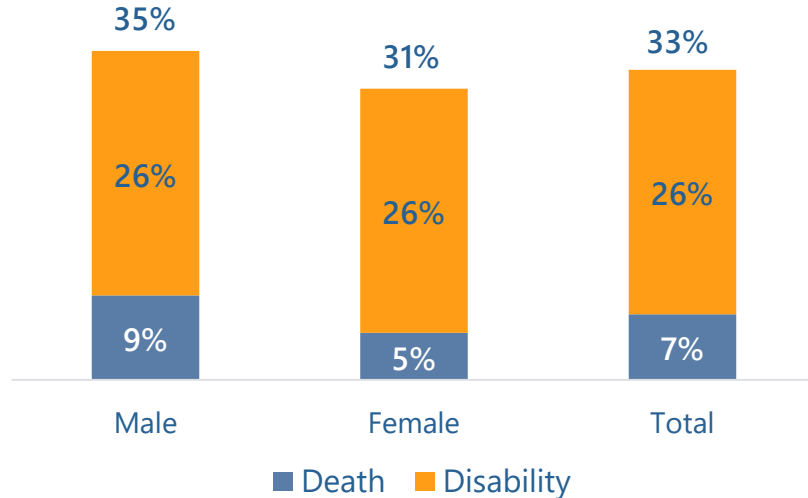
Source: Center on Budget and Policy Priorities, *Chart Book: Social Security Disability Insurance,* September 6, 2019

# U.S. – High Probability of Disability Before Retirement

U.S. Young Workers Have 1 in 3 Chance of Death or Disability Before Retirement
Probability of disability of death before reaching Social Security's full retirement age

Male: 35% (Disability 26%, Death 9%)
Female: 31% (Disability 26%, Death 5%)
Total: 33% (Disability 26%, Death 7%)

■ Death ■ Disability

U.S. Disability Rates Rise with Age
Disability Insurance recipients as a percent of insured worker, June 2019

Under 25: 0.2%
25-29: 0.6%
30-34: 1.2%
35-39: 2.1%
40-44: 3.2%
45-49: 4.6%
50-54: 7.2%
55-59: 11.7%
60-66: 17.3%
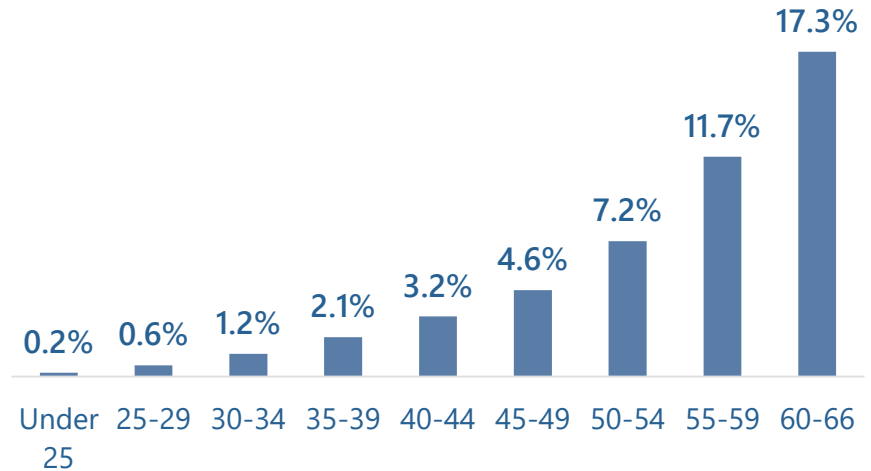
Note: Projections are for workers reaching ago 20 in 2019, for whom the full retirement age is 67.
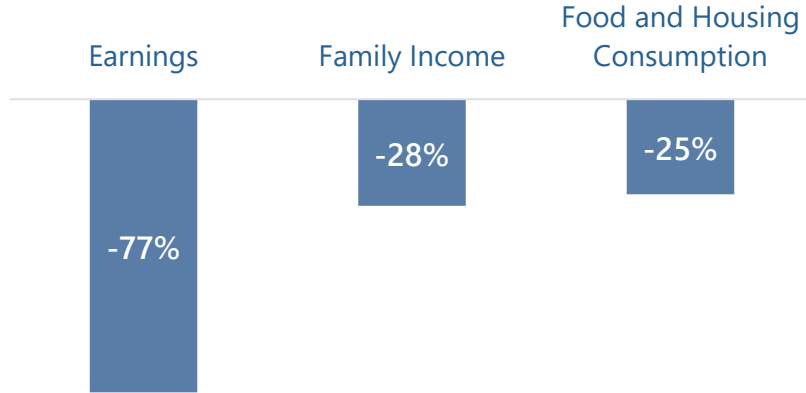
Source: Center on Budget and Policy Priorities, *Chart Book: Social Security Disability Insurance*, September 6, 2019

Inadequate Protection Can Lead to Severe Hardship

Severe and Chronic Disability Greatly Harms People's Economic Circumstances – U.S.

Average percentage change, 10 years after onset

Earnings	Family Income	Food and Housing Consumption
-77%	-28%	-25%

U.S. Typical Disabled Worker Is Over 50 and Has Severe Mental, Musculoskeletal, or Other Impairment

Millions of beneficiaries, by age and primary impairment, December 2017

Legend:
- Injuries and other impairments
- Nervous system and sense organs (e.g., blindess)
- Circulatory, respiratory, endocrine, and neoplasms (e.g., cancer)
- Musculoskeletal
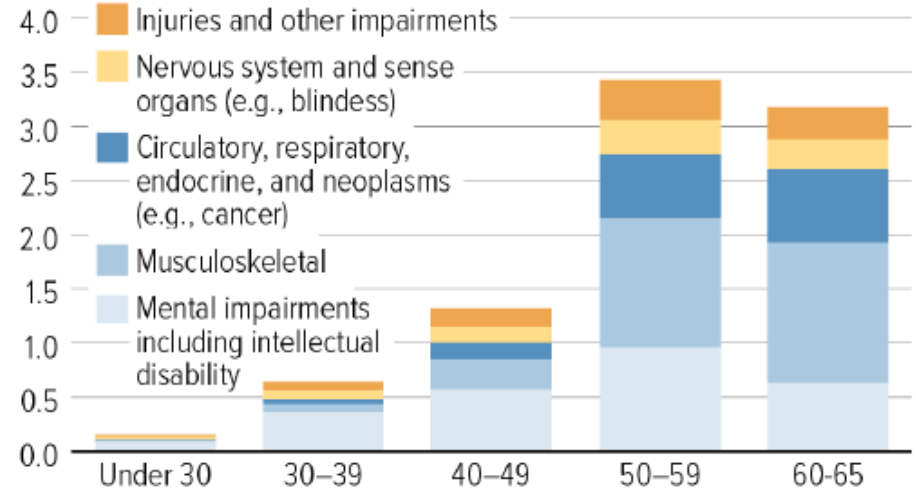- Mental impairments including intellectual disability

Note: Family income is after tax and includes both cash and non-cash transfers such as SNAP and housing subsidies. Percentage change is measured relative to value five years prior to the onset of disability. The data are for male household heads age 22 to 61.

Source: Center on Budget and Policy Priorities, *Chart Book: Social Security Disability Insurance*, September 6, 2019
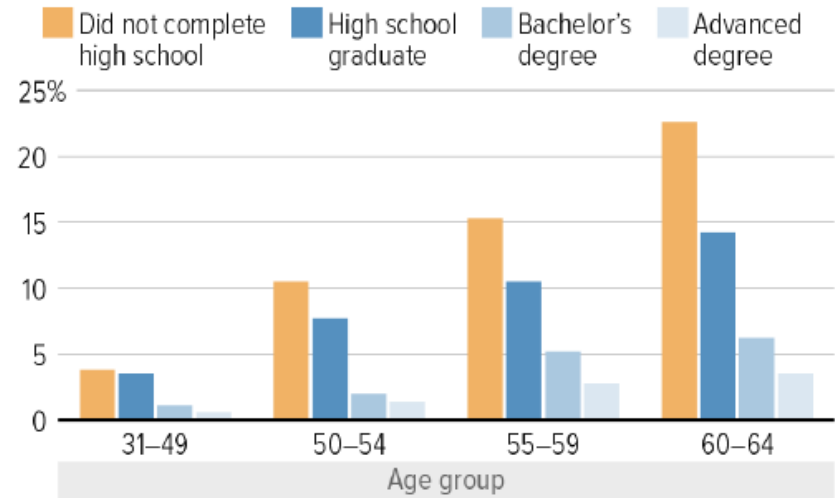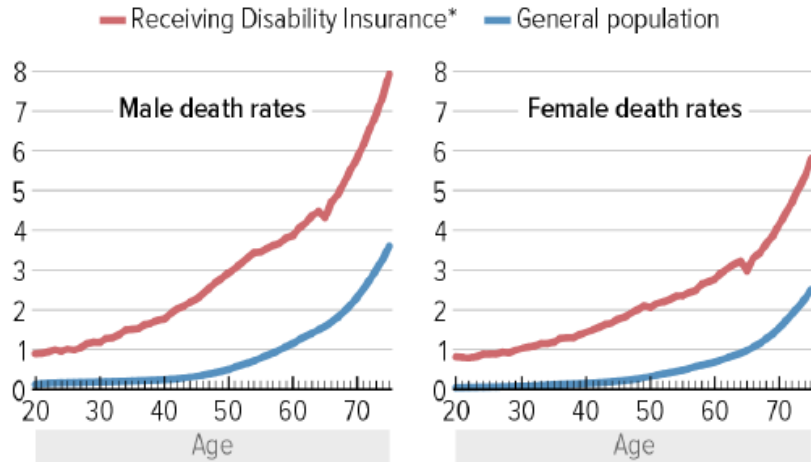
Mortality of Disabled Persons Is Also High – Need for Survivor Benefits as part of Insurance Solution

U.S. Death Rates Higher for Disability Insurance Beneficiaries Than for General Population

U.S. Disability Insurance Receipt Is Highest Among Older Workers with Limited Education
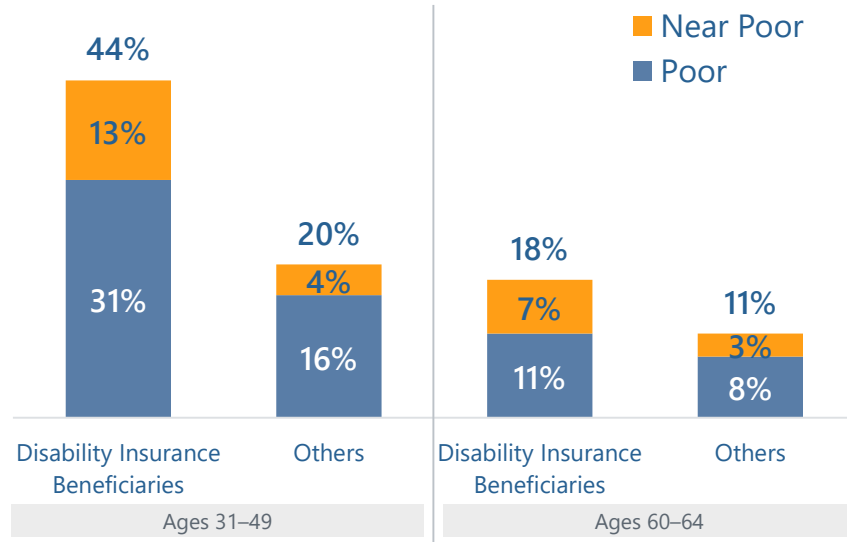*Percent of group receiving Disability Insurance, 2010*

* Data for people 66 or older represents former Disability Insurance beneficiaries who have been converted to retirement benefits.

Source: Center on Budget and Policy Priorities, *Chart Book: Social Security Disability Insurance*, September 6, 2019
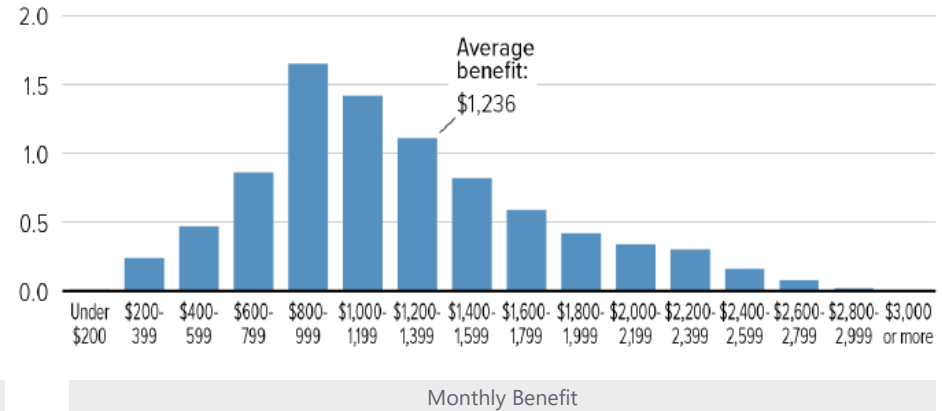
U.S. – High Levels of Poverty Among Disabled Population

U.S. Disability Insurance Beneficiaries Have High Poverty Rates

Legend: ■ Near Poor ■ Poor

Ages 31–49

- Disability Insurance Beneficiaries: 44% total (13% Near Poor, 31% Poor)
- Others: 20% total (4% Near Poor, 16% Poor)

Ages 60–64

- Disability Insurance Beneficiaries: 18% total (7% Near Poor, 11% Poor)
- Others: 11% total (3% Near Poor, 8% Poor)

U.S. Disability Insurance Benefits Are Modest
Number of beneficiaries (in millions), June 2019

Average benefit: $1,236

Monthly Benefit (Under $200, $200-399, $400-599, $600-799, $800-999, $1,000-1,199, $1,200-1,399, $1,400-1,599, $1,600-1,799, $1,800-1,999, $2,000-2,199, $2,200-2,399, $2,400-2,599, $2,600-2,799, $2,800-2,999, $3,000 or more)

Note: Near poor is defined as income between 100 and 125 percent of the poverty line. The Urban Institute did not publish data for people aged 50–59, but we expect the results would be similar.

Source: Center on Budget and Policy Priorities, *Chart Book: Social Security Disability Insurance*, September 6, 2019

Imbalance Between Needs and Current Disability Insurance (DI) Density – Example: Germany

Private DI insurance density among graduates **>50%**

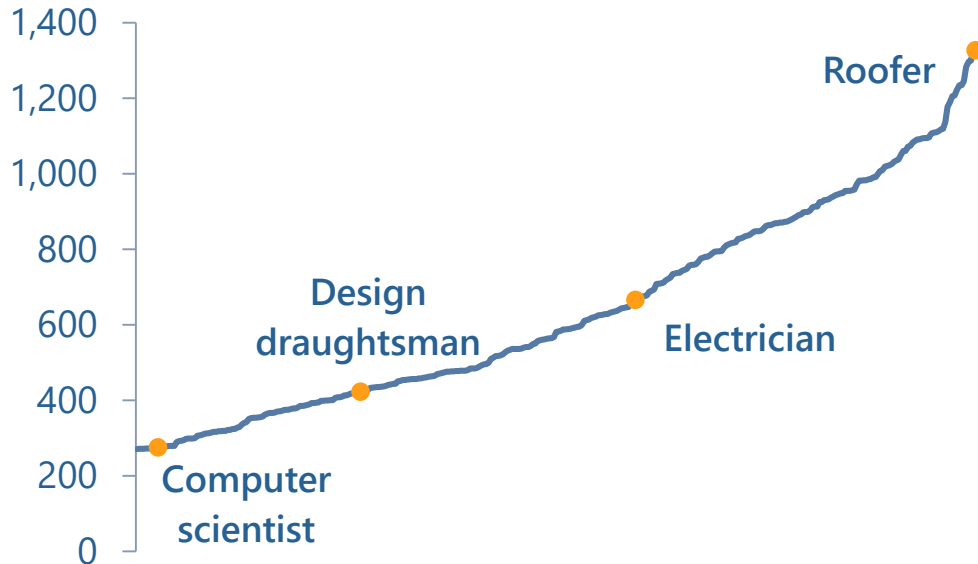Premium in % of income for coverage of 50% of income **1–2%**

<20% Private DI insurance density among manual workers

5–9% Premium in % of income for coverage of 50% of income

Occupation Based DI Is Expensive, Especially for Blue Collar Workers – Example: Germany

Average annual DI premium (EUR) by occupation, German market. Entry age 30, end age 60, EUR 1,000 monthly benefit
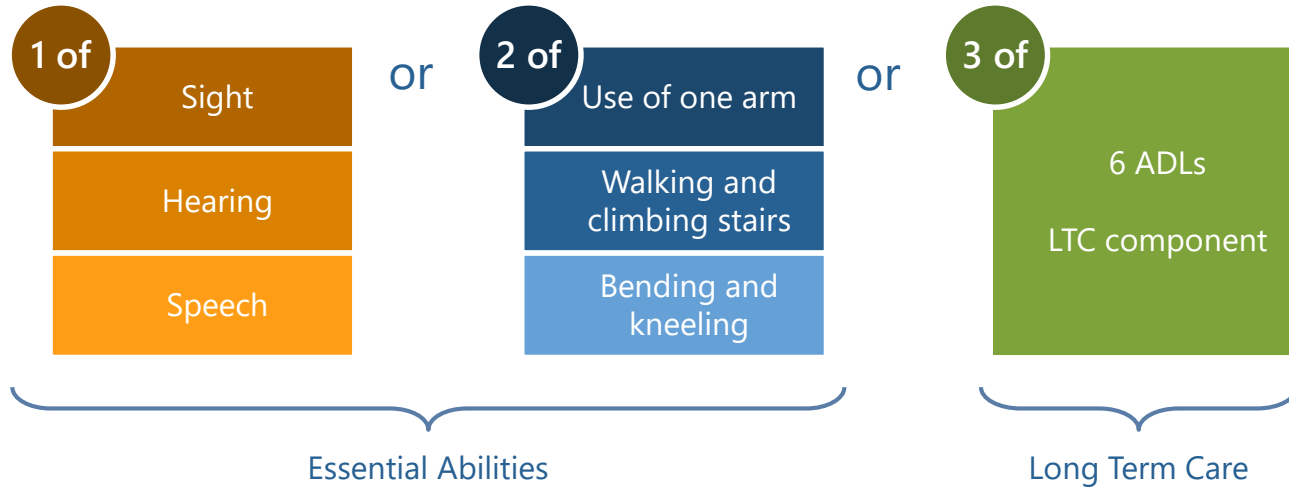

- Those who need protection against disability the most have to pay the highest price.

- There are occupations which cannot be offered DI cover.

- Medical underwriting is more stringent for traditional DI.

A less comprehensive and hence cheaper disability product has become popular in Germany in recent years: Essential Abilities Cover
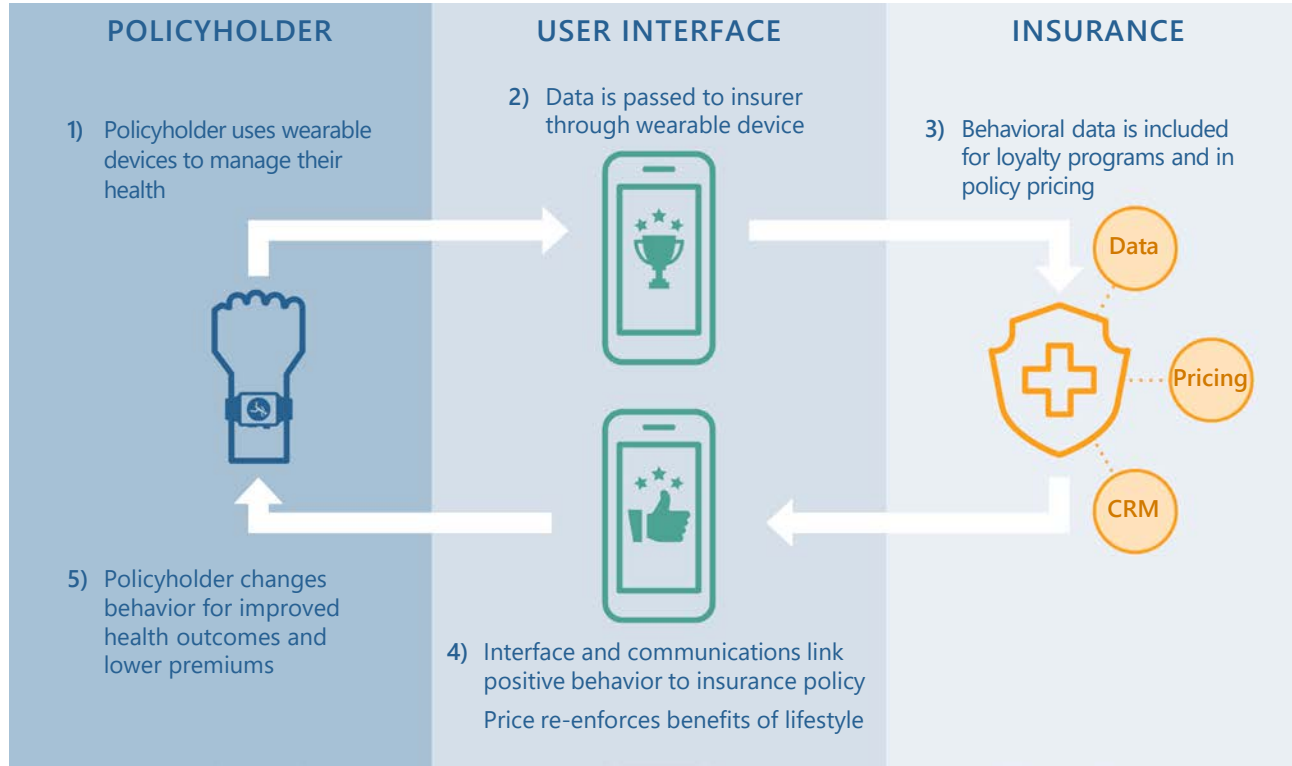
Source: Morgen & Morgen

Recent Innovation: Essential Abilities Cover – Germany

1 of

| Sight |
| Hearing |
| Speech |

or

2 of

| Use of one arm |
| Walking and climbing stairs |
| Bending and kneeling |

or

3 of

| 6 ADLs

LTC component |

Essential Abilities   Long Term Care

- Individual cover with two essential abilities components and one LTC component
- LTC component with 3 out of 6 ADLs as benefit trigger
- Annuity payment until retirement age OR fixed benefit period of 5 years (but stopping at retirement age at the latest), benefits cease in case of death
- No mental abilities included – makes the product easier and cheaper

Use of Technology and the Future of Insurance – From Pay As You Go to Pay As You Live

POLICYHOLDER

1) Policyholder uses wearable devices to manage their health

5) Policyholder changes behavior for improved health outcomes and lower premiums

USER INTERFACE

2) Data is passed to insurer through wearable device

4) Interface and communications link positive behavior to insurance policy

Price re-enforces benefits of lifestyle

INSURANCE

3) Behavioral data is included for loyalty programs and in policy pricing

Data

Pricing

CRM

Social Security Examples:

- **Saudi Arabia's (GOSI) pilot using chat bots for customer service**

- **Companion robots for dementia patients in Japan**

- **Remote Medical Diagnostics (ReMeDi) links health workers in India to 2,200 rural villages / 50M people**

- **National Health Insurance Service (NHIS) in Korea uses big data to support evidence-based medicine**

Source: International Social Security Association, Ten *Global Challenges for Social Security – Asia and the Pacific, 2018*

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