Wittgenstein Centre

FOR DEMOGRAPHY AND GLOBAL HUMAN CAPITAL

The End of World Population Growth, Ageing, Education and Sustainable Development

Wolfgang Lutz

Semmering, 29.10. 2011

IIASA International Institute for Applied Systems Analysis www.iiasa.ac.at

Vienna Institute of Demography

ÖAW Austrian Academy of Sciences

WU WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS

3 Main Points

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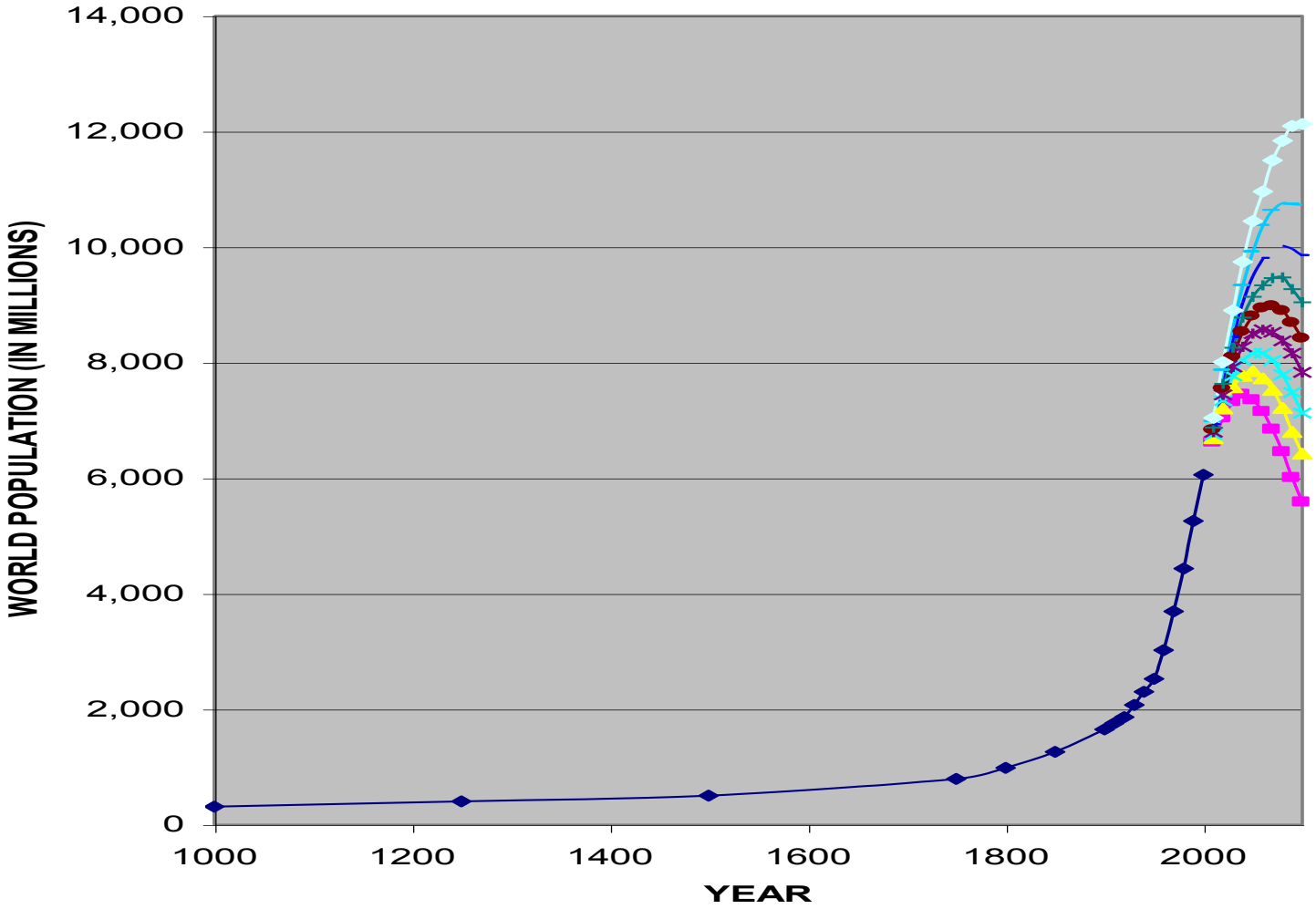
- **Confusing differences in demographic outlook**: Ageing and Shrinking in Europe and Eastern Asia – "explosive" growth in Africa
- **Age is not what it used to be**: 60 is the new 50 and 70 is the 60
- Population Size and Distribution (by place of residence, **age und education) matter critically** for mitigation and adaptation to climate change.

World Population from the year 1000 to 2100



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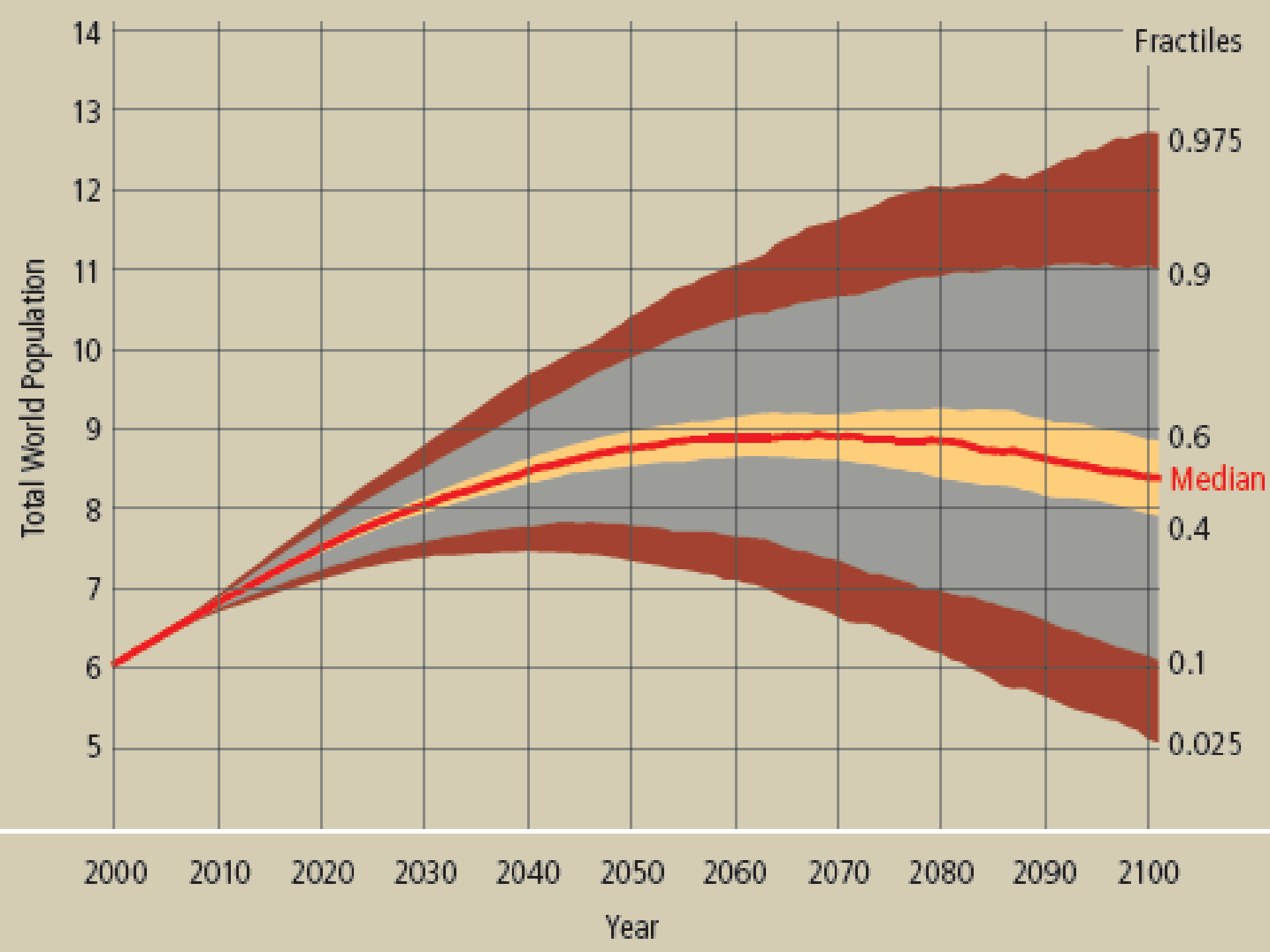
Fractiles
0.975
0.9
0.6
Median
0.4
0.1
0.025
Total World Population
14
13
12
11
10
9
8
7
6
5
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
Year

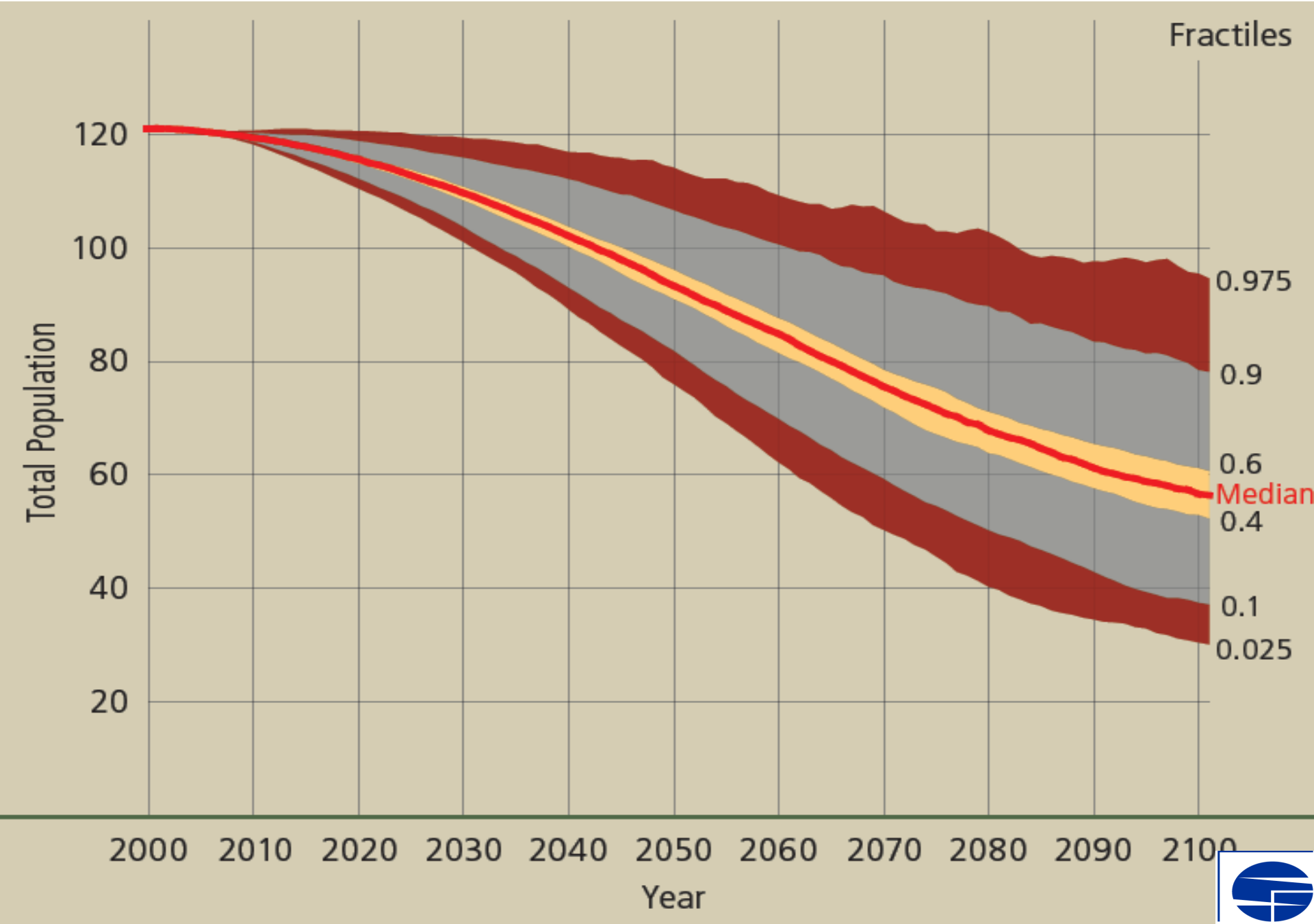

Figure 3. Eastern European population, in millions

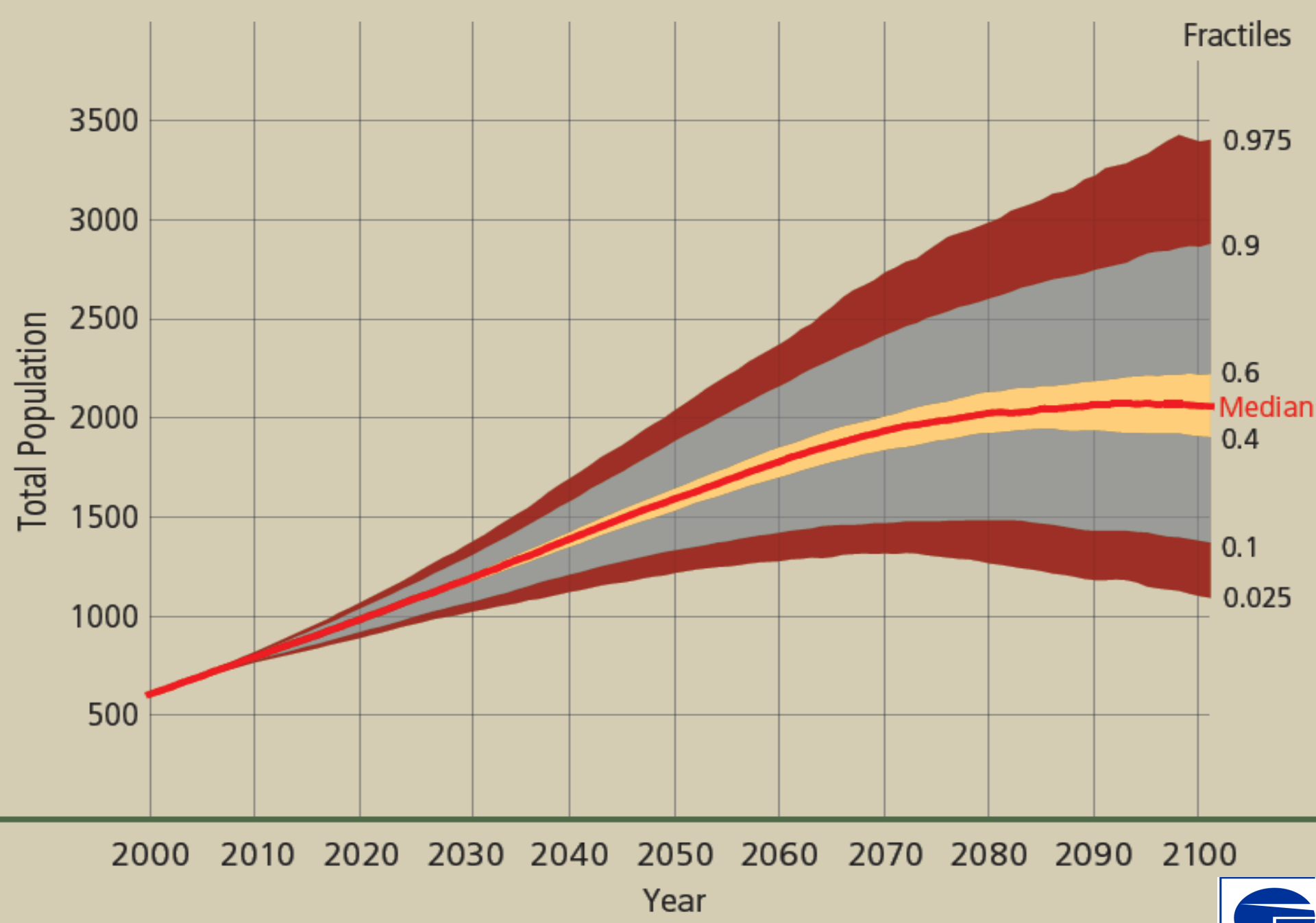

Figure 2. Sub-Saharan Africa population, in millions.

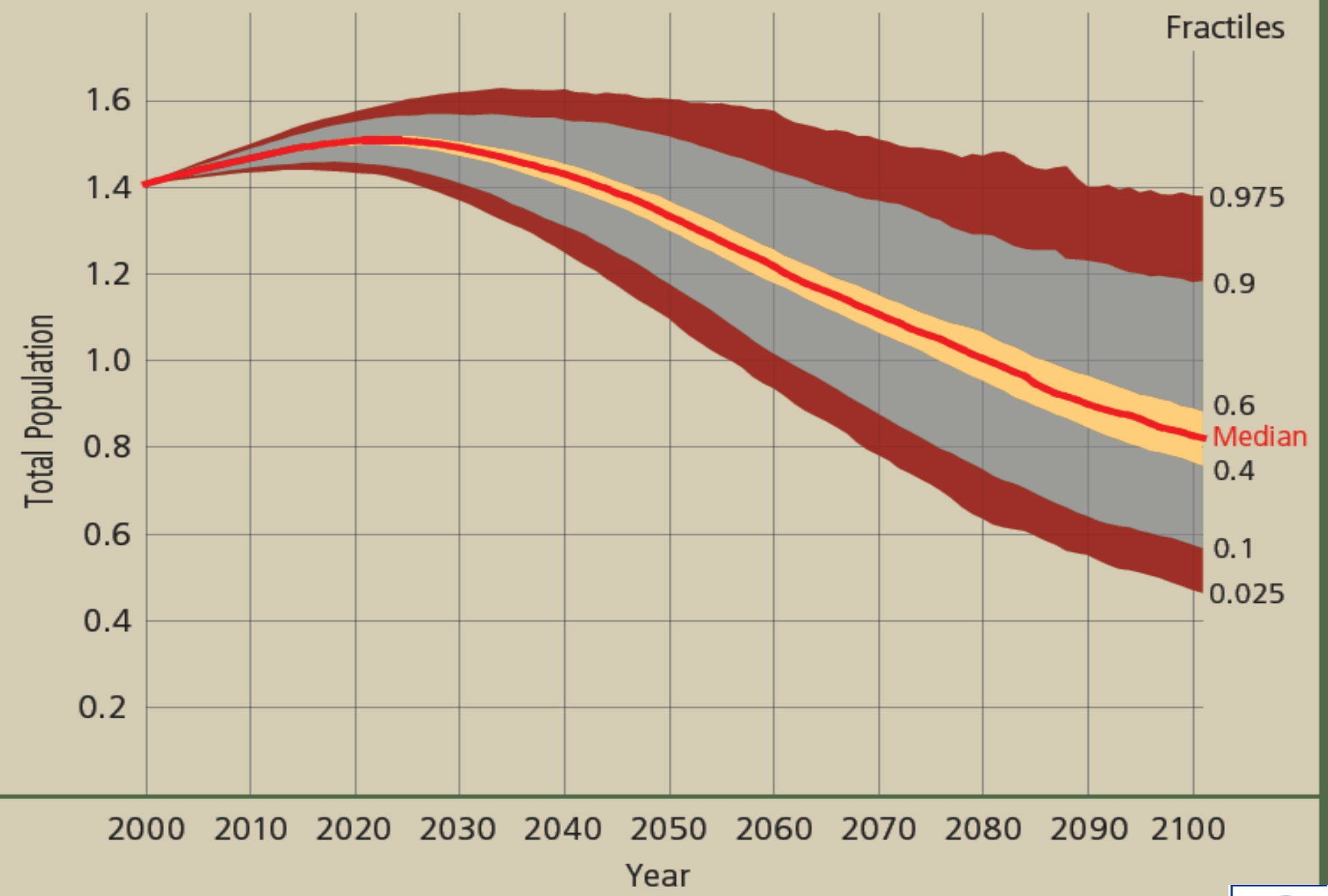

Figure 4. Population of China and Cambodia, Hong Kong, Laos, Mongolia, North Korea, Taiwan, Vietnam, in billions.

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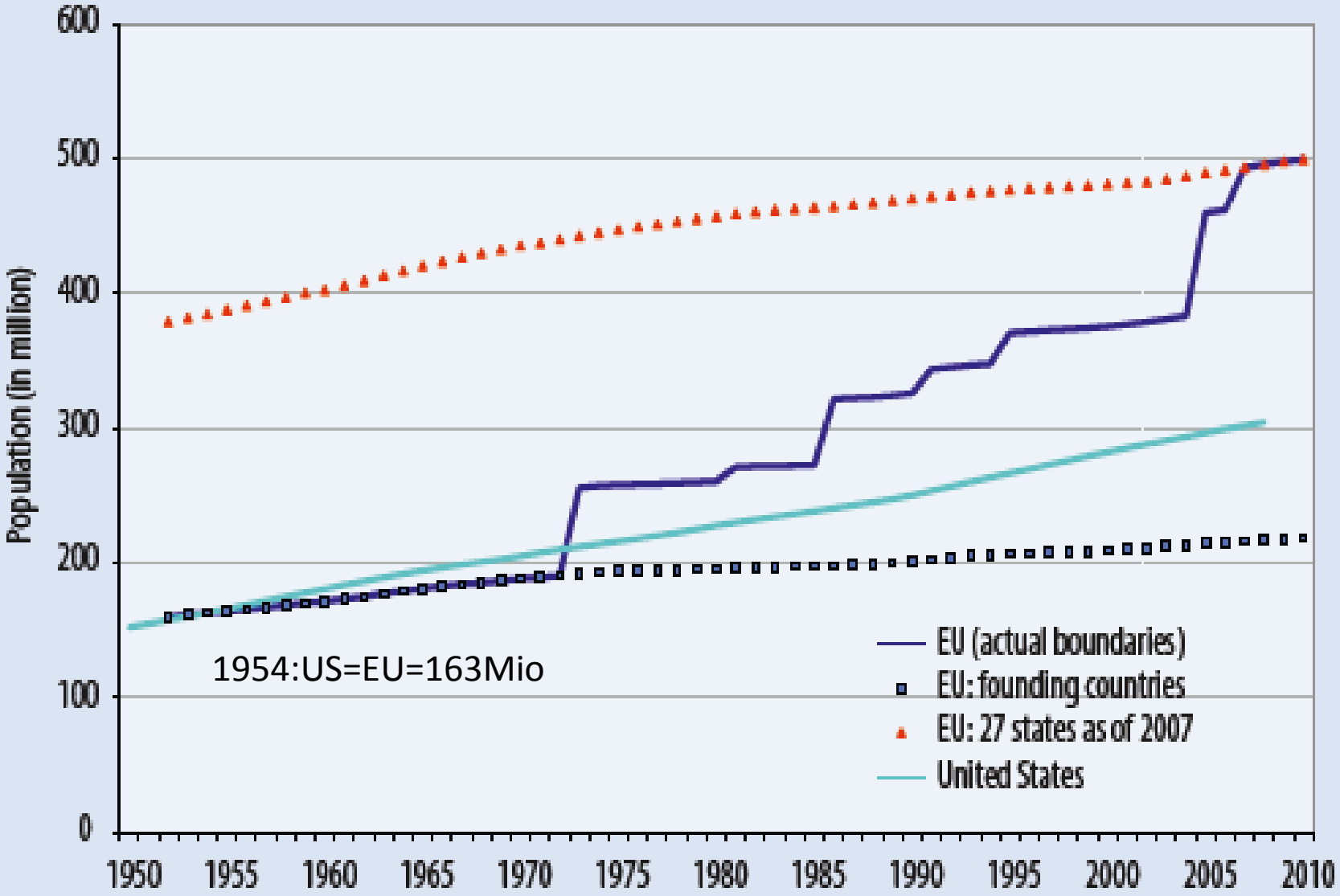
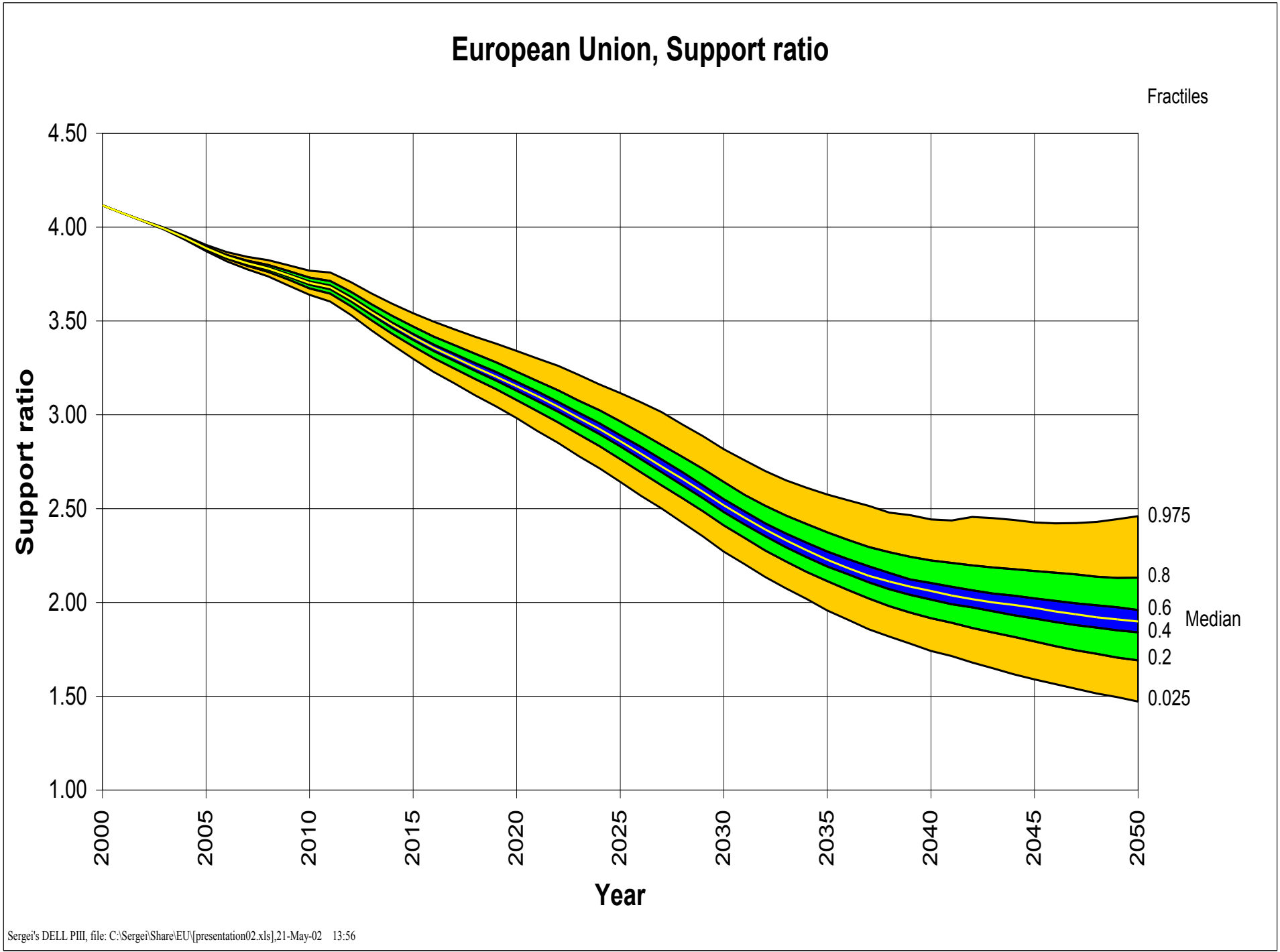
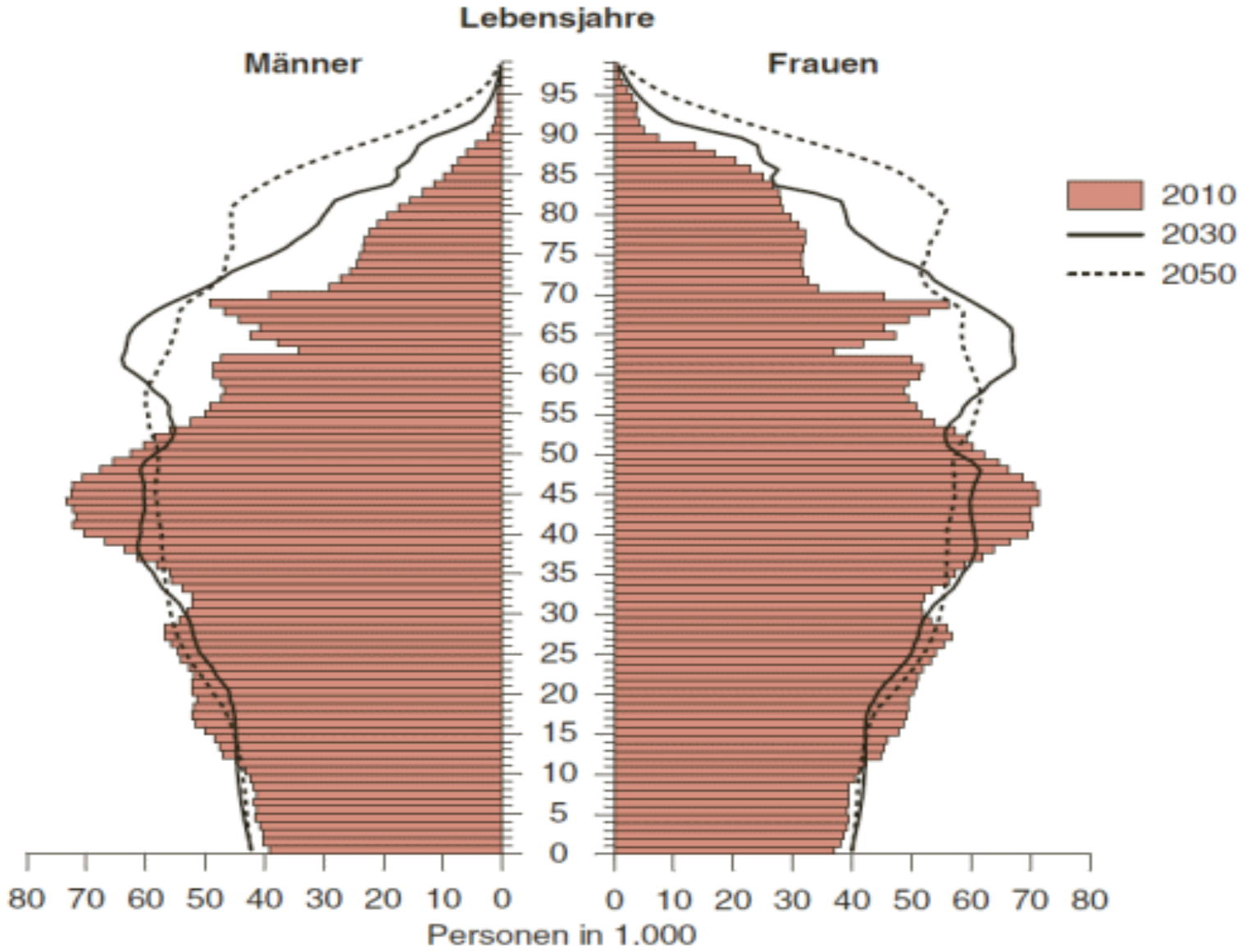


Figure 2: Population growth in the European Union and its predecessor as compared with the United States, 1952-2010

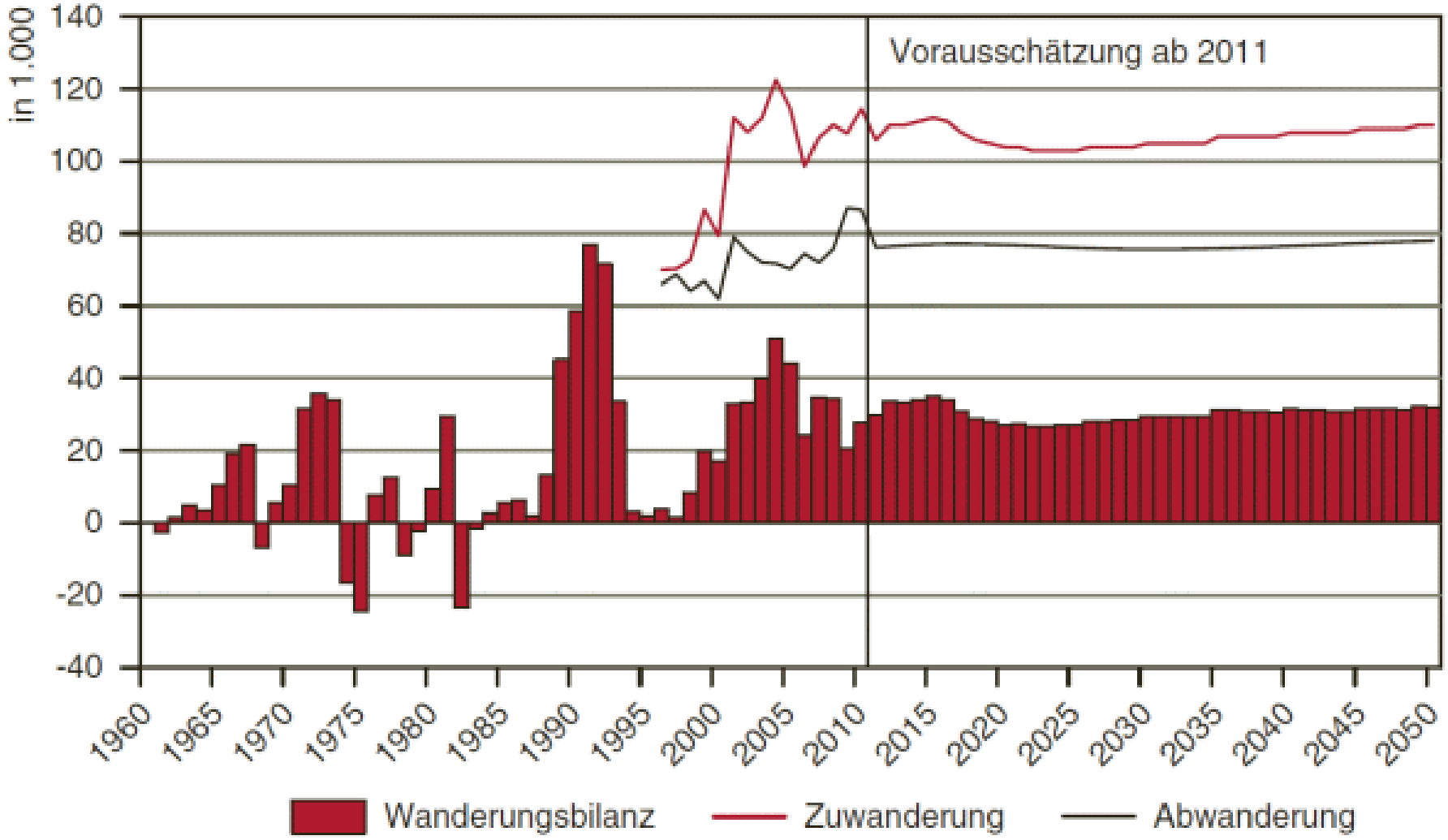

European Union, Support ratio
Fractiles
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
Support ratio
0.975
0.8
0.6
0.4
0.2
0.025
Median
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Year

Bevölkerungspyramide 2010, 2030 und 2050
(mittlere Variante)



Q: STATISTIK AUSTRIA, Bevölkerungsprognose 2011. Erstellt am: 25.08.2011.

Internationale Wanderungen 1961 bis 2050
(mittlere Variante)



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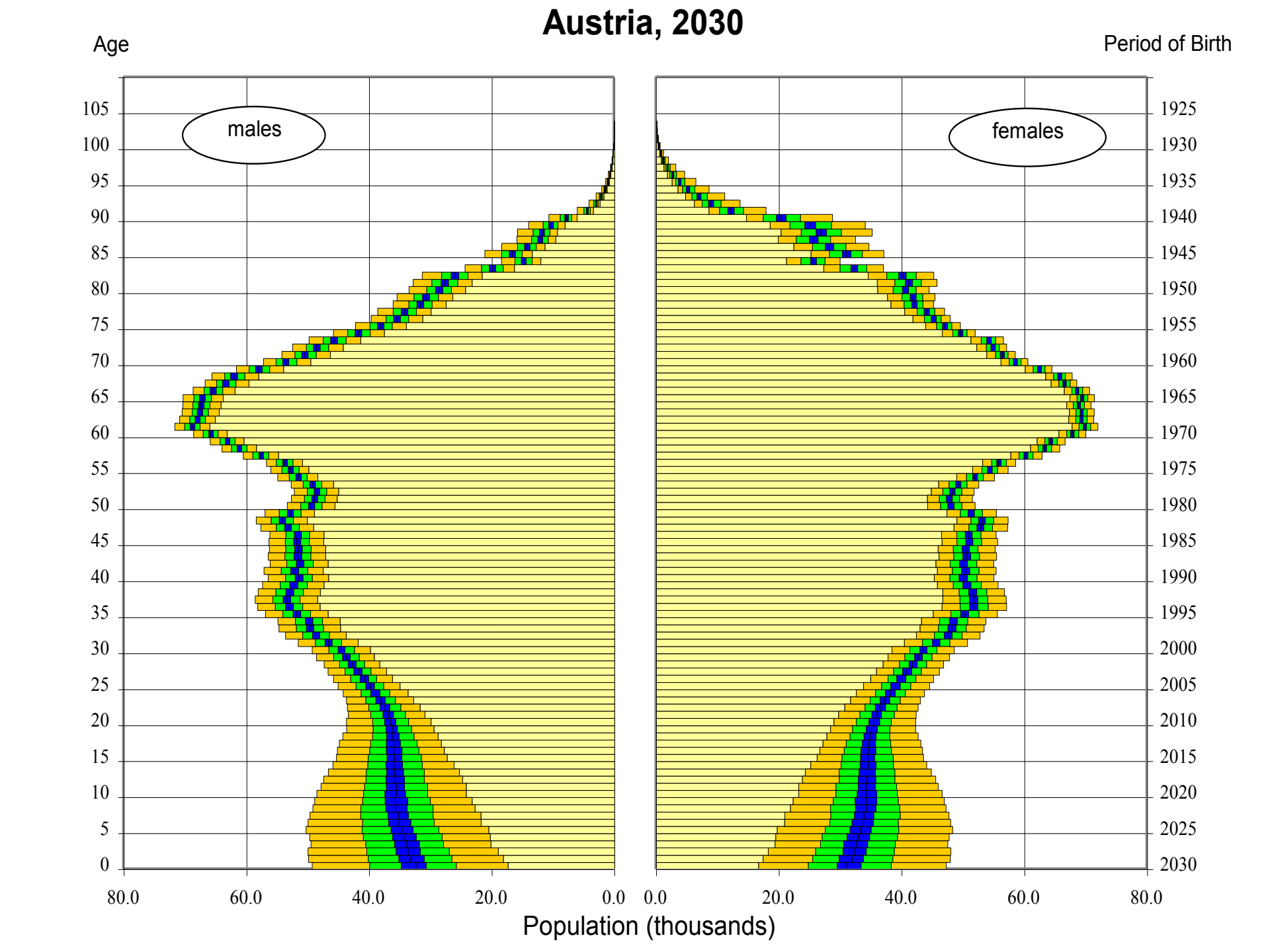
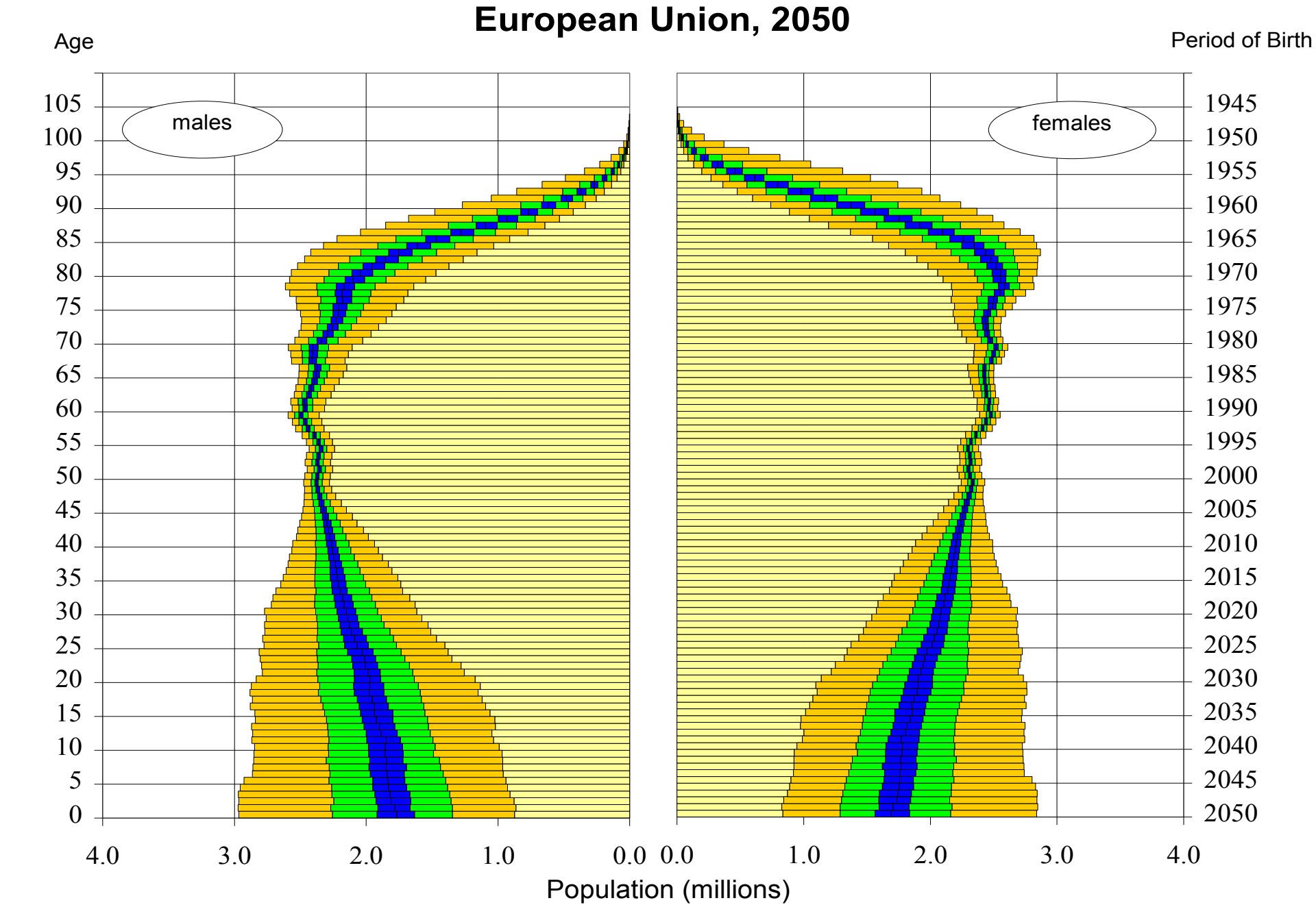

Austria, 2030
Age
Period of Birth
males
females
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
Population (thousands)

Probabilistic Population Pyramid



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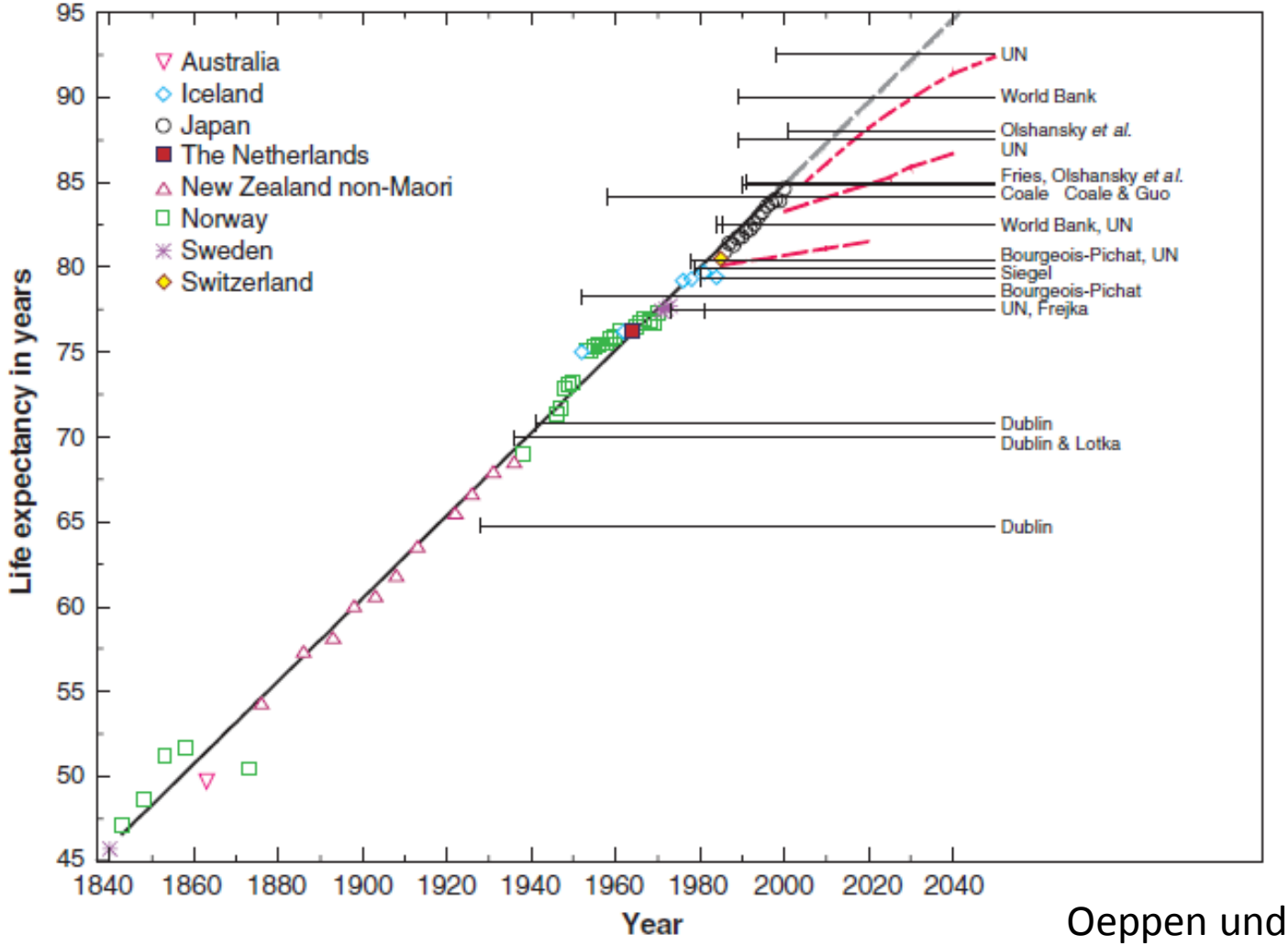
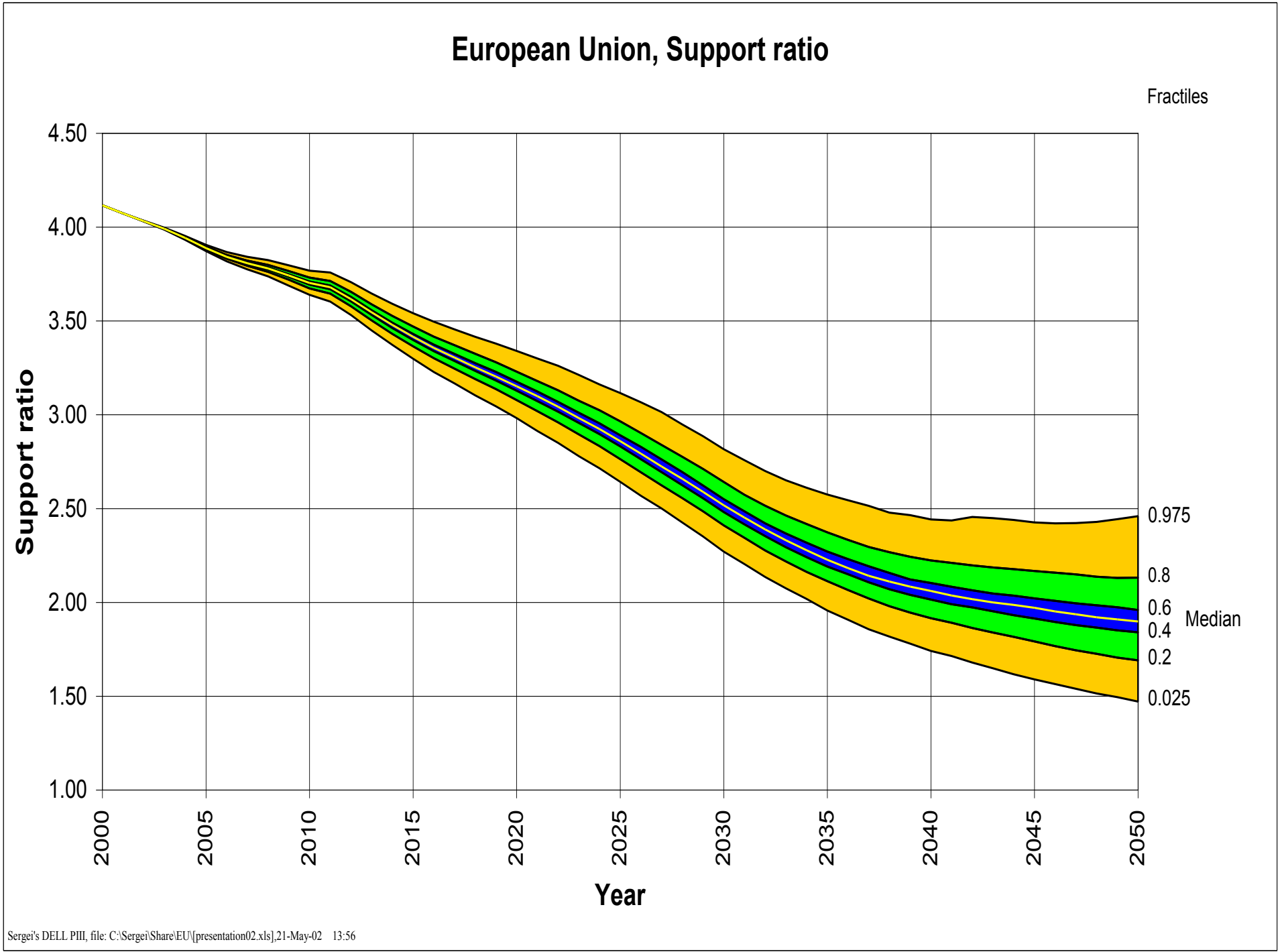
Is there a limit to human life expectancy ?



Oeppen und Vaupel 2002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2040
2045
2050
Year

Redefining old age dependency

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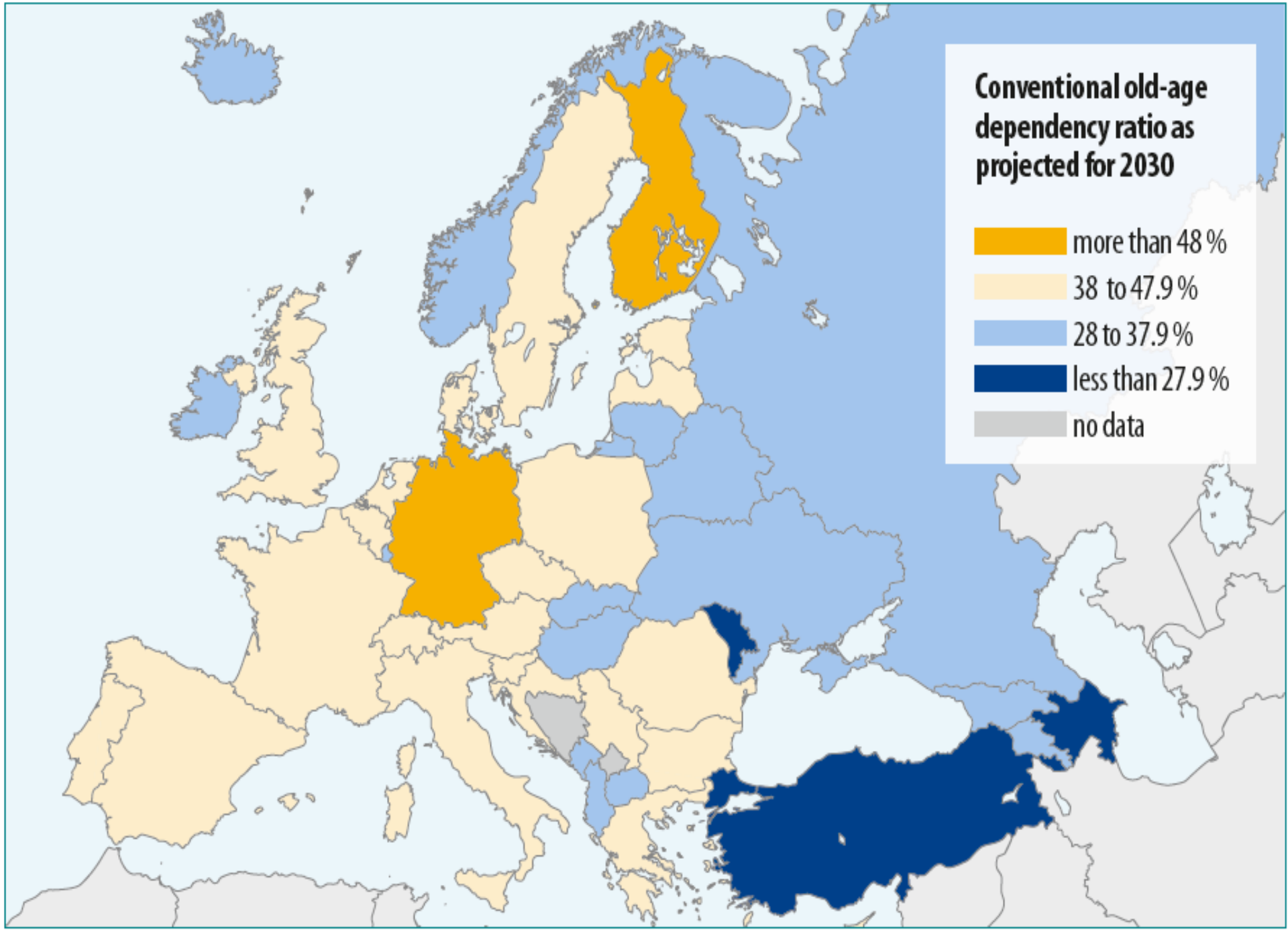
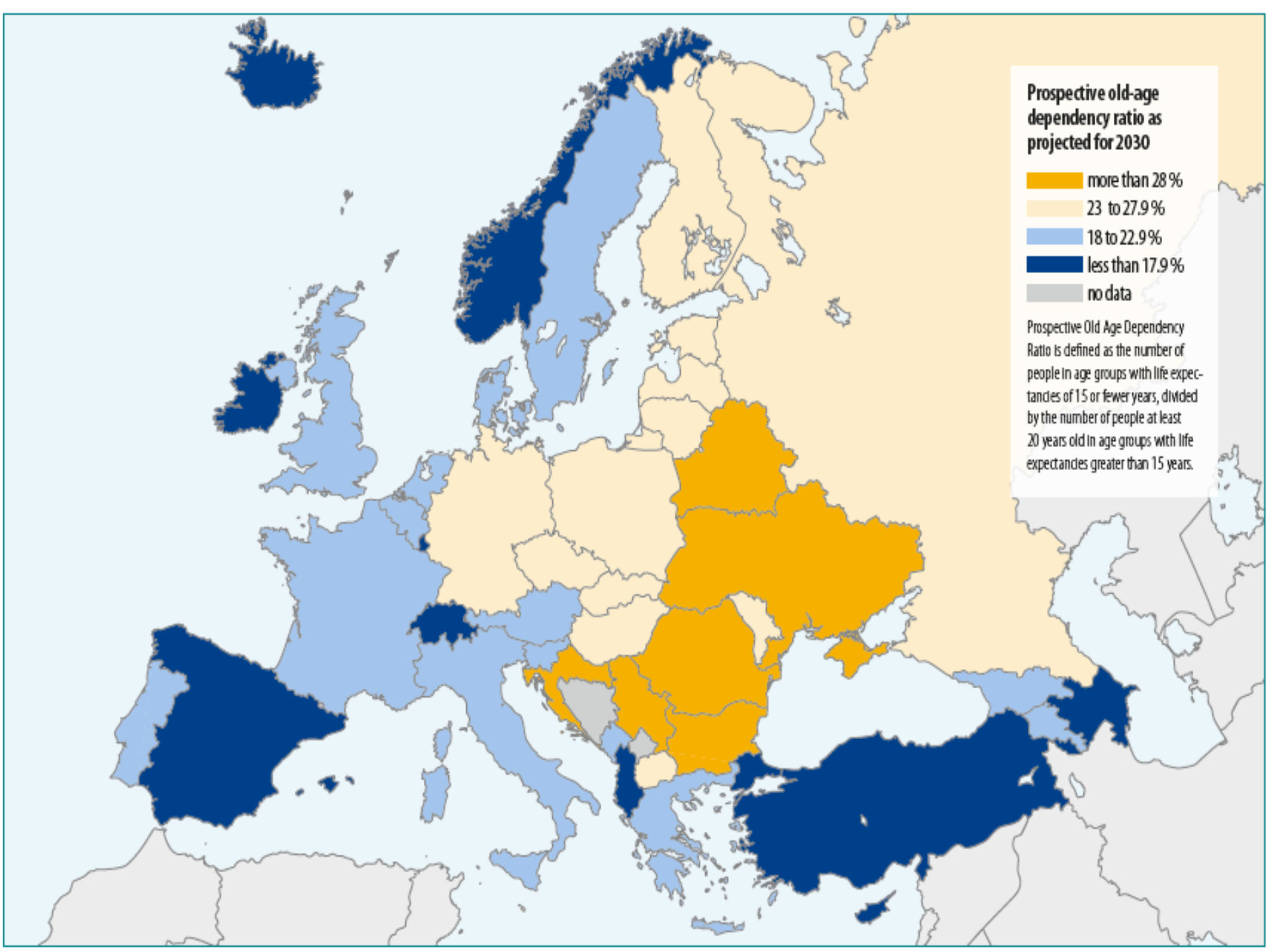
$$\text{OADR} = \frac{\text{Number of people aged 65 years or older}}{\text{Number of people aged 20 to 64}}$$

the VID and IIASA: the prospective old-age dependency ratio. In the POADR, the threshold of being old is not fixed but linked to life expectancy. People are considered old when the average remaining life expectancy in their age group is less than 15 years.

$$\text{POADR} = \frac{\text{Number of people older than the old-age threshold}}{\text{Number of people aged 20 to the old-age threshold}}$$


Conventional old-age dependency ratio as projected for 2030
more than 48 %
38 to 47.9 %
28 to 37.9 %
less than 27.9 %
no data

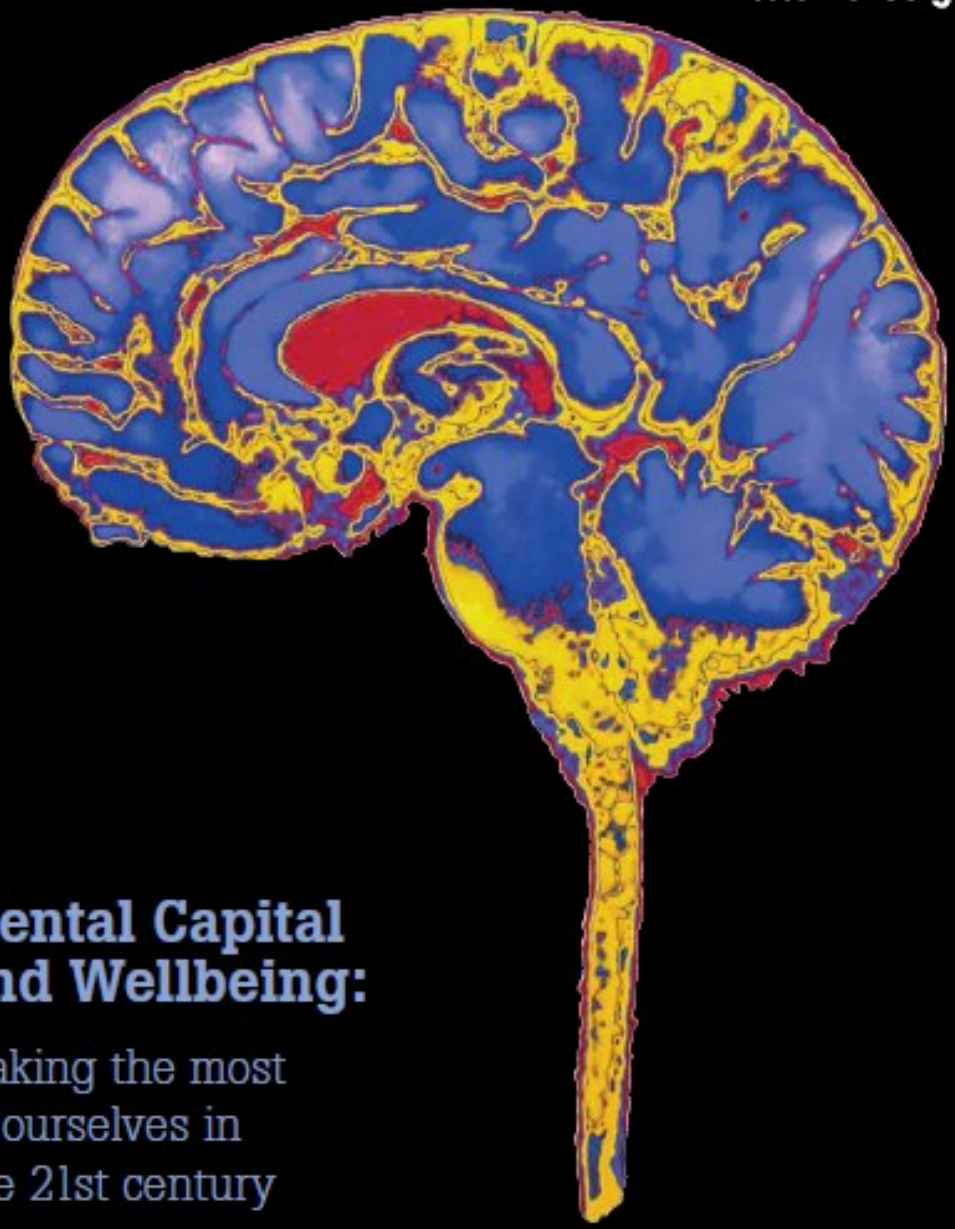

Prospective old-age dependency ratio as projected for 2030
more than 28 %
23 to 27.9 %
18 to 22.9 %
less than 17.9 %
no data
Prospective Old Age Dependency Ratio is defined as the number of people in age groups with life expectancies of 15 or fewer years, divided by the number of people at least 20 years old in age groups with life expectancies greater than 15 years.

Focus on the Human Resource Base for Sustainable Development

- Human Resources refer to the ability of people to help themselves and help others.
- The crucially depend on age, health, education, motivation, social networks etc.
- Education is central: Learning from the first day to old age.
- Formal education (school) is only one aspect of this that is fairly easy to measure.

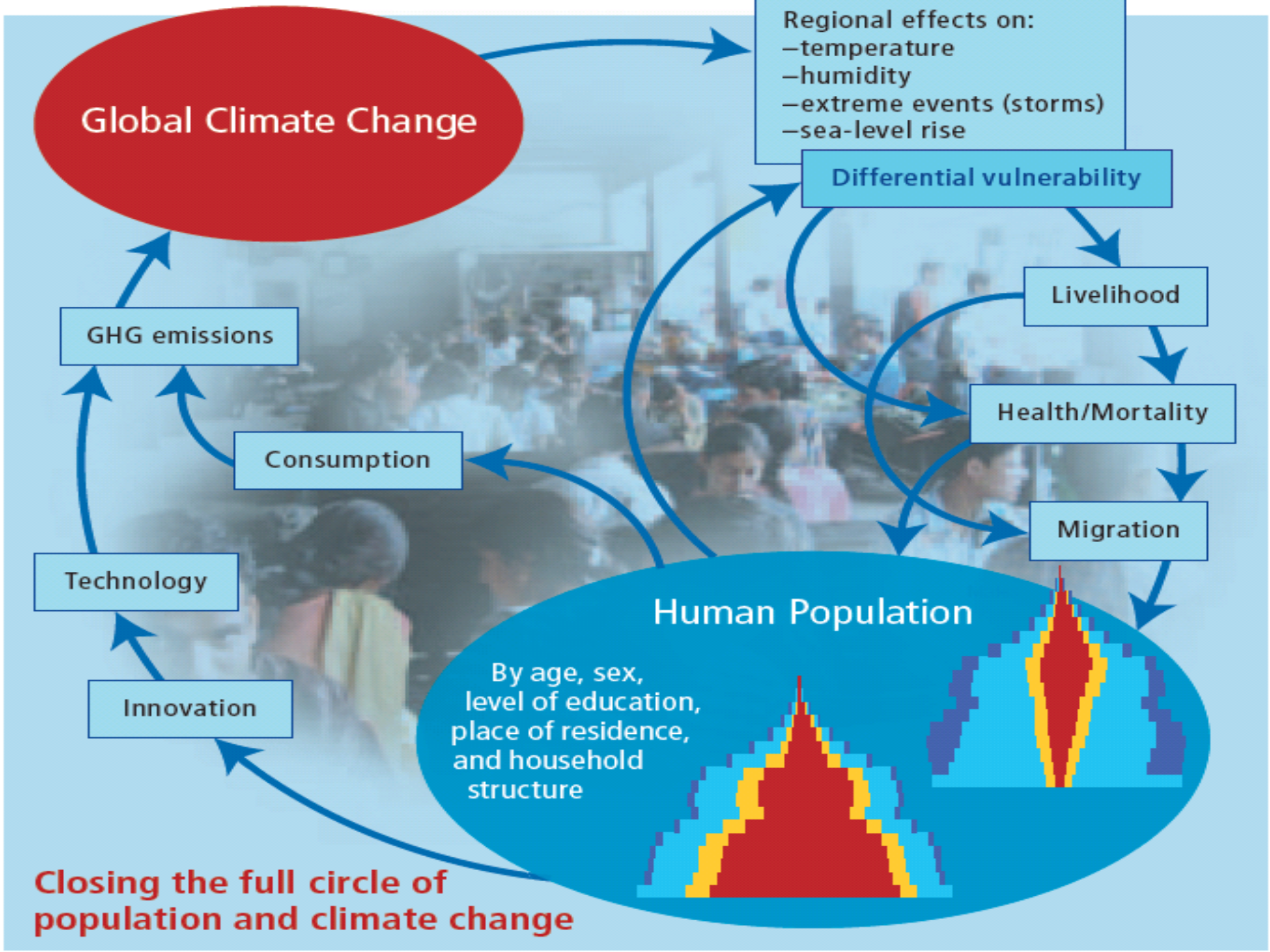
Government Office for Science

Foresight



Mental Capital and Wellbeing:

Making the most of ourselves in the 21st century



Closing the full circle of population and climate change

Education reduces diaster mortality and enhances adaptive capacity to climate change

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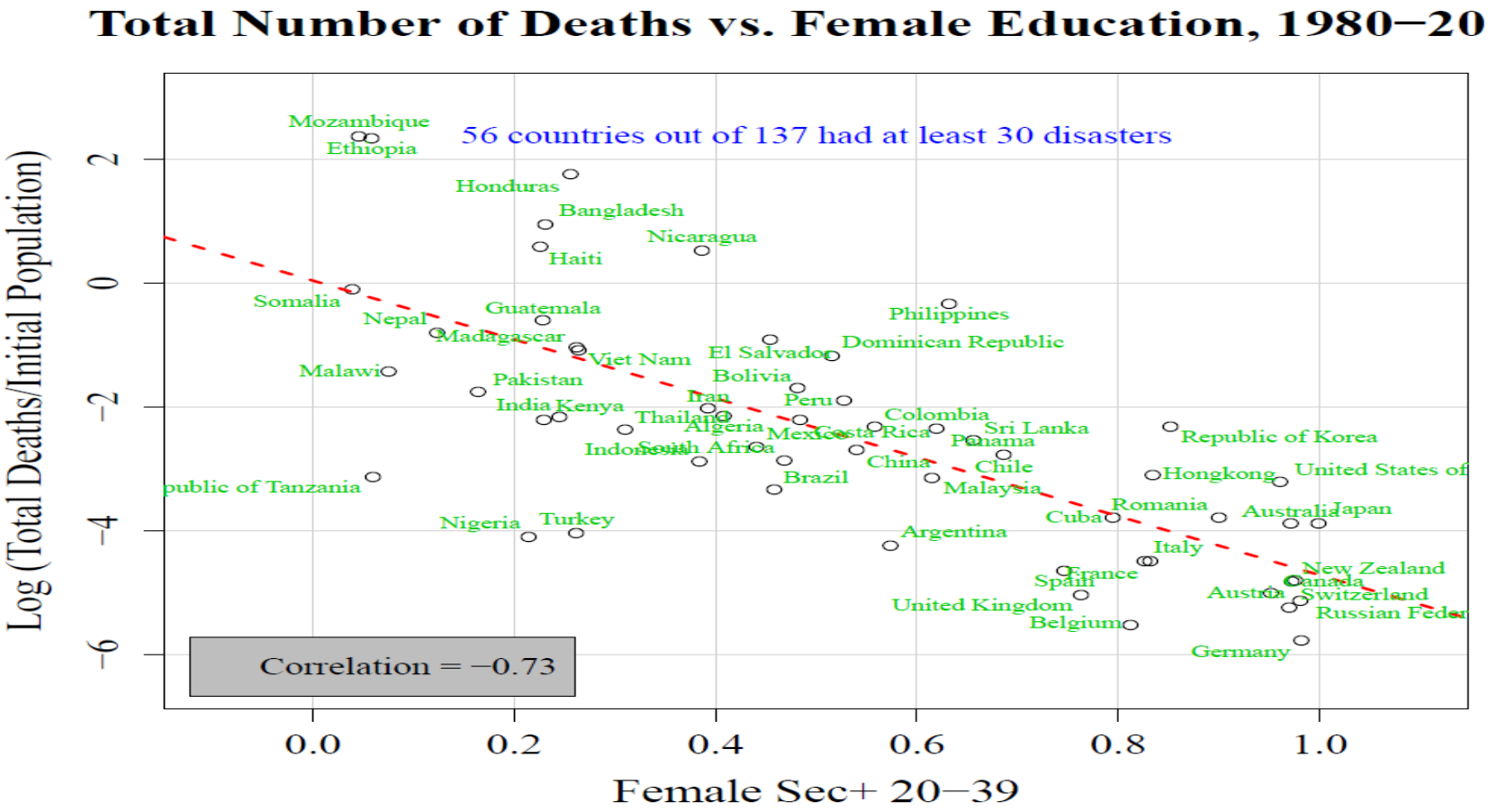
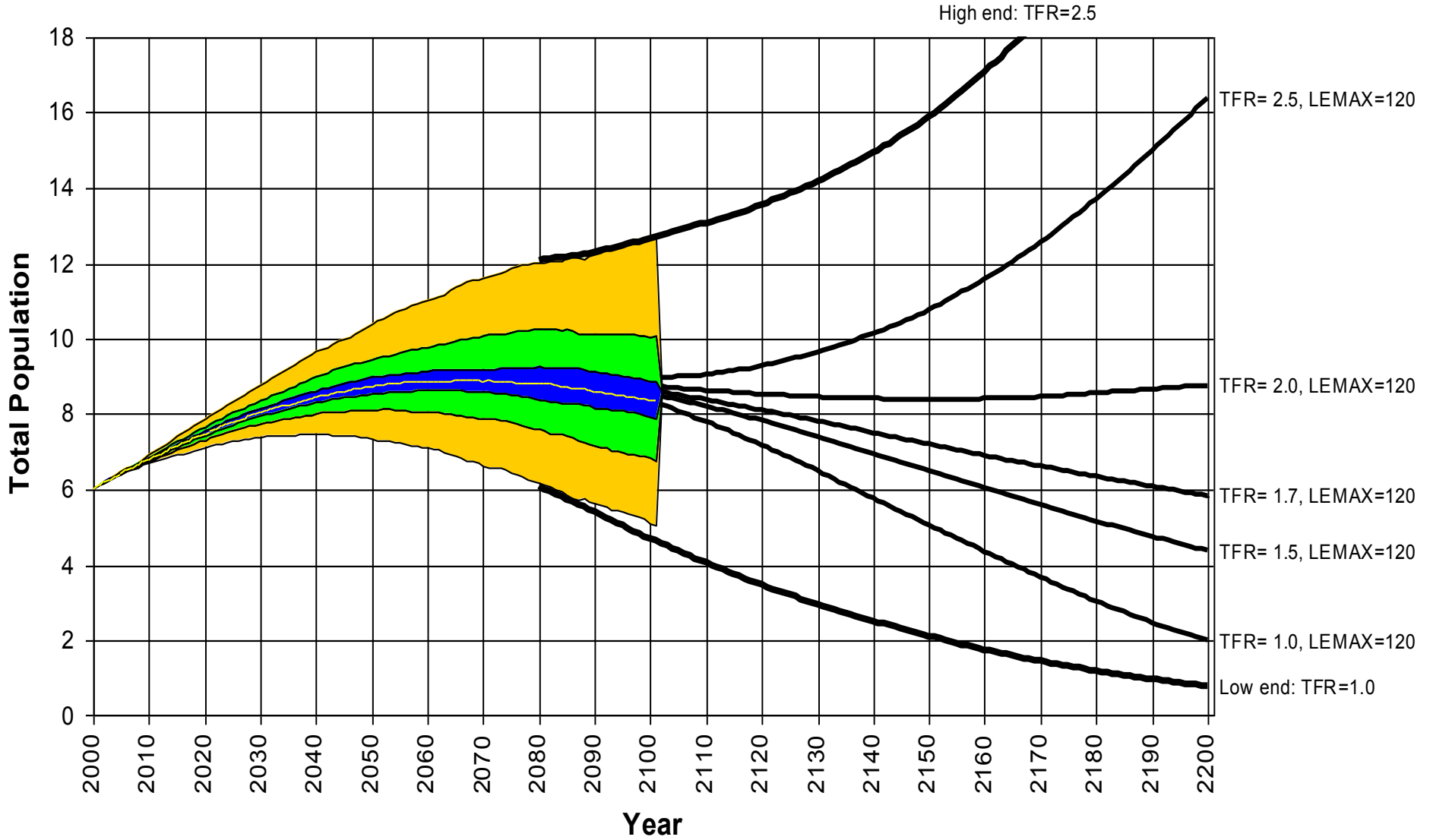


World, Total Population (in billions)



Sergei's DELL PIII, file: I:\IIASA2007\World_Projections\world2300\[presentation02_2_from_drive_I_2_increase1_retmr80_with_UN2_2_high_low_TMP_l20.xls],05-Nov-08 21:01

IIASA

Journal of the Royal Statistical Society
SERIES A Statistics in Society
J. R. Statist. Soc. A (2009)
172, *Part* 4, *pp.* 701–705

Editorial: Towards a world of 2–6 billion well-educated and therefore healthy and wealthy people

….being able to move quickly to green technologies and

…. Being able to adapt successfully to already unavoidable climate change.

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