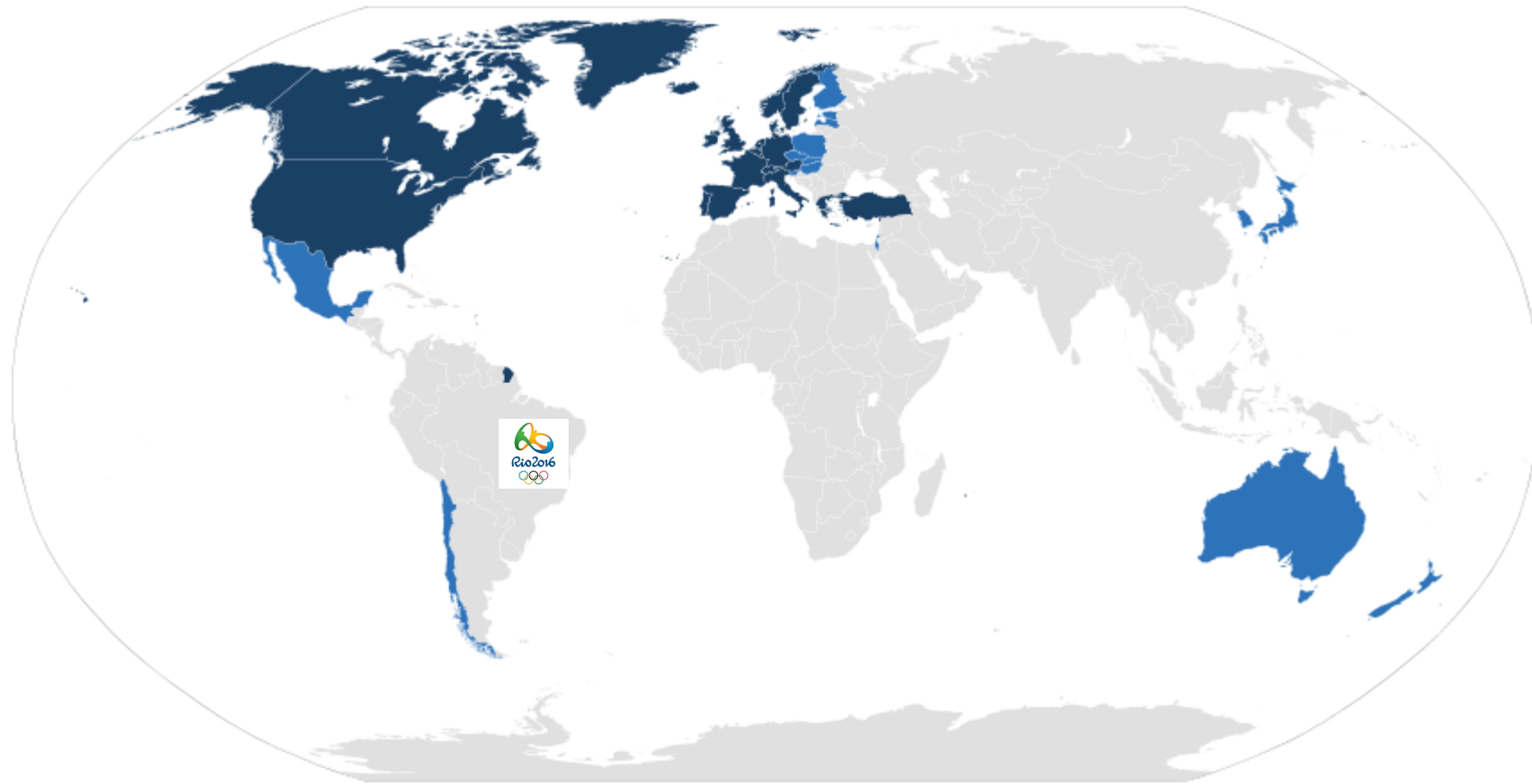# Demographic Aspects and Global Consequences for the Social Security System

Larry Hartshorn

Corporate Vice President

LIMRA

Sao Paulo, Brasil

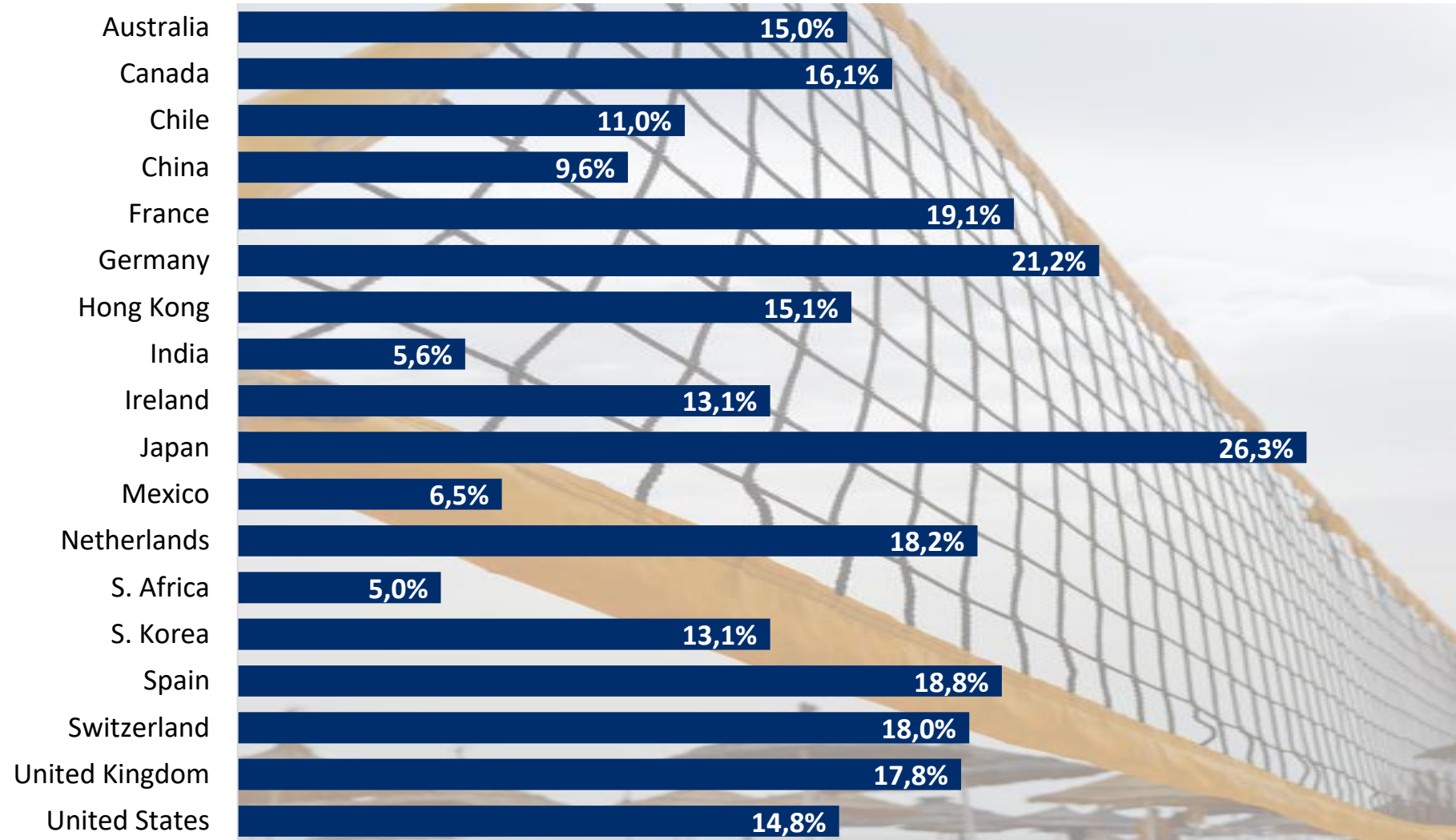August 23, 2016

Population in thousands

Population

	Total	Male	Female
Australia	23,969	11,976	11,993
Canada	35,940	17,826	18,114
Chile	17,948	8,855	9,093
China	1,376,049	708,977	667,072
France	64,395	31,342	33,054
Germany	8,0689	39,653	41,036
Hong Kong	7,288	3,422	3,866
India	131,1051	679,548	631,502
Ireland	4,688	2,340	2,348
Japan	126,573	61,559	65,015
Mexico	12,7017	63,181	63,836
Netherlands	16,925	8,401	8,524
S. Africa	54,490	26,797	27,693
S. Korea	50,293	24,995	25,298
Spain	46,122	22,624	23,498
Switzerland	8,299	4,109	4,189
United Kingdom	64,716	31,899	32,817
United States	321,774	159,494	162,280
Brazil	202,657	100,013	102,644

Source: United Nations, World Population Prospects: The 2015 Revision

CELEBRATING
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YEARS 1916-2016

Population over age 65

Age 65+

Country	Percentage
Australia	15,0%
Canada	16,1%
Chile	11,0%
China	9,6%
France	19,1%
Germany	21,2%
Hong Kong	15,1%
India	5,6%
Ireland	13,1%
Japan	26,3%
Mexico	6,5%
Netherlands	18,2%
S. Africa	5,0%
S. Korea	13,1%
Spain	18,8%
Switzerland	18,0%
United Kingdom	17,8%
United States	14,8%

The numbers are staggering

Average retirement is now ~18 years or 216 months or 6,575 days

@ $100/day => $658K/person
@ 1M people => $658B

@$33/day => $217K/person
@ 1M people => $217B

@$10/day => $66K/person
@ 1M people => $66B
@500M people* => $33T
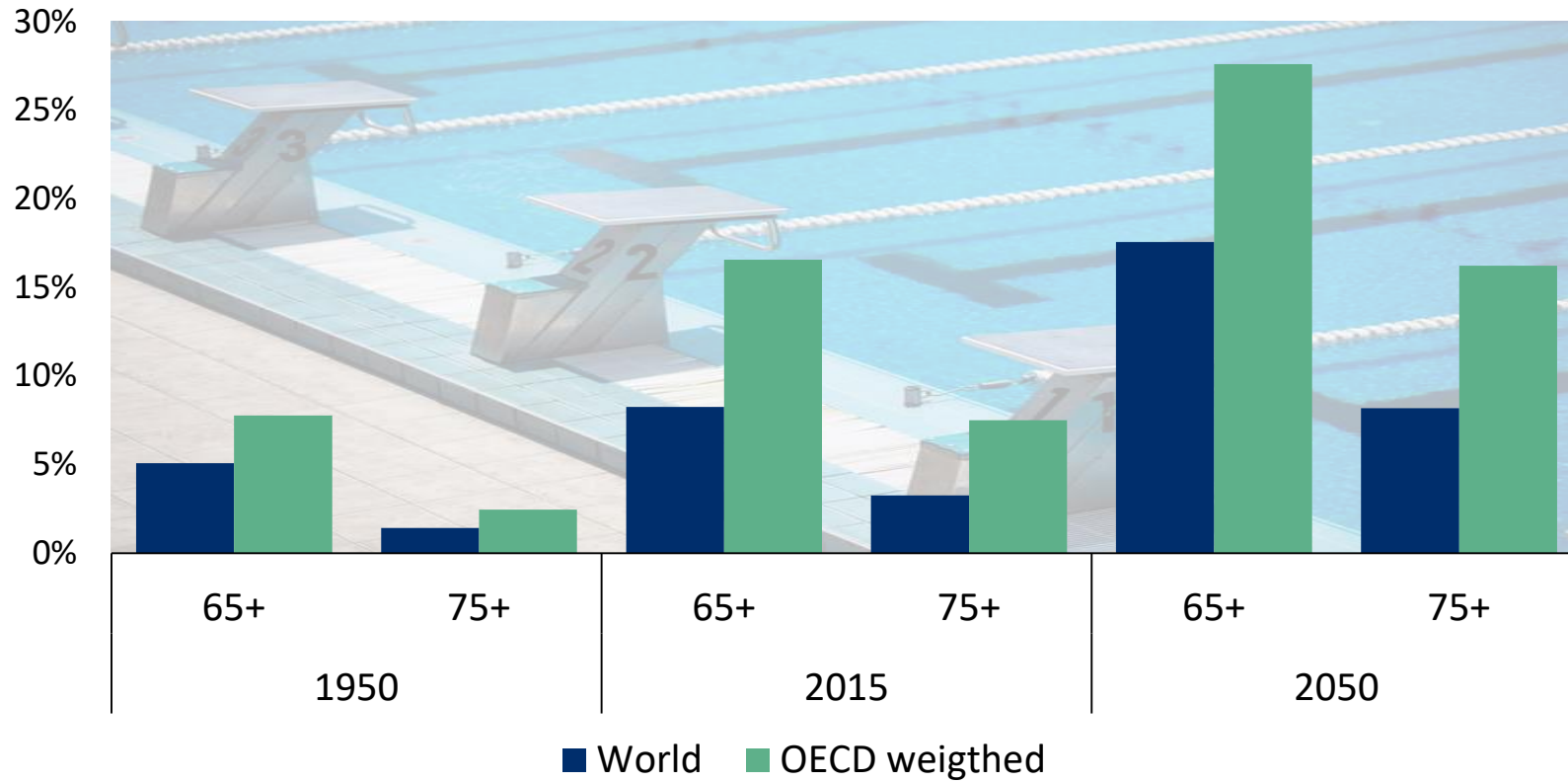@1.5B people** => $99T

*   2010 estimate
** 2050 estimate

"All of these economies, from Europe to the U.S. to Japan to China, are aging. Birthrates are coming down, mortality rates are coming down, but there's been a big failure to adjust institutions to this fact. And if we don't adjust and fix antiquated retirement systems that cannot support longer life spans…it's going to stress our economies even more."

John Shoven

Director, Stanford Institute for Economic Policy Research

Share of elderly older than 65 and 75 in the total population

Elderly Population

| | 65+ | 75+ | 65+ | 75+ | 65+ | 75+ |
| | 1950 | | 2015 | | 2050 | |

Legend: ■ World ■ OECD weigthed

Oldest Populations (Median Age)

2015		2030		2050	
Japan	46.5	Japan	51.5	Other	56.2
Germany	46.2	Italy	50.8	S. Korea	53.9
Martinique	46.1	Portugal	50.2	Japan	53.3
Italy	45.9	Spain	50.1	Bos.&Herz.	53.2
Portugal	44.0	Greece	48.9	Singapore	53.0
Greece	43.6	Hong Kong	48.6	Hong Kong	52.7
Bulgaria	43.5	Germany	48.6	Portugal	52.5
Austria	43.2	Other	48.1	Greece	52.3
Hong Kong	43.2	Slovenia	48.1	Cuba	51.9
Spain	43.2	S. Korea	47.5	Poland	51.8

Retirement ages for man entering market at age 20

	2014	Future
Australia	65.0	67.0
Canada	65.0	67.0
Chile	65.0	65.0
China	-	-
France	61.2	63.0
Germany	65.0	65.0
India	-	-
Ireland	66.0	68.0
Japan	65.0	65.0
Mexico	65.0	65.0
Netherlands	65.2	67.0
S. Africa		
S. Korea	61.0	65.0
Spain	65.0	65.0
Switzerland	65.0	65.0
United Kingdom	65.0	68.0
United States	66.0	67.0

Age

Retirement ages for basic and minimum pensions

	Men	Women
Australia	65.0	65.0
Canada	65.0	65.0
Chile	65.0	60.0
China	60.0	60.0
France	61.2	61.2
Germany	65.3	65.3
India	58.0	58.0
Ireland	66.0	66.0
Japan	65.0	65.0
Mexico	65.0	65.0
Netherlands	65.2	65.2
S. Africa	60.0	60.0
S. Korea	65.0	65.0
Spain	65.2	65.2
Switzerland	65.0	64.0
United Kingdom	65.0	62.0
United States	65.0	65.0

Retirement Age

Fertility rates over time

	1970	2013	2060
Australia	2.86	1.88	1.86
Canada	2.33	1.61	1.86
Chile	3.95	1.80	1.82
China	5.47	1.66	1.84
France	2.48	1.98	1.99
Germany	2.03	1.41	1.69
India	5.49	2.51	1.85
Ireland	3.87	1.96	1.97
Japan	2.13	1.43	1.78
Mexico	6.72	2.22	1.76
Netherlands	2.57	1.68	1.88
S. Africa	5.59	2.70	1.82
S. Korea	4.53	1.19	1.75
Spain	2.90	1.27	1.83
Switzerland	2.10	1.52	1.80
United Kingdom	2.43	1.83	1.90
United States	2.48	1.86	1.99

Fertility

Life Expectancy at birth 2010-2015

	Women	Men
Australia	84.7	80.1
Canada	83.5	79.3
Chile	82.6	77.0
China	76.6	74.0
France	85.1	78.2
Germany	83.1	78.2
India	68.1	64.6
Ireland	82.7	78.4
Japan	86.9	80.0
Mexico	79.7	74.9
Netherlands	82.8	78.9
S. Africa	59.1	54.9
S. Korea	84.6	77.9
Spain	85.2	78.8
Switzerland	84.9	80.1
United Kingdom	82.4	78.5
United States	81.2	76.4

Longevity

Expected remaining life expectancy at age 65 in years, WOMEN

Longevity

2060-2065   2010-2015

Source: OECD Pensions at a Glance 2015

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Expected remaining life expectancy at age 65 in years, MEN

Longevity

Legend: ■ 2060-2065 ■ 2010-2015

Countries: Australia, Canada, Chile, China, France, Germany, India, Japan, Korea, Mexico, Netherlands, South Africa, Spain, Switzerland, United Kingdom, United States

Source: OECD Pensions at a Glance 2015

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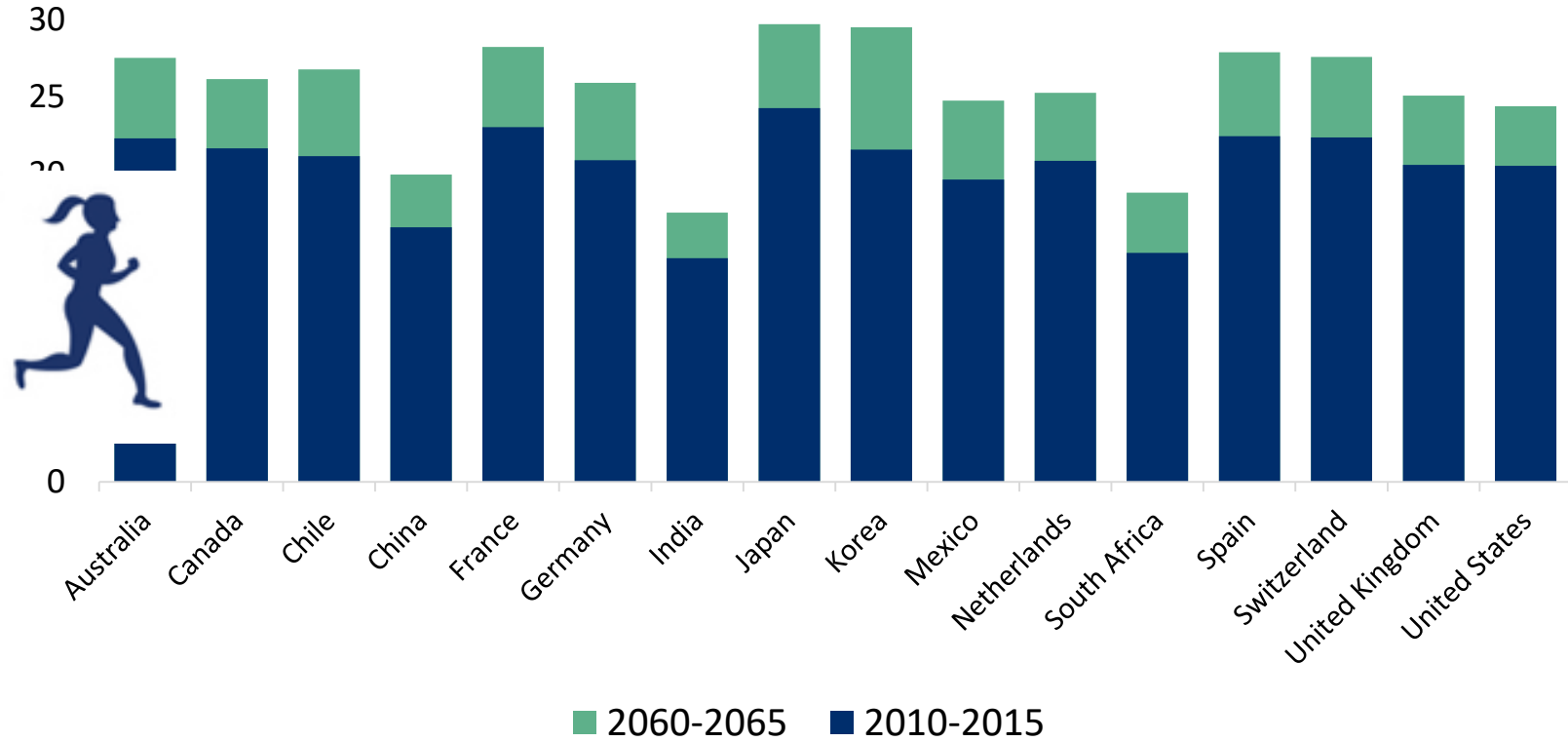
Percent of working-age population covered by private pension
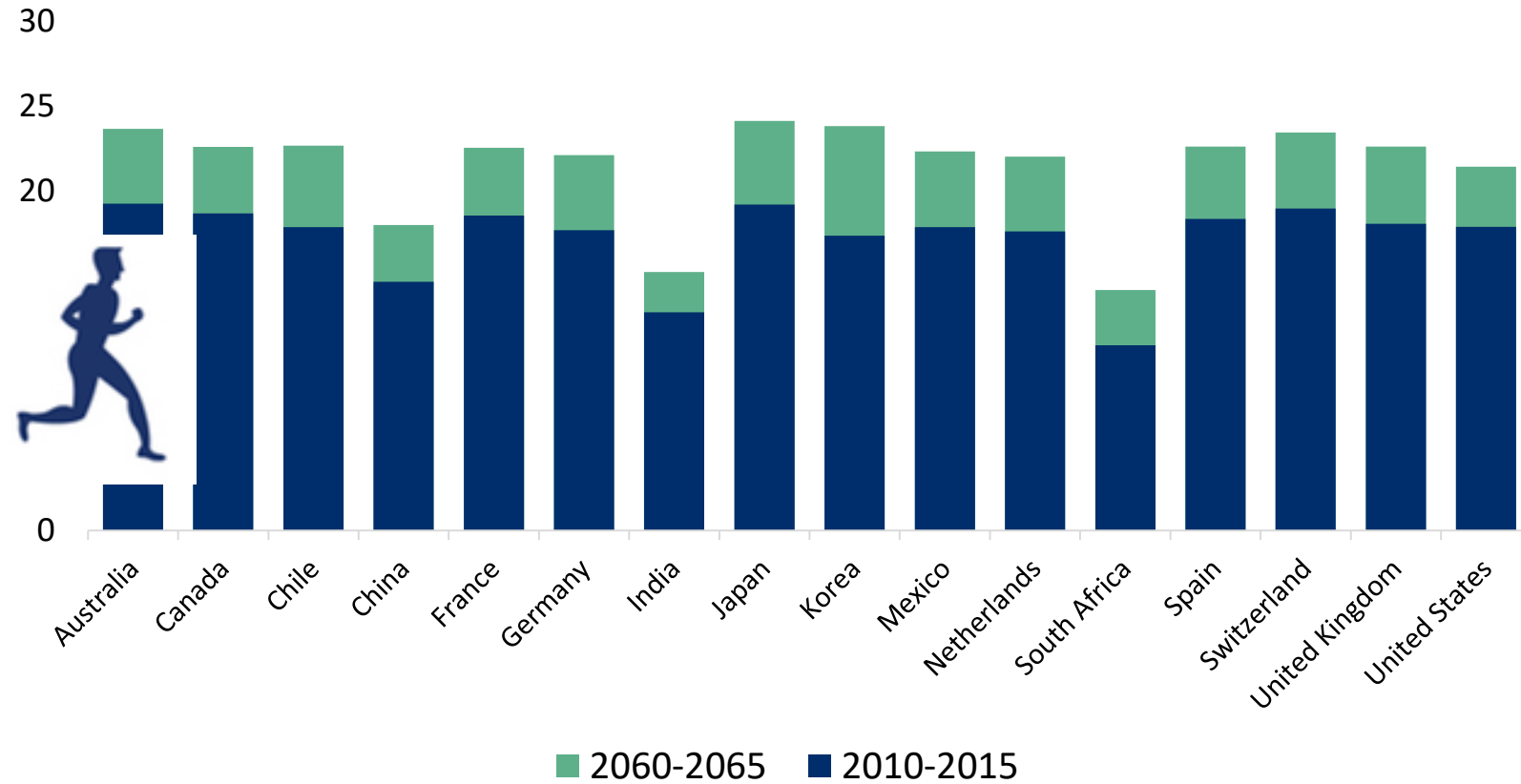
Private Pension Coverage

71,30%	52,20%	47,10%	43,30%	23,40%
Germany	Iceland	United States	United Kingdom	Korea

Source: OECD

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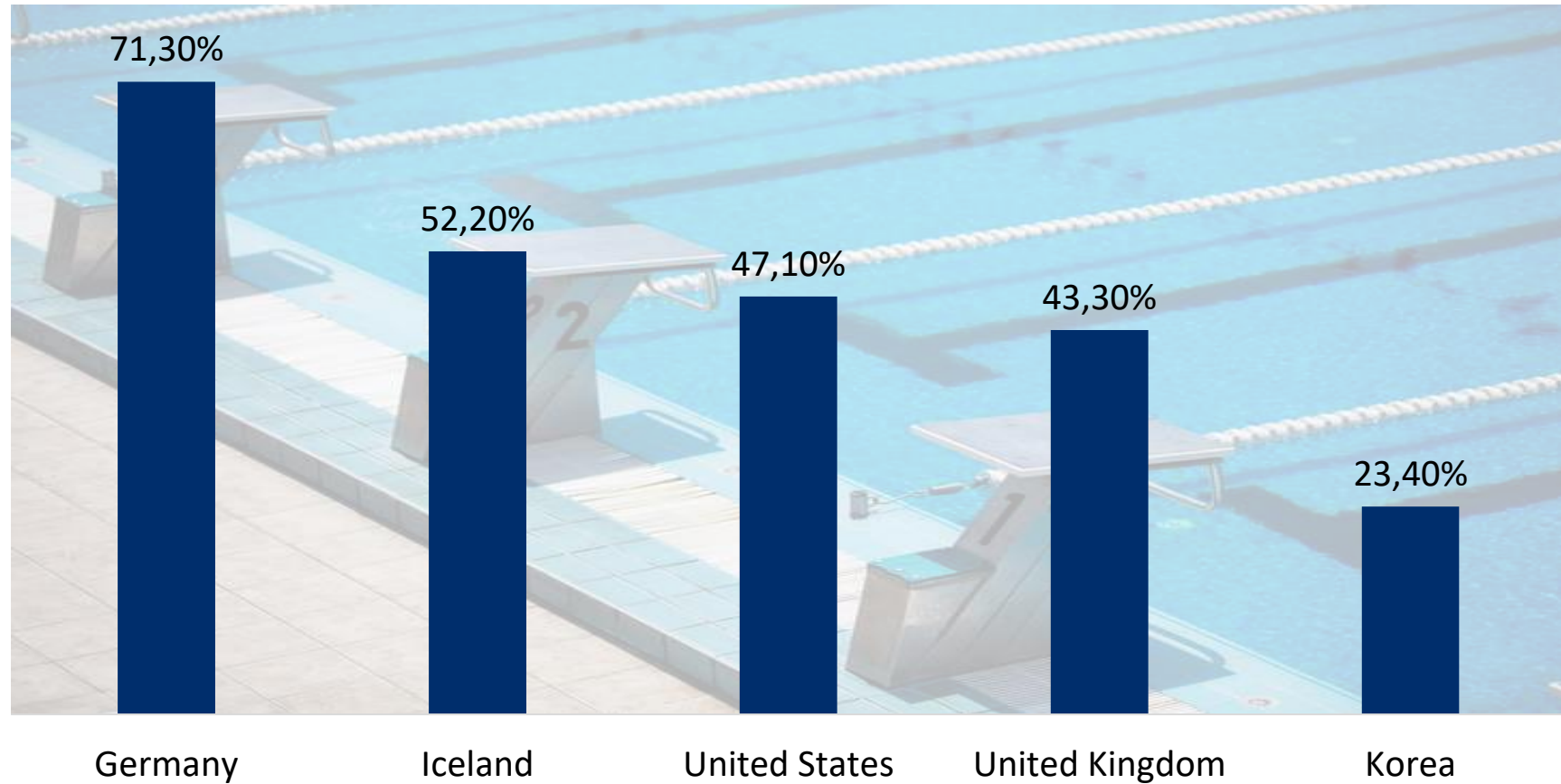
Government debt pre- and post-crisis % of GDP

	2007	2014
Australia	20.4	42.5
Canada	70.4	94.9
Chile		
China		
France	75.8	120.4
Germany	64.2	82.3
India		
Ireland	27.5	128.9
Japan	162.4	220.3
Mexico		
Netherlands	48.5	81.8
S. Africa		
S. Korea	26.9	34.8
Spain	41.7	115.8
Switzerland	50.5	45.8
United Kingdom	50.1	111.3
United States	64.3	110.1

Government Debt

Source: OECD Pensions at a Glance 2015

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Structure of retirement-income provision

	Public	Private
Australia		DC
Canada	DB	
Chile	DC	DC
China	NDC/DC	
France	DB+Points	
Germany	Points	
India	DB+DC	
Ireland		
Japan	DB	
Mexico		DC
Netherlands		DB
S. Africa		
S. Korea	DB	
Spain	DB	
Switzerland	DB	DB
United Kingdom	DB	
United States	DB	

Retirement Income Structure
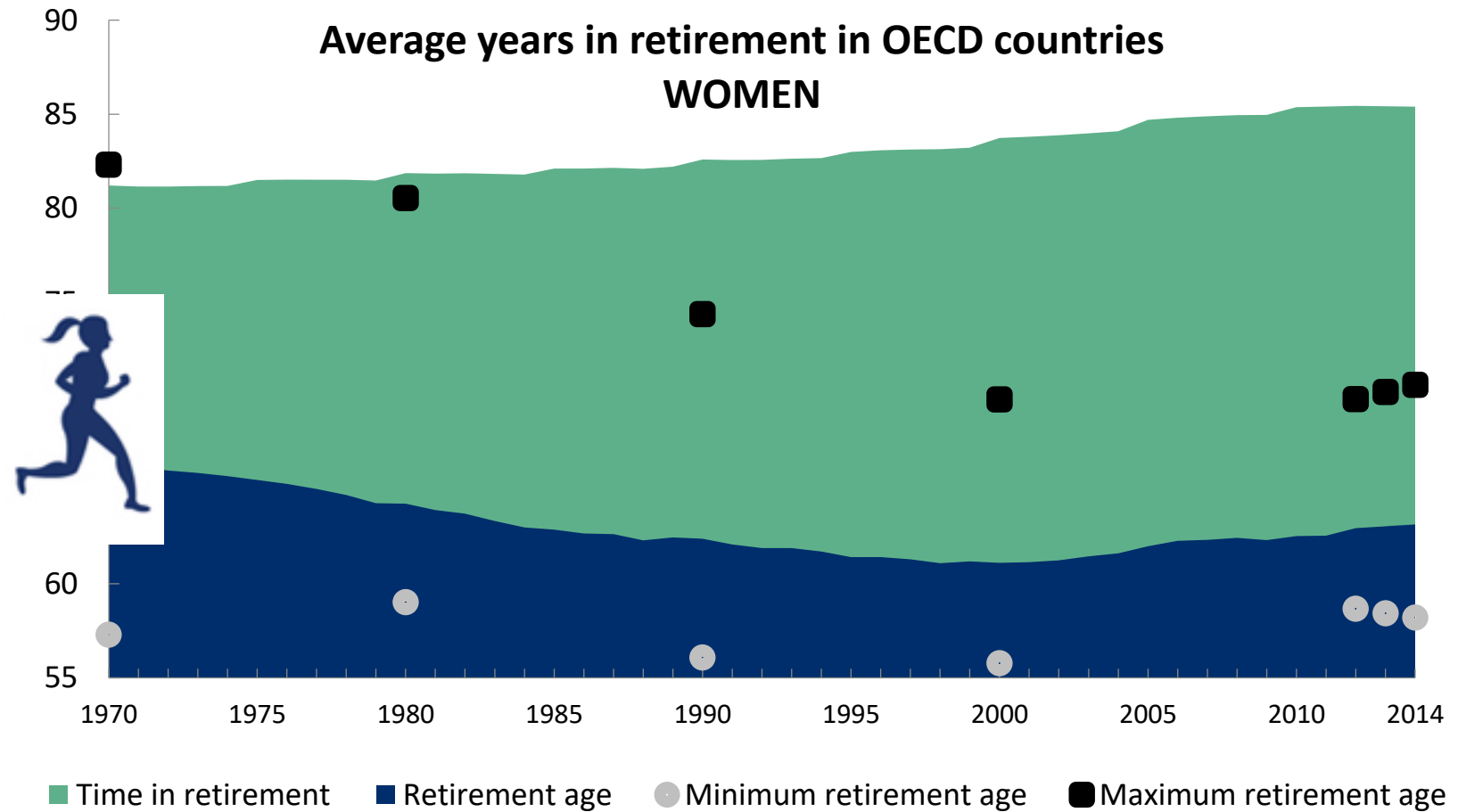
GROSS PENSION REPLACEMENT RATES
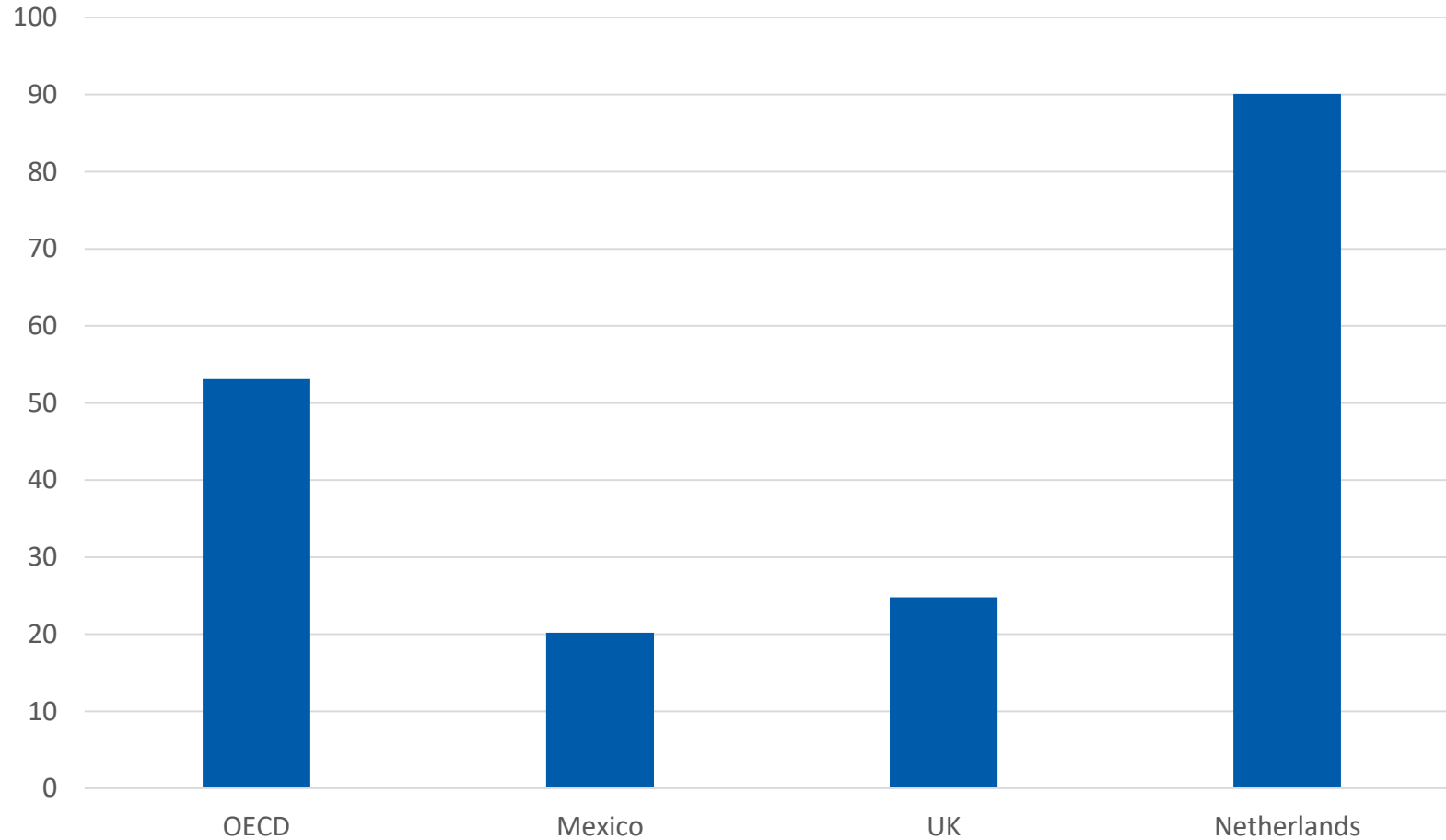
The future gross replacement rate shows the level of pension benefits in retirement from mandatory public and private pension schemes relative to earnings when working.

Pension Replacement Rates

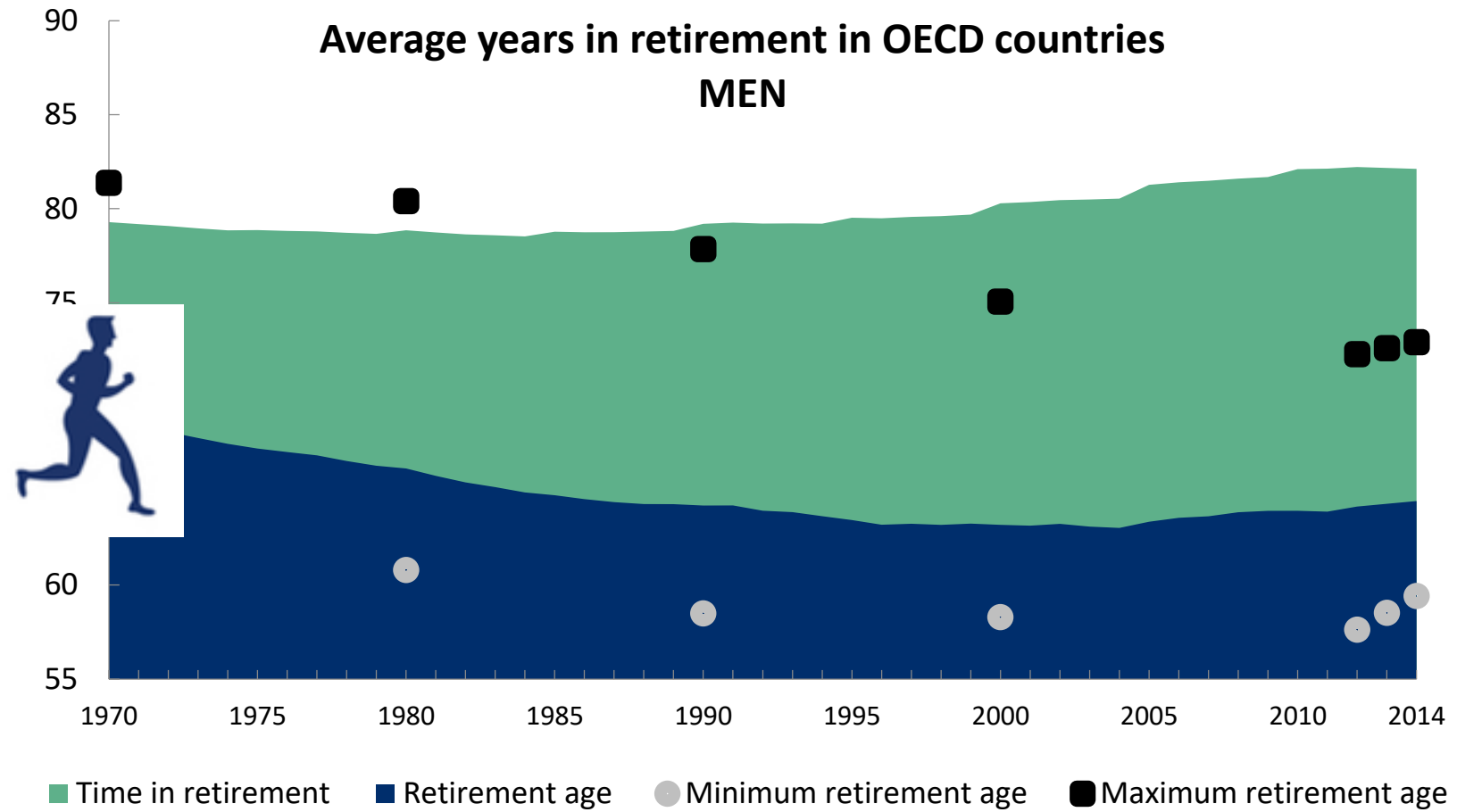Source: OECD Pensions at a Glance 2015

Old-Age Dependency Ratios*

	1975	2015	2050
Australia	16.0	25.1	40.8
Canada	15.3	25.9	46.4
Chile	11.5	17.2	44.9
China	9.7	14.2	42.5
France	24.6	32.8	49.0
Germany	26.3	35.3	65.1
India	7.6	9.6	20.8
Ireland	22.0	21.2	47.8
Japan	13.0	47.2	78.4
Mexico	9.5	12.1	35.3
Netherlands	19.5	30.5	52.5
S. Africa	7.3	10.2	17.4
S. Korea	7.5	19.6	71.5
Spain	19.2	29.6	73.2
Switzerland	21.5	29.5	44.3
United Kingdom	25.4	30.8	46.4
United States	19.1	24.7	39.5

*number of individuals aged 65 and over per 100 people of working age defined as those aged between 20 and 64

Average years in retirement in OECD countries WOMEN

Years in retirement

Legend:
- Time in retirement (green)
- Retirement age (dark blue)
- Minimum retirement age (gray dot)
- Maximum retirement age (black square)

Y-axis: 55, 60, 75, 80, 85, 90

X-axis: 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2014

Average years in retirement in OECD countries MEN

Years in Retirement

Legend:
- Time in retirement
- Retirement age
- Minimum retirement age
- Maximum retirement age

Y-axis: 55, 60, 75, 80, 85, 90
X-axis: 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2014

Private Pension Asset Shares

Relative share of pension assets in OECD countries

Countries (left to right): Chile, France, Greece, Australia, Mexico, Spain, United States, Ireland, Korea, Canada, Germany, Switzerland

Legend:
- Defined benefit / Hybrid-Mixed
- Defined contribution

Assets in pension funds and public pension reserve funds - 2013

	Pension funds % of GDP	Pension reserve funds % of GDP
Australia	102.2	6.1
Canada	70.8	17.2
Chile	62.3	2.8
China	1.0	
France	0.4	2.5
Germany	6.1	
India	0.4	6.1
Ireland	52.3	
Japan	29.2	26.8
Mexico	14.7	0.1
Netherlands	148.7	
S. Africa	94.8	
S. Korea	6.0	29.9
Spain	8.8	5.1
Switzerland	113.4	
United Kingdom	99.6	
United States	83.2	16.5
Brazil	13.3	

Pension Asset-To-GDP Ratio

Source: OECD Pensions at a Glance 2015