

# Aging Demographic Data Sheet 2020



## Introduction

Population aging challenges the ability of societies to adapt. Responding appropriately has been hampered by inaccurate and misleading traditional measures of aging. The main problem with them is that they do not capture the changing characteristics and capabilities of people. Today, 60 or 65 year-olds are very different from their counterparts half a century earlier and are likely to be very different from what they will be like half a century in the future. In any year, people are also different geographically and across population subgroups. Older people today are generally fitter and healthier than ever before and live longer. The new measures in this Data Sheet take account of the diversity of populations. They are now being used by the United Nations and other statistical agencies.

- The Characteristics Approach to the Measurement of Population Aging** takes the changing characteristics of groups of people, such as life expectancy, physical health, and cognitive functioning into account and allows the construction of new, multidimensional measures of aging. These new measures provide novel perspectives on important policy questions.
- How Old do you Need to be to be "Old"?** The frequently used old-age thresholds of 60 or 65 are inconsistent with the reality of people living longer and healthier lives. A better alternative is to define the onset of old age based on ages adjusted for remaining life expectancy.
- More Accurate Measures of Population Aging:** The widely used measures of population aging, the old-age dependency ratio and the median age of the population, overestimate the speed of aging. We show this by comparing the old measures with their analogs that adjust ages for differences in remaining life expectancy.
- An Intergenerationally Equitable Pension Age:** Fairness is a fundamental democratic value. Intergenerationally fair normal pension ages can be computed using the Characteristics Approach, and they ensure that the balance of pension contributions and receipts is the same for each generation, and that pension systems are flexible enough to adapt to demographic changes.
- Human Life Indicator (HLI):** The HLI expresses wellbeing in terms of years of life, similar to life expectancy at birth. However, unlike any other current measure, it takes not only the mean value but also the inequality in longevity into account. The wide availability of mortality data means that the HLI can be used for reliable comparisons of wellbeing across countries, in the past as well as the present.
- Equal Survivorship Age:** The survival rate from age 20 to the equal survivorship age is the same as the survival rate from age 20 to age 65 in a comparison country. People in that age group are the largest component of the labor force. Differences across countries and changes over time in the equal survivorship age reflect differences in the health of those in the prime working ages. Poor health among prime working age adults influences health care costs and productivity. The equal survivorship age provides policy-makers with a tool that they can use to assess their policies.

In this Data Sheet, we present measures of population aging adjusted for changes in remaining life expectancy and compare them to unadjusted measures. Unadjusted measures of population aging often assume that old-age begins at age 60 or 65. We define that stage of old-age as beginning at the age when remaining life expectancy falls to 15 years. The result is a dynamic old-age threshold that reflects variations in demographic conditions. In this Data Sheet, we show that when aging is measured using the new threshold, much slower speeds of aging are observed than when unadjusted figures are used.

Using the dynamic old-age threshold, we can see new things. For example, we show the extent to which the proportion of populations categorized as "old" using the dynamic threshold differs from the proportion computed on the assumption that everyone 65+ years old is counted as being "old".

We can also see that the proportion of the adult lifespan spent in old-age tends to decrease over time when the dynamic old-age threshold is used. Without adjusting for changes in remaining life expectancy the opposite is observed.

Since 2017, the new measures of population aging are a permanent feature in UN reports on aging (UN 2017a, 2017b, 2019a, 2019b). These measures provide policy makers all over the world with a clearer understanding of how population aging has occurred in their countries in the past and how it is likely to evolve in the future (Coombs et al. 2019). Through the UN, some of our measures of population aging are now easily available for virtually all countries of the world. This Data Sheet presents additional measures not found there.

A complete description of our approach to the study of population aging appears in a new book entitled *Prospective Longevity: A New Vision of Population Aging* by Sanderson and Scherbov and published by Harvard University Press (2019).

All calculations in this Data Sheet are estimates and projections based on the United Nations, World Population Prospects: The 2019 Revision, New York: United Nations Department of Economic and Social Affairs, Population Division, available at [esa.un.org/wpp/](http://esa.un.org/wpp/). Team at the International Institute for Applied Systems Analysis (IIASA): Sergei Scherbov, Warren Sanderson, Stefanie Andrichowicz. Contact: Sergei Scherbov ([scherbov@iiasa.ac.at](mailto:scherbov@iiasa.ac.at)) and Stefanie Andrichowicz ([andrichowicz@iiasa.ac.at](mailto:andrichowicz@iiasa.ac.at)), International Institute for Applied Systems Analysis, Schlossplatz 1, 2361 Laxenburg, Austria, [www.iiasa.ac.at](http://www.iiasa.ac.at). Responsible for content: Sergei Scherbov. This project has received funding from the European Union's Horizon 2020 research and innovation program, No 635316 - Ageing Trajectories of Health: Longitudinal Opportunities and Synergies (ATHLOS). Suggested citation: International Institute for Applied Systems Analysis (IIASA). 2020. Aging Demographic Data Sheet 2020. IIASA: Laxenburg, Austria.



## Country rankings

Human Life Indicator (years) both sexes, 2015–2020		
Rank	Country	Value
1	China, Hong Kong SAR	82.8
2	Japan	82.2
3	Singapore	81.4
4	Spain	81.0
5	Italy	80.8
6	Switzerland	80.7
7	Republic of Korea	80.5
8	Sweden	80.3
9	Australia	80.3
10	Israel	80.2

Regions/countries with a population of over 100 thousand age 70 and above, excluding Panama

Equal survivorship age, standard: Sweden, age 20–65, 2015–2020		
Rank	Men	Value
1	Switzerland	65.7
2	Italy	65.2
3	Singapore	65.2
4	China, Hong Kong SAR	65.1
5	Sweden	65.0
6	Israel	64.8
7	Australia	64.6
8	Japan	64.3
9	Netherlands	64.2
10	Norway	64.1

Intergenerationally equitable pension age, standard: Germany, 2015–2020			
Country	2015–2020	2045–2050	Average decadal increase (months per decade)
Austria	65.1	67.7	10
Czech Republic	63.5	66.2	11
Finland	65.4	67.9	10
France	66.2	68.5	9
Germany	65.0	67.5	10
Greece	65.6	68.1	10
Hungary	62.0	64.7	11
Italy	66.2	68.5	9
Latvia	61.8	64.3	10
Netherlands	65.4	67.8	10
Norway	65.6	68.0	10
Poland	63.5	66.4	12
Spain	66.4	68.6	9
Sweden	65.8	68.1	10
Switzerland	66.5	68.7	9
United Kingdom	65.1	67.6	10

Average decadal increase is computed over the 30 year period from 2015–2020 to 2045–2050.

### Intergenerationally equitable pension age

The table shows the intergenerationally equitable pension age for selected European countries in 2015–2020 and its projected average decadal increase in months per decade over the next 30 years. The parameters of the pension system (the pension tax rate and the replacement ratio) are set so that the intergenerationally equitable pension age is 65 in Germany in 2015–2020 and are kept fixed over time. Changes in the intergenerationally equitable pension age are due solely to changes in survival rates. For the countries in the table the intergenerationally equitable pension age is projected to increase by about 10 months per decade. The projected increase is slightly faster for countries where the intergenerationally equitable pension age is relatively low in 2015–2020. Increases much faster or slower than 10 months per decade would indicate increasing inequality in the treatment of different generations.

Regions/countries with a population of over 100 thousand age 70 and above, excluding Panama

## Country rankings

Life expectancy at age 65, 2015–2020 (years)					
Rank	Men	Value	Rank	Women	Value
1	China, Hong Kong SAR	20.0	1	Japan	24.7
2	Australia	20.0	2	China, Hong Kong SAR	24.6
3	Japan	19.9	3	France	23.2
4	Switzerland	19.9	4	Spain	23.2
5	Israel	19.6	5	Australia	22.7
6	Singapore	19.4	6	Switzerland	22.7
7	New Zealand	19.4	7	Republic of Korea	22.6
8	France	19.4	8	Singapore	22.6
9	Spain	19.4	9	Italy	22.5
10	Italy	19.3	10	Canada	22.2

Regions/countries with a population of over 100 thousand age 70 and above, excluding Panama

Prospective old-age threshold, 2015–2020					
Rank	Men	Value	Rank	Women	Value
1	China, Hong Kong SAR	71.5	1	China, Hong Kong SAR	76.3
2	Japan	71.3	2	Japan	76.2
3	Australia	71.3	3	France	74.8
4	Switzerland	71.2	4	Spain	74.4
5	Israel	71.0	5	Singapore	74.2
6	France	70.9	6	Australia	74.1
7	Greece	70.8	7	Switzerland	74.0
8	Singapore	70.7	8	Canada	73.9
9	Spain	70.7	9	Italy	73.8
10	New Zealand	70.6	10	Puerto Rico	73.8

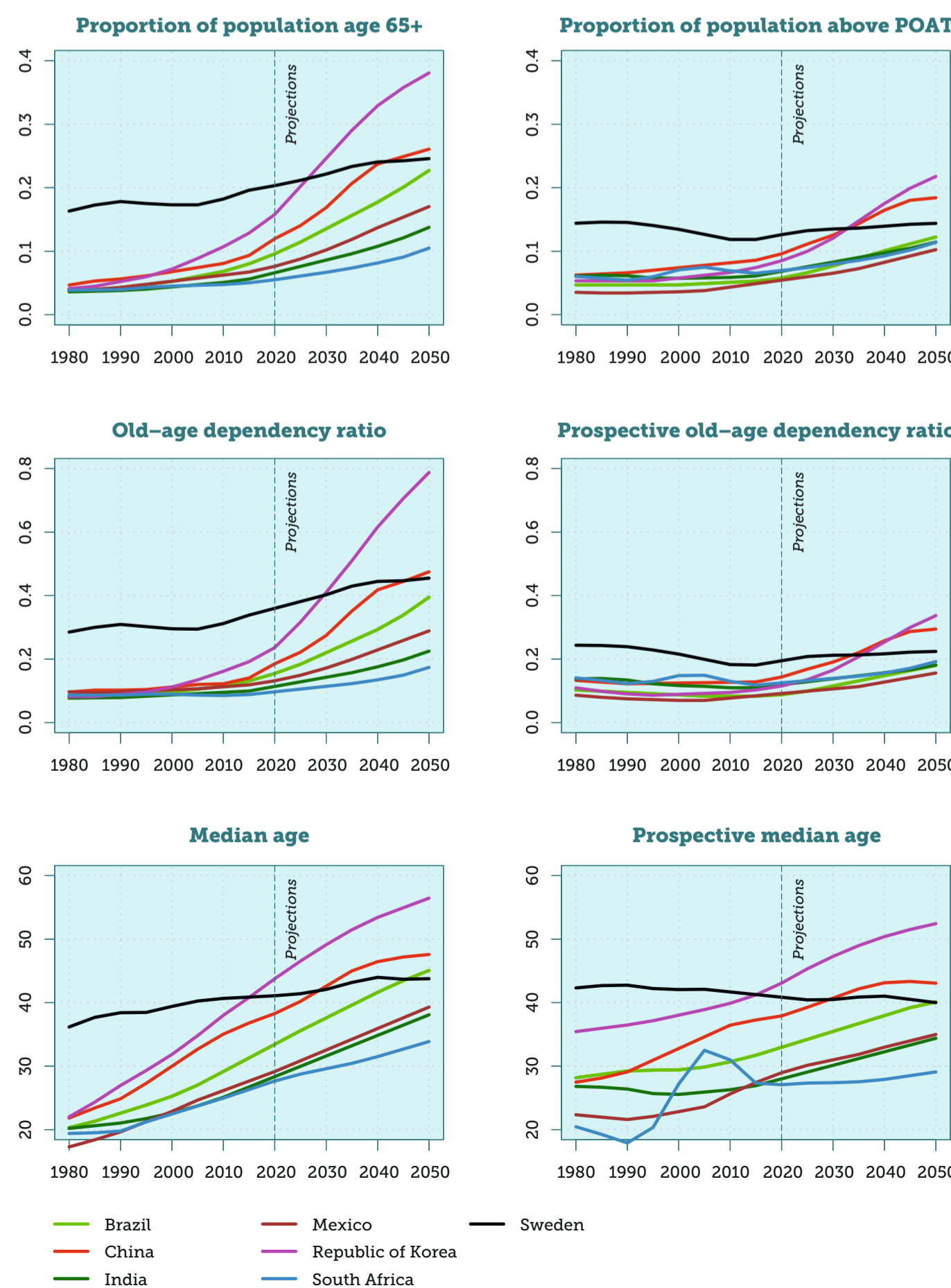
Regions/countries with a population of over 100 thousand age 70 and above, excluding Panama

Proportion of population age 65+, 2020 (%)		
Rank	Country	Value
1	Japan	28.4
2	Italy	23.3
3	Portugal	22.8
4	Finland	22.6
5	Greece	22.3
6	Germany	21.7
7	Bulgaria	21.5
8	Croatia	21.3
9	Puerto Rico	20.8
10	France	20.8

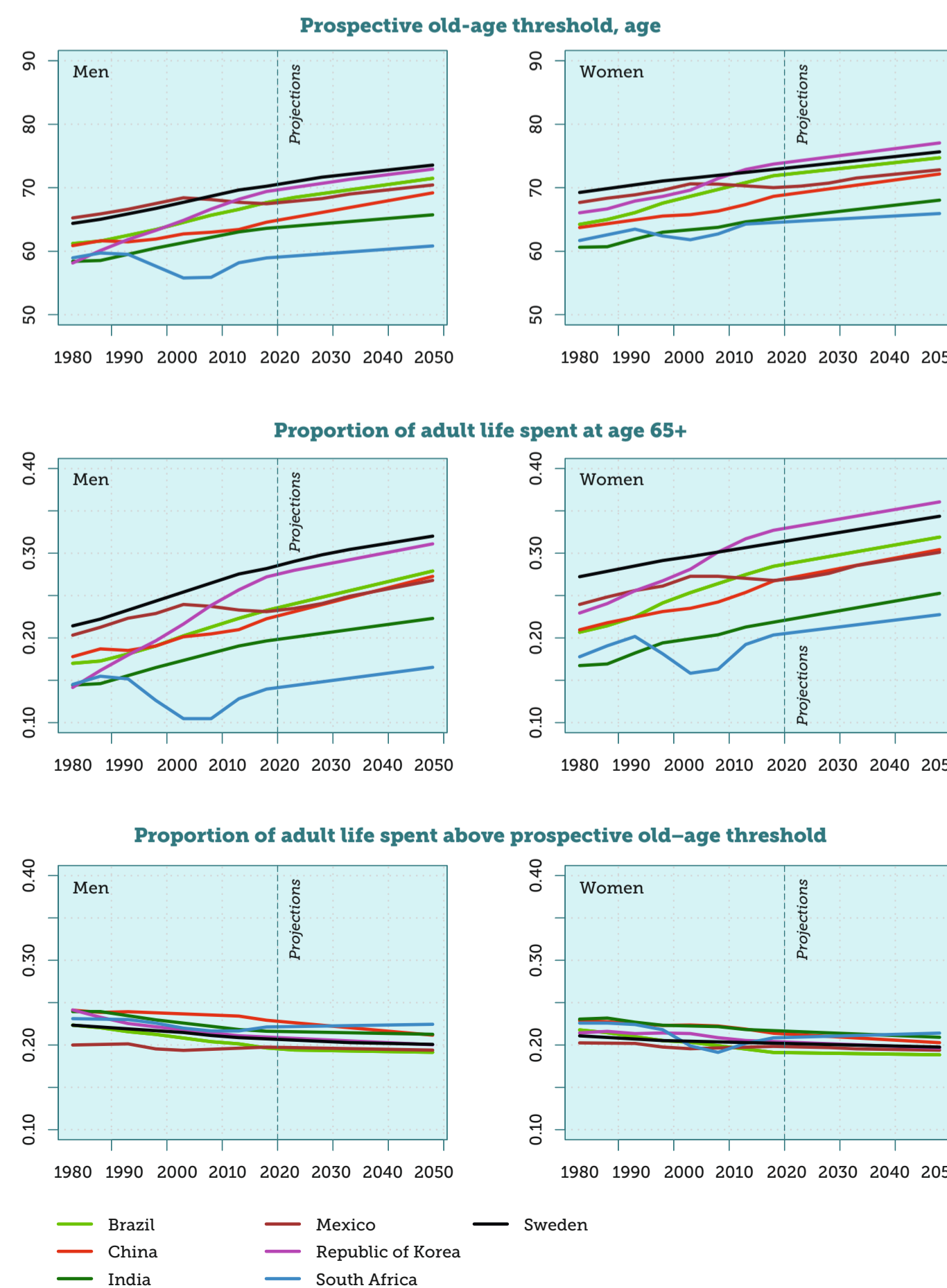
Proportion of population above prospective old-age threshold, 2020 (%)		
Rank	Country	Value
1	Bulgaria	18.9
2	Serbia	16.9
3	Ukraine	16.5
4	Croatia	16.2
5	Latvia	15.8
6	Romania	15.3
7	Japan	15.2
8	Hungary	15.0
9	Germany	14.6
10	Lithuania	14.4

Regions/countries with a population of over 100 thousand age 70 and above, excluding Panama

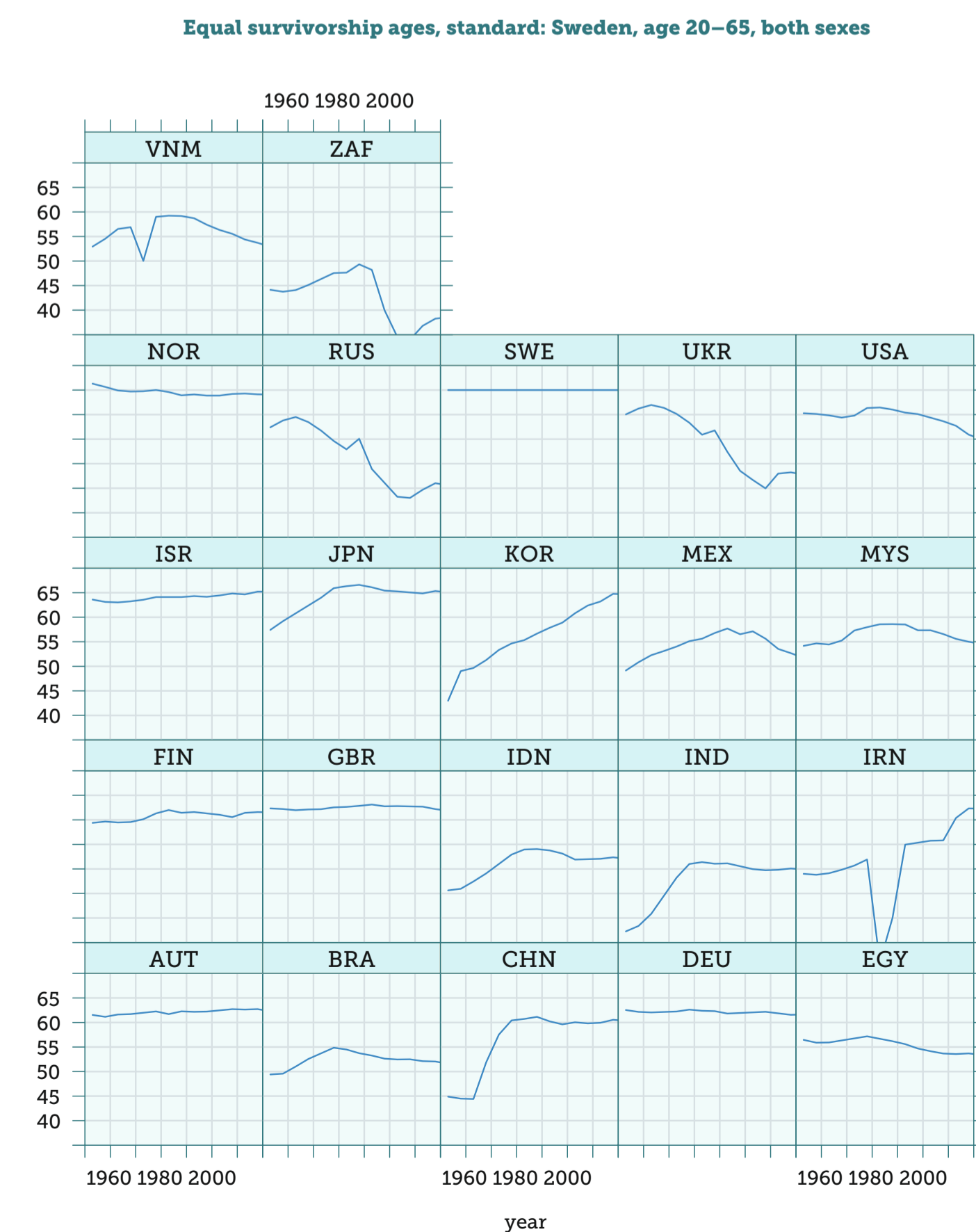
## Selected countries



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Column numbers refer to the main table.

**Equal survivorship ages, standard: Sweden, age 20–65 (column 7)**  
The survival rate from age 20 to the equal survivorship age is the same as the survival rate from age 20 to age 65 in Sweden.

**Human Life Indicator, HLI (column 6)**  
The Human Life Indicator expresses wellbeing in terms of years of life, similar to life expectancy at birth, and takes the inequality in longevity into account. Two countries with the same life expectancy at birth would not necessarily have the same HLI. The country with less inequality in longevity would have a higher HLI. The wide availability of mortality data allows the HLI to be used for reliable comparisons of wellbeing across countries, in the past as well as the present. (Ghislandi et al. 2018)

**Intergenerationally equitable pension age, standard: Germany, 2015–2020 (column 5)**  
This normal pension age takes changing mortality conditions into account and ensures that no generation benefits at the expense of another (Sanderson & Scherbov 2015, 2017).

**Life expectancy at age 65 (column 1)**  
The average number of years a 65-year-old person has left to live if subjected to the age-specific mortality rates of a given period for the rest of his/her life.

**Life expectancy at birth (column 1)**  
The average number of years a newborn would live if subjected to the age-specific mortality rates of a given period for the rest of his/her entire life.

**Median age (column 2)**  
The share of the population into two numerically equal groups, with half of the people being younger than this age and half older.

**Old-age dependency ratio, OADR (column 4)**  
The conventional old-age dependency ratio relates the number of people at age 65 and above to the number of people from age 20 to age 65. The ratio is multiplied by 100.

other (Sanderson & Scherbov 2015, 2017).

**Percentage of adult lifetimes spent at age 65+ (column 3)**  
The percentage of adult lifetimes spent at or above age 65 is the percentage of person-years spent from age 20 onwards that are also spent at or above the POAT.

**Proportion of population above POAT (column 4)**  
The share of the population with an average remaining life expectancy below 15 years. (Sanderson & Scherbov 2008, 2015)

**Proportion of population age 65+ (column 5)**  
The share of the population at or above age 65.

**Proportion of adult life spent at age 65+ (column 3)**  
Given the mortality rates of a given period, this is the fraction of the average remaining lifetimes of 20 year-olds that are lived from age 65 onward (Sanderson & Scherbov 2014, 2017).

**Proportion of adult life spent above POAT (column 4)**  
Given the mortality rates of a given period, this is the fraction of the average remaining lifetimes of 20 year-olds that

are lived from the prospective old age threshold onward (Sanderson & Scherbov 2014, 2017).

**Prospective median age, PMA (column 2)**  
The median age of a population adjusted for changes in remaining life expectancy (Sanderson & Scherbov 2008).

**Prospective old-age dependency ratio, POADR (column 4)**  
This is the ratio of the number of people at or older than the prospective old-age threshold (POAT) to the number of people between age 20 and the prospective old-age threshold. The ratio is multiplied by 100. (Sanderson & Scherbov 2008, 2015)

**Prospective old-age threshold, POAT (column 3)**  
The prospective old-age threshold is a flexible threshold age defining the group of people who are considered old. It is the age at which the average remaining life expectancy first falls below 15 years. In contrast to a threshold based on a fixed chronological age, such as 65, this threshold of old-age varies across states and over time. (Sanderson & Scherbov 2019)

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**Proportion of population age 65+ (column 5)**  
The share of the population at or above age 65.

**Proportion of adult life spent at age 65+ (column 3)**  
Given the mortality rates of a given period, this is the fraction of the average remaining lifetimes of 20 year-olds that

are lived from the prospective old age threshold onward (Sanderson & Scherbov 2014, 2017).

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**Proportion of population age 65+ (column 5)**  
The share of the population at or above age 65.

**Proportion of adult life spent at age 65+ (column 3)**  
Given the mortality rates of a given period, this is the fraction of the average remaining lifetimes of 20 year-olds that

are lived from the prospective old age threshold onward (Sanderson & Scherbov 2014, 2017).

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