

The Future: A Vision

Yossi Sirote, September 2016, Israel Association of Actuaries



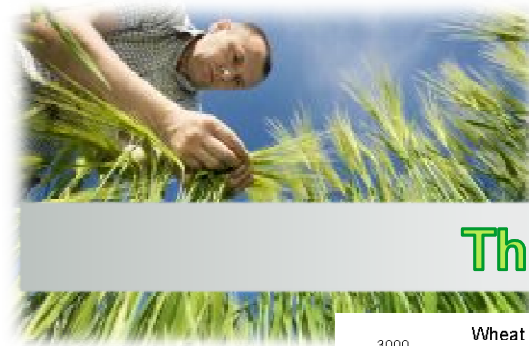
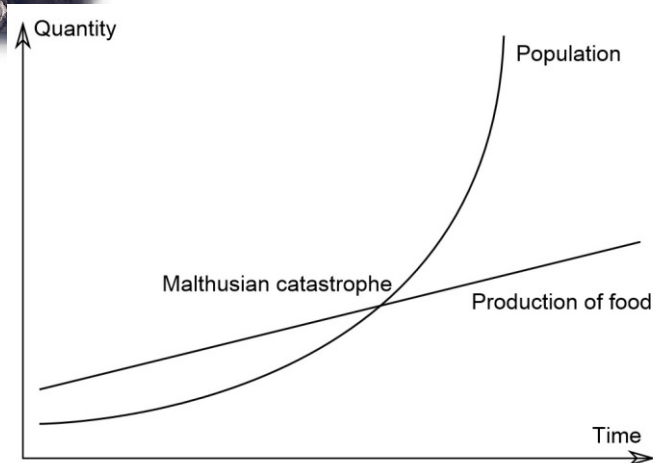
Agenda

- Demography
- Economics
- Technology
 - ❖ Medical Advances
 - ❖ Social Implications

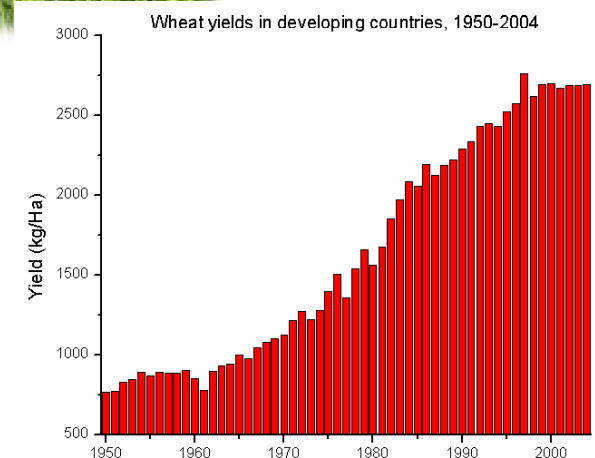
Demography



Malthus Was Wrong



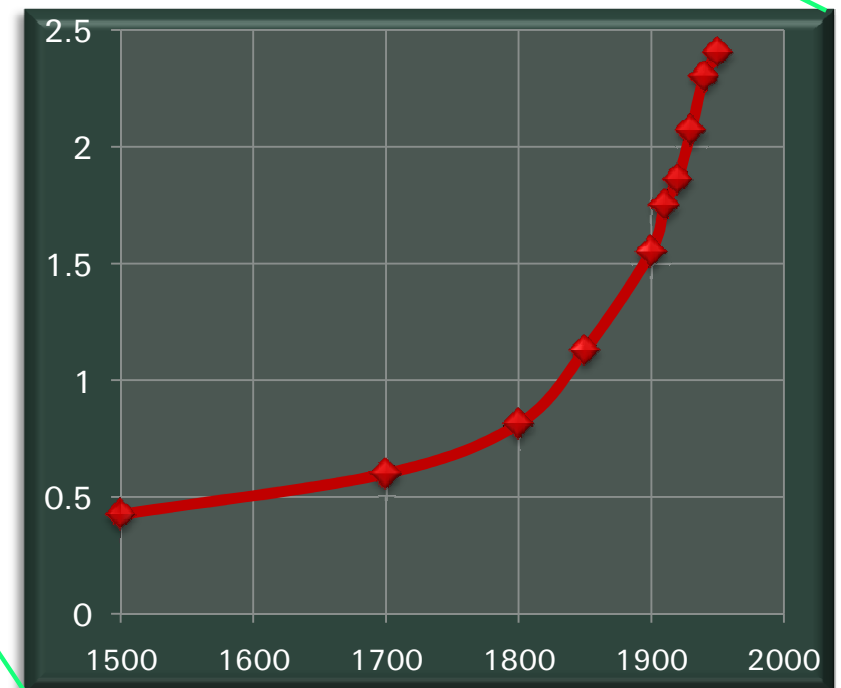
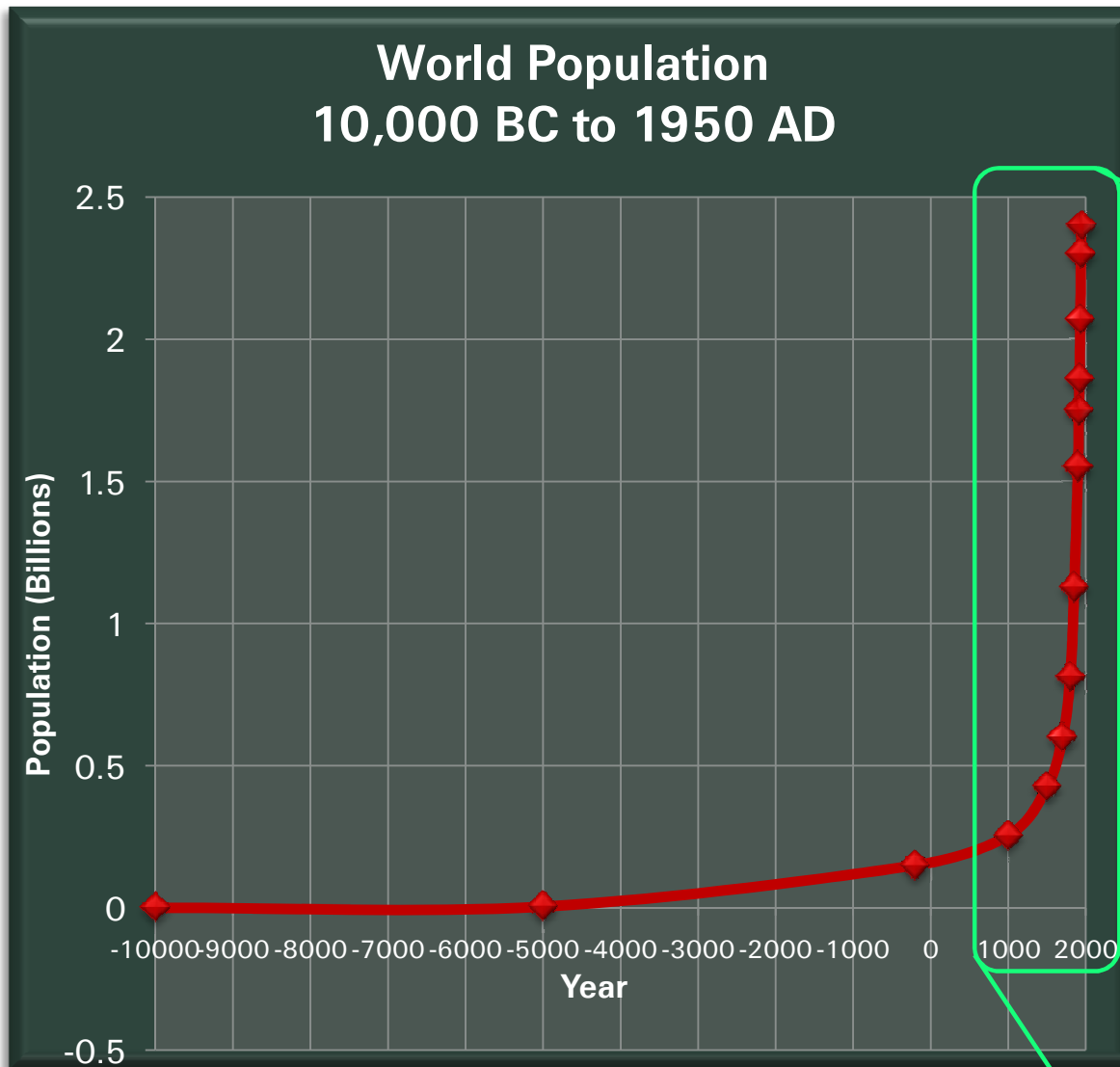
The Green Revolution



World Population

Impact of Industrial Revolution

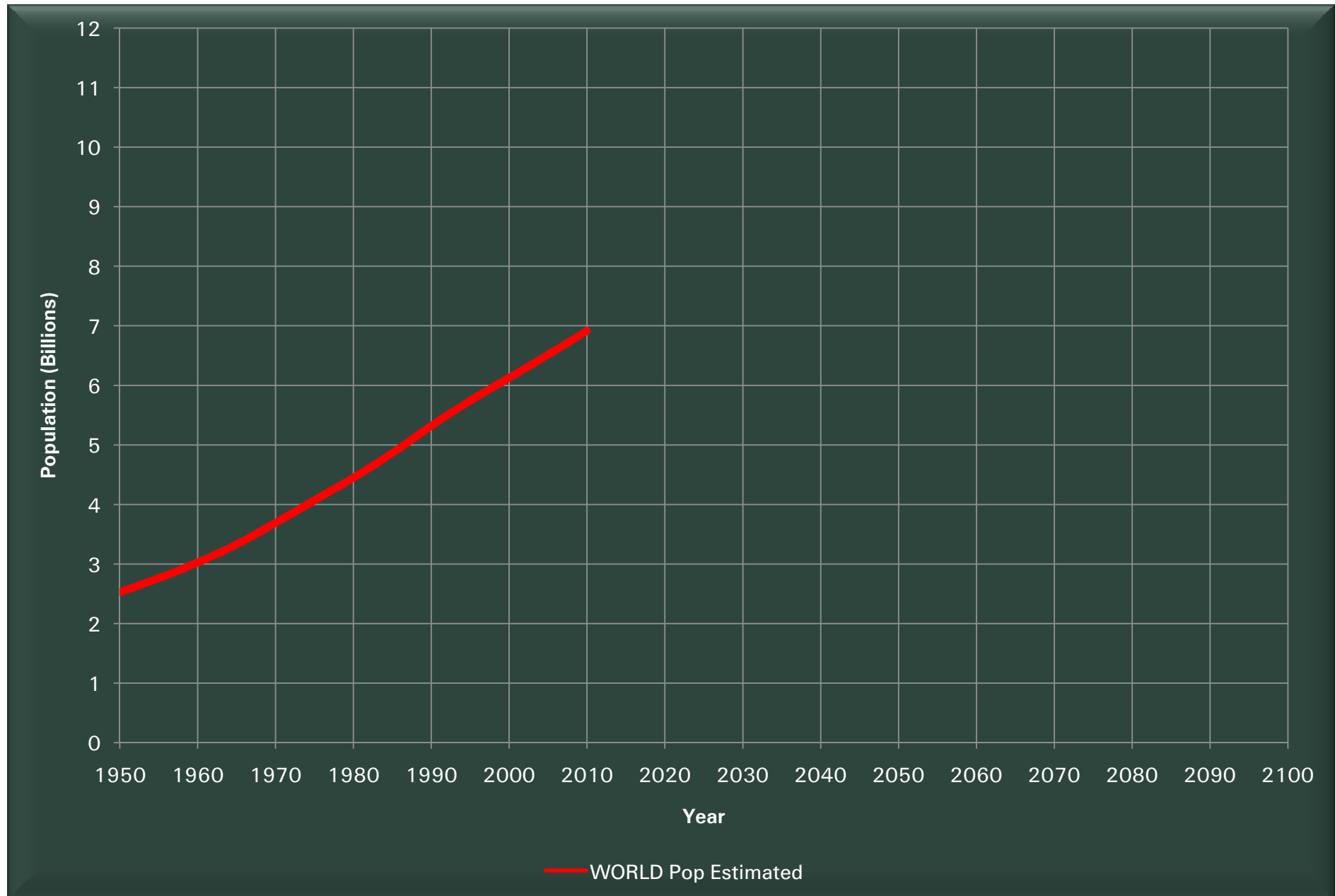
General Public Release



Data Source: US Census Bureau

World Population

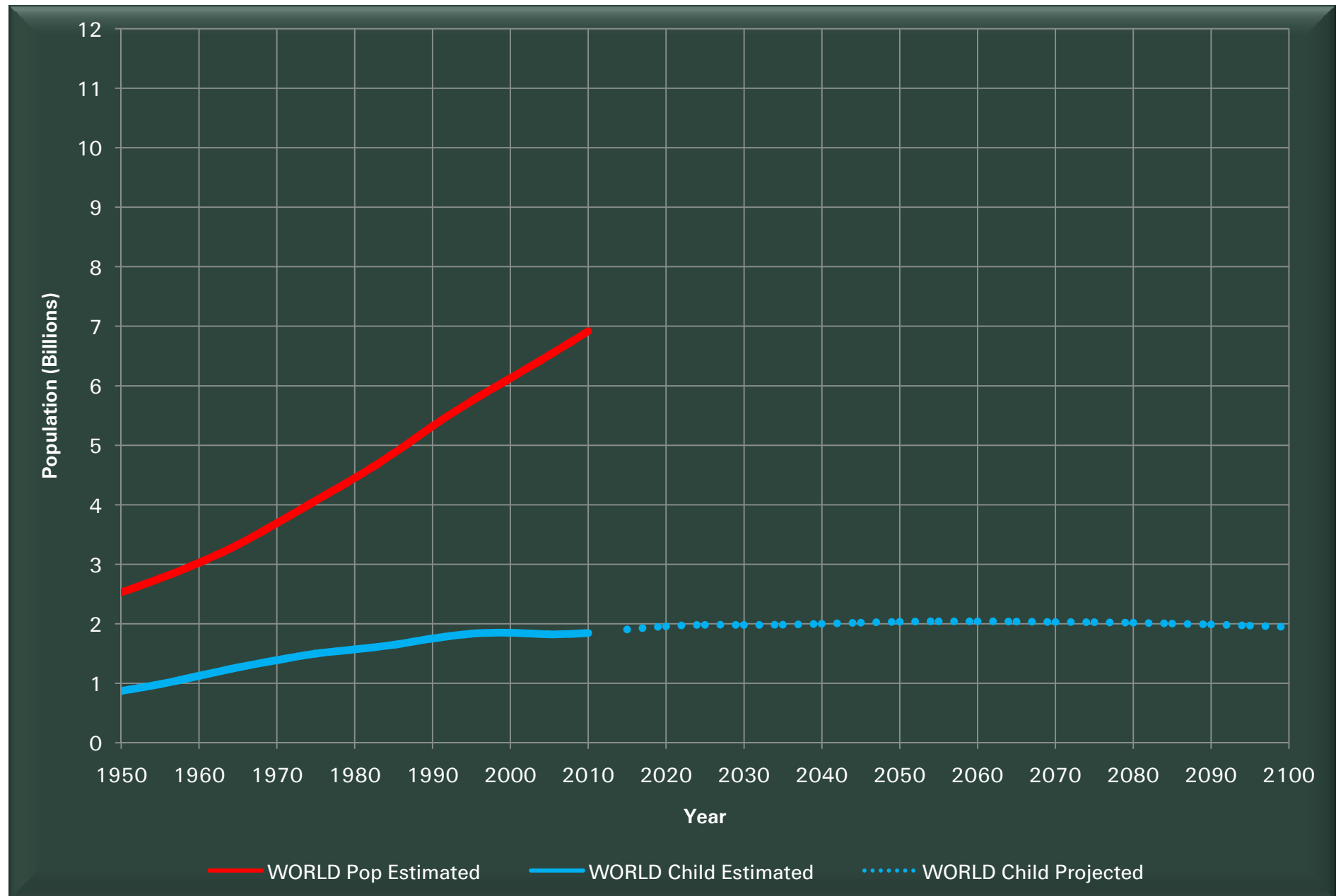
General Public Release



Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

World Population

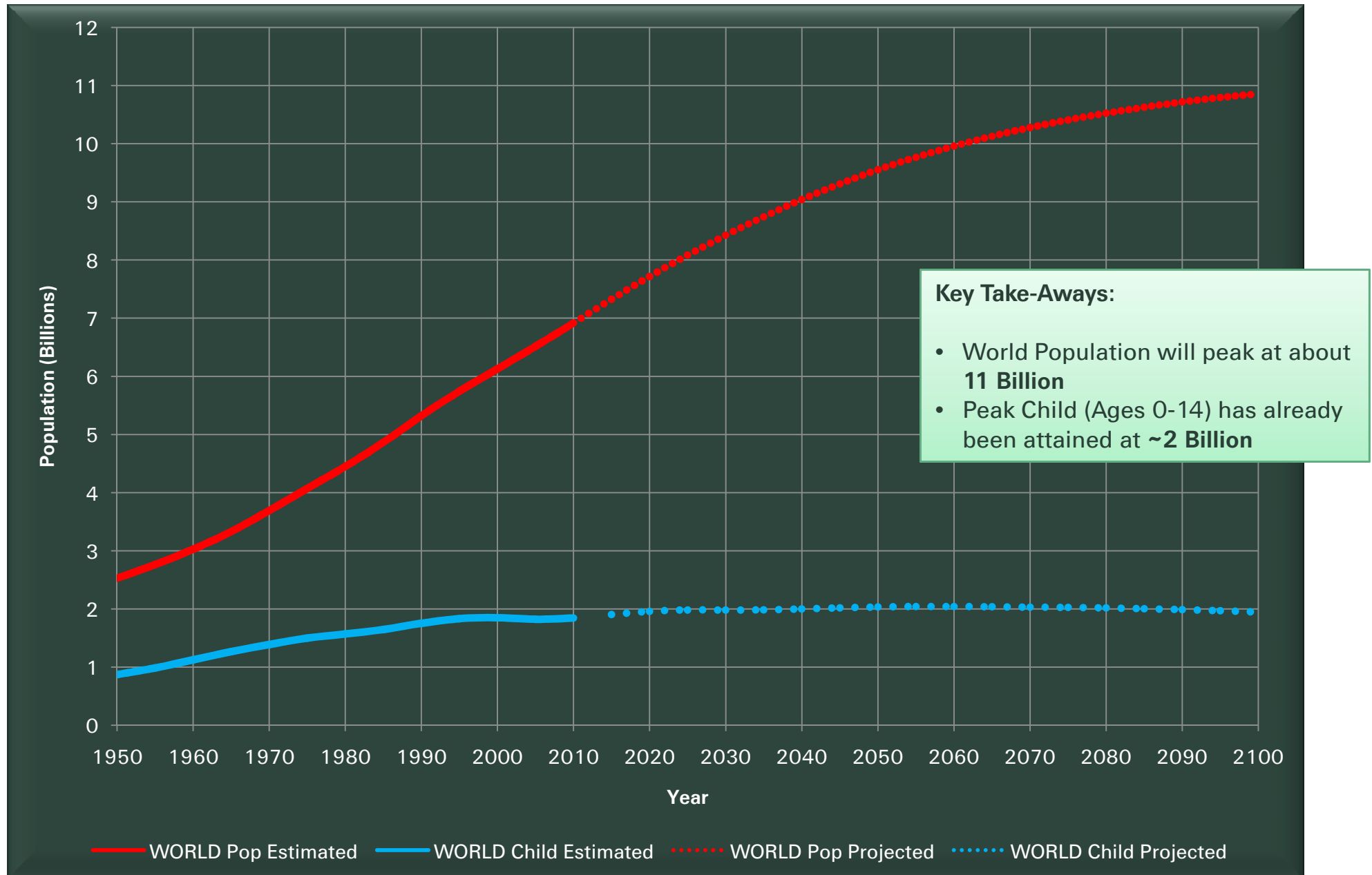
General Public Release



Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

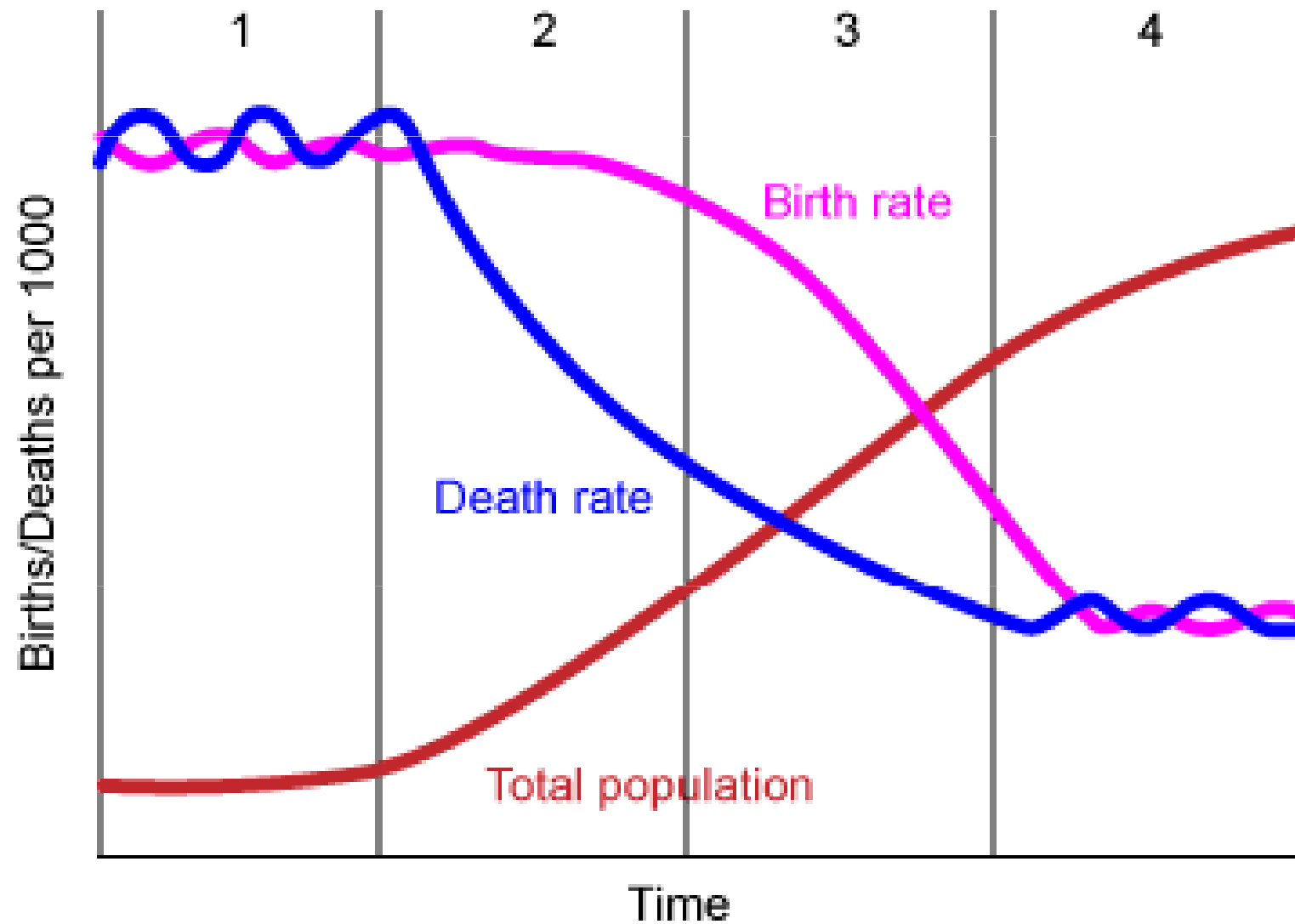
World Population

General Public Release

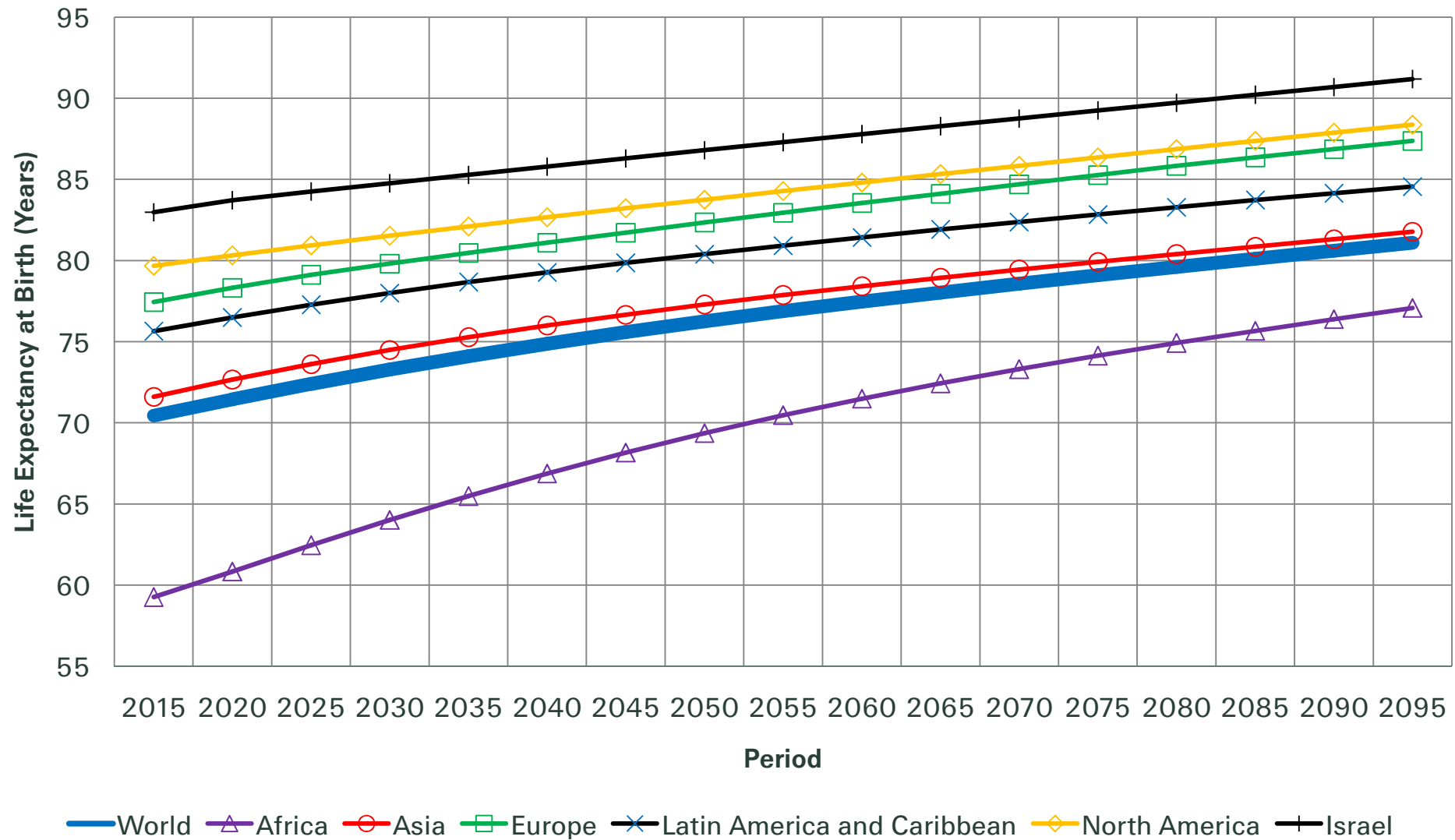


Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.

The Demographic Transition



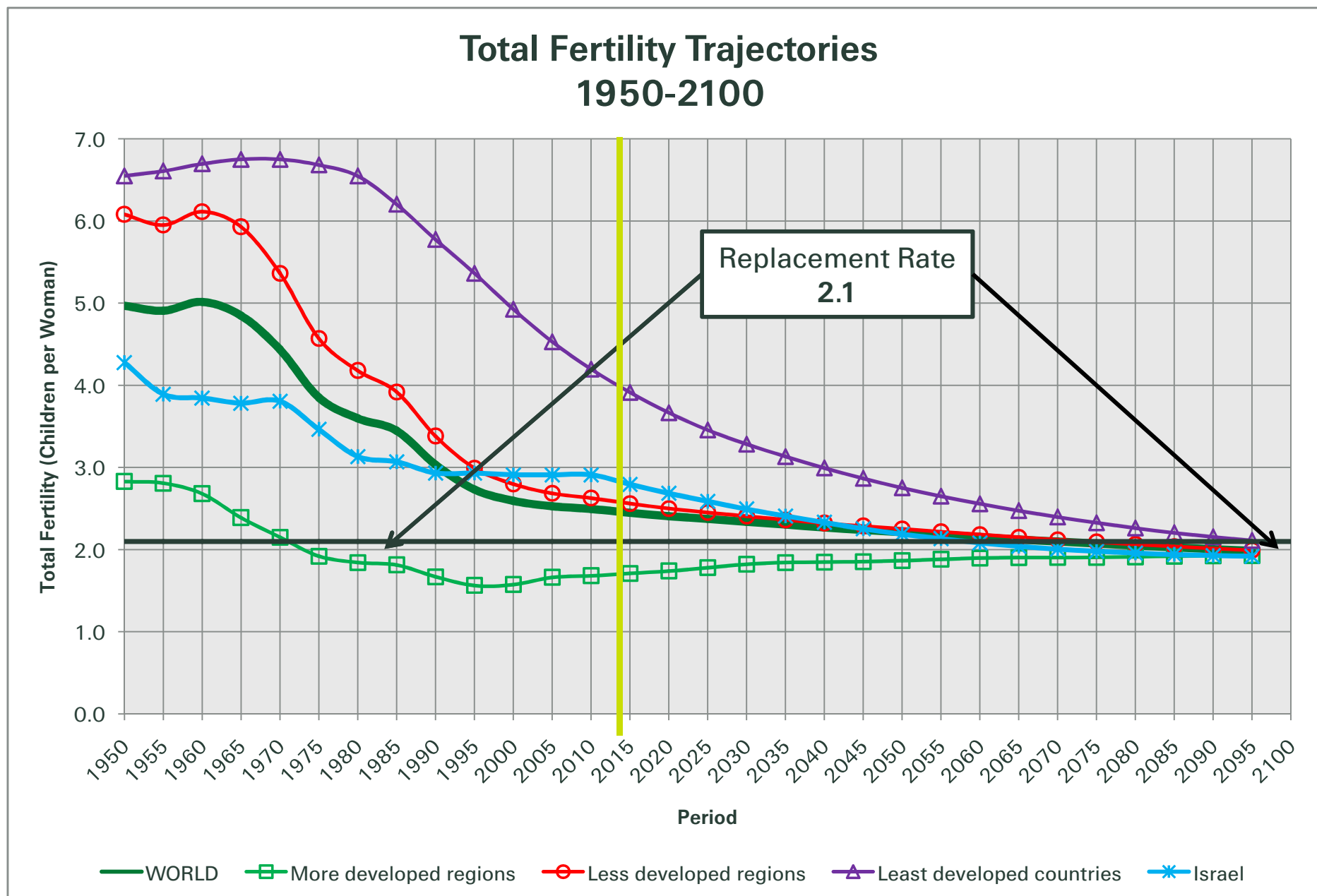
Life Expectancy at Birth Projected



Source: UN World Population Prospects , 2010 Revision, Medium Scenario

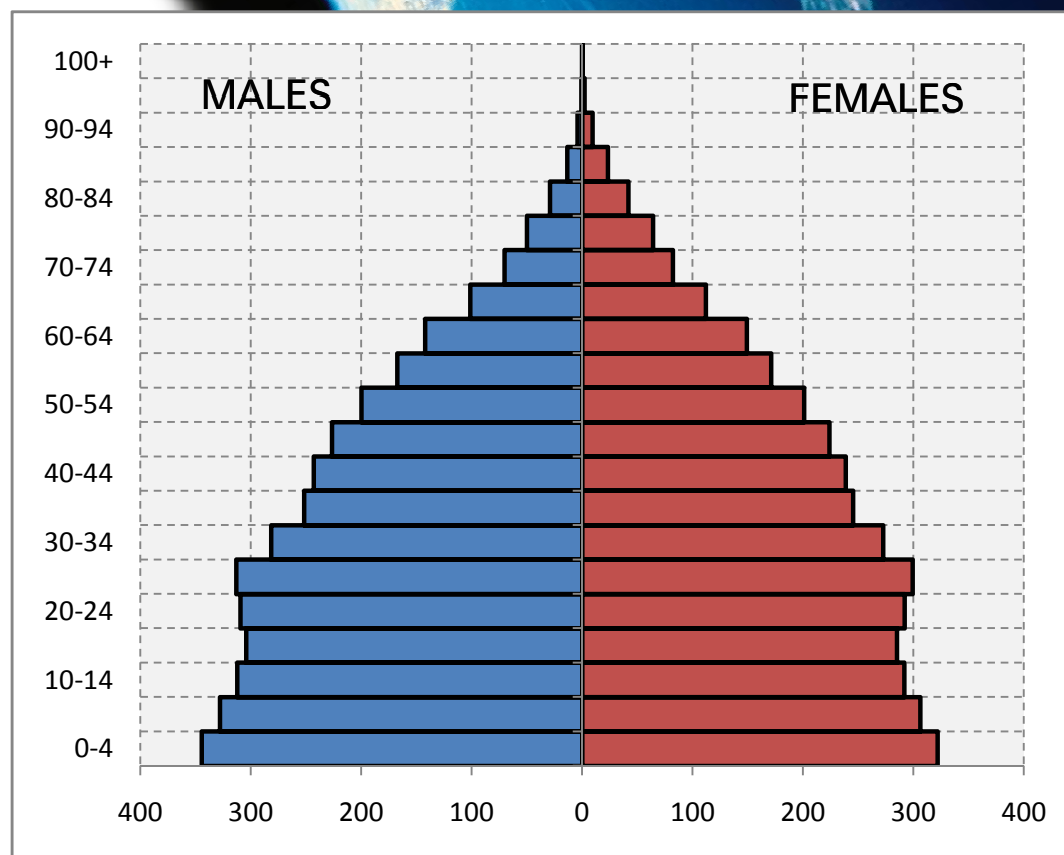
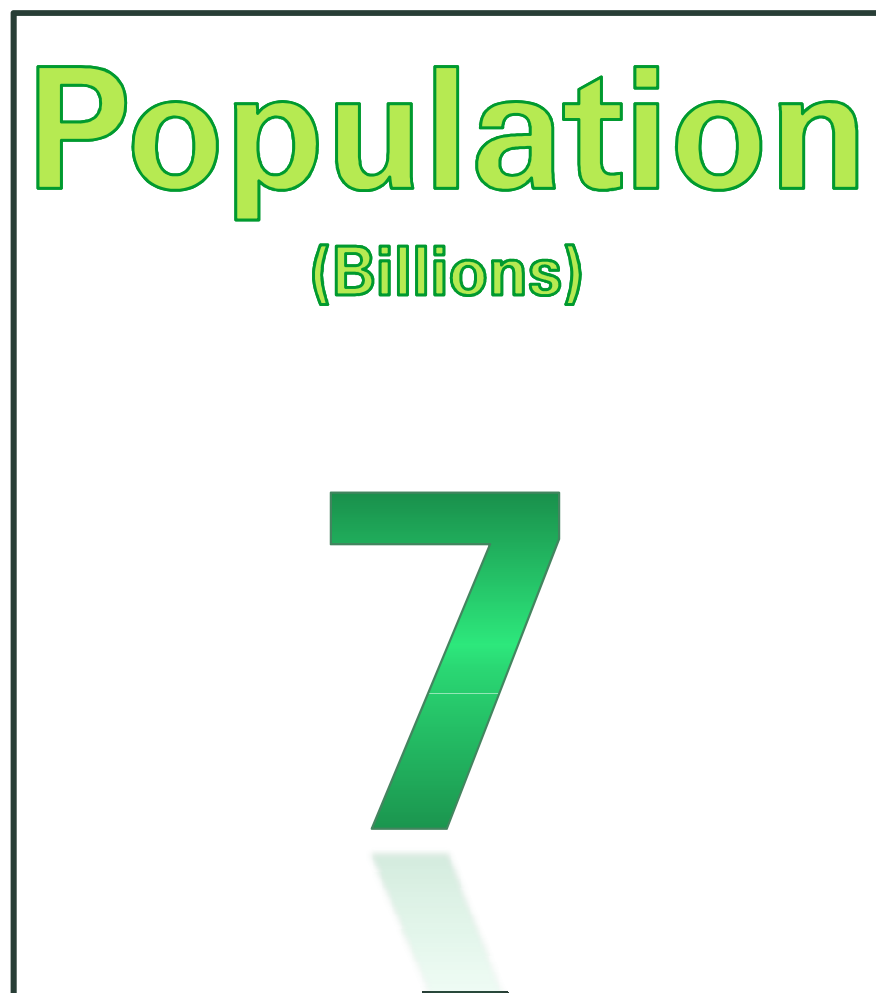
World Fertility Is In Decline

General Public Release



The Globe in Play

2015

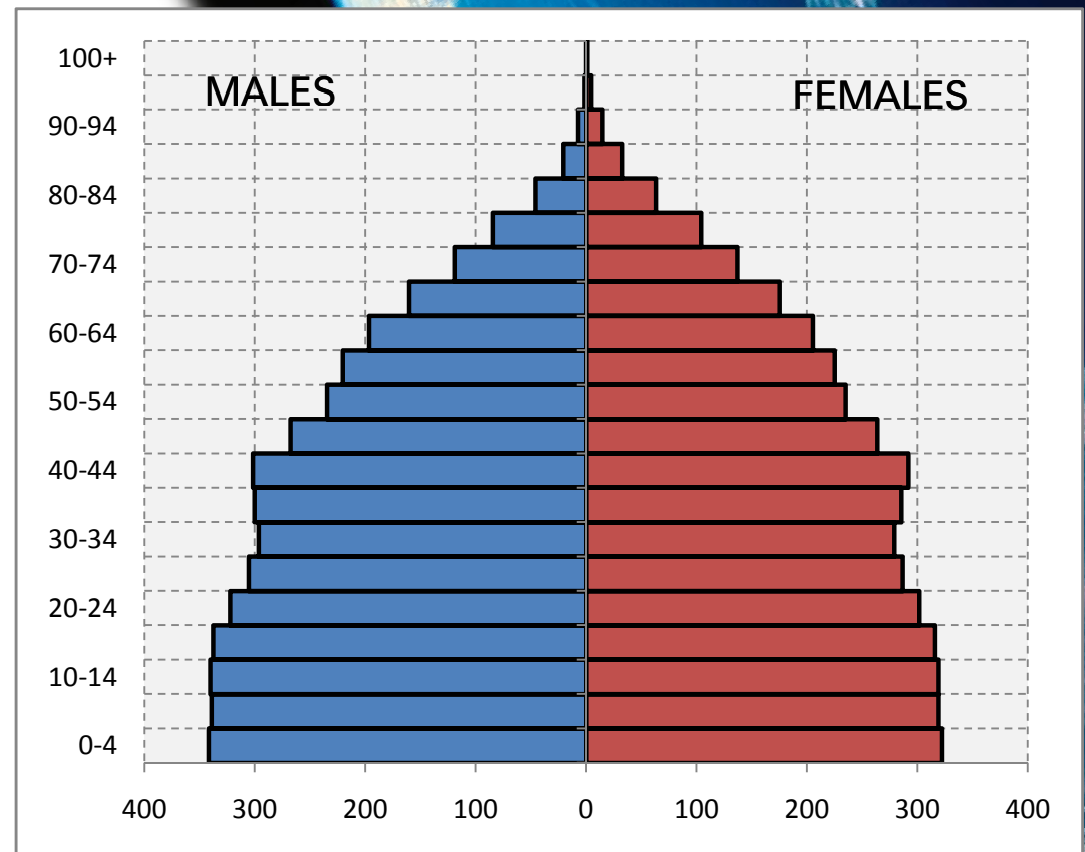


The Globe in Play

2030

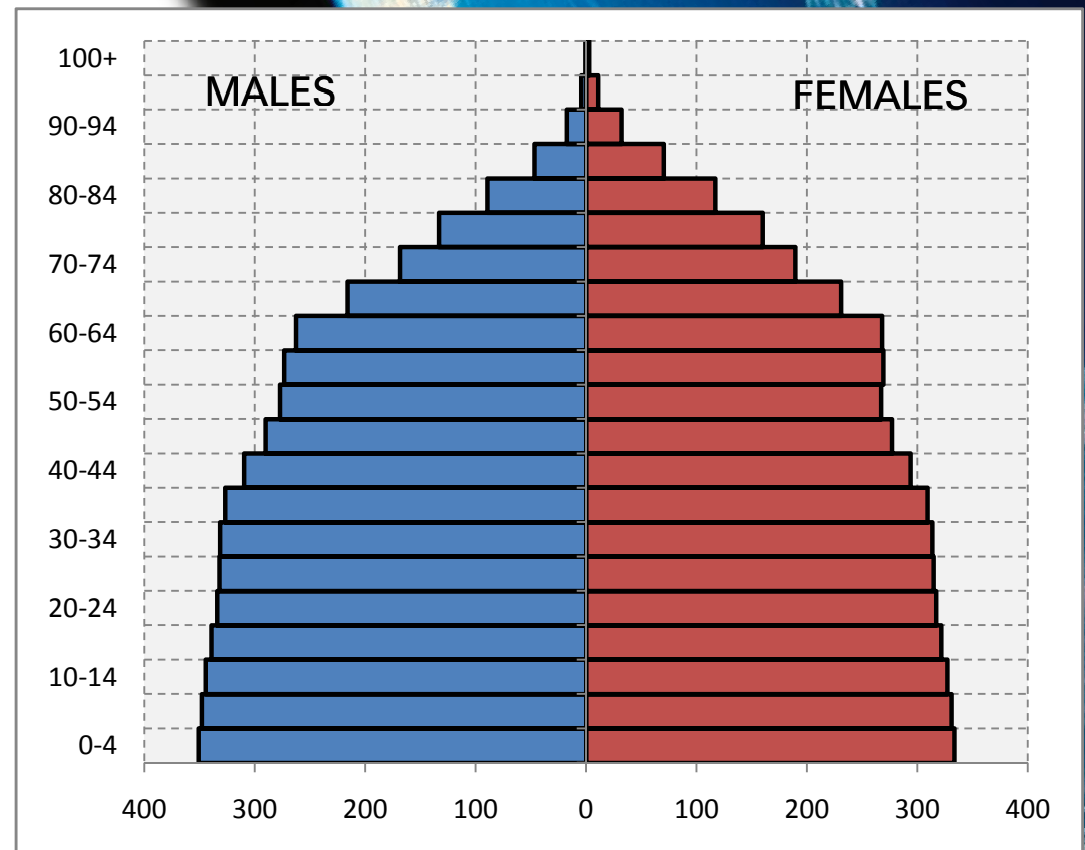
Population
(Billions)

8



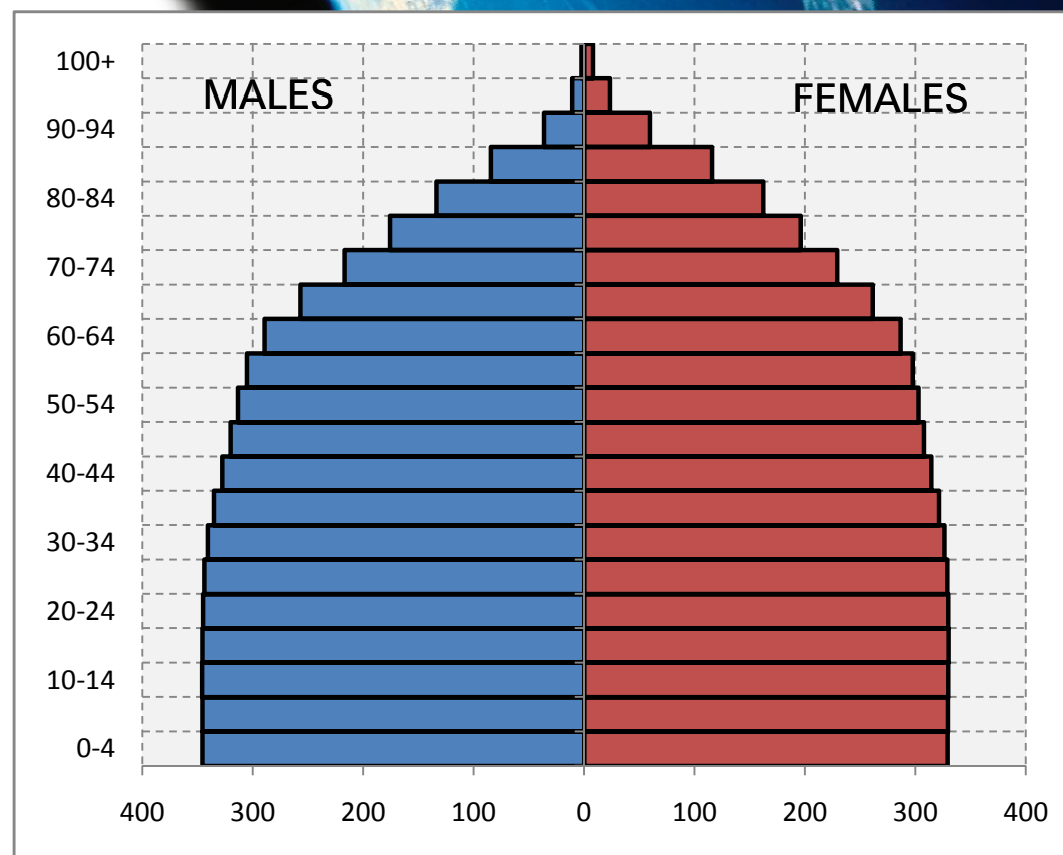
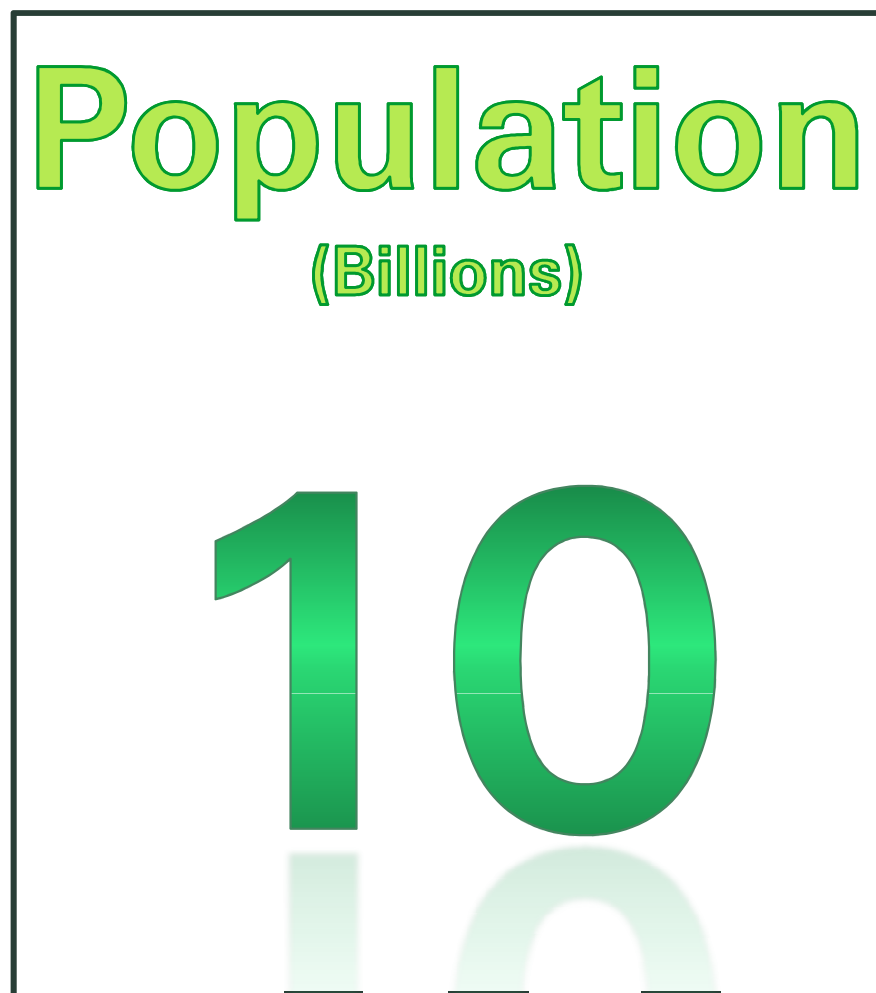
The Globe in Play

2050



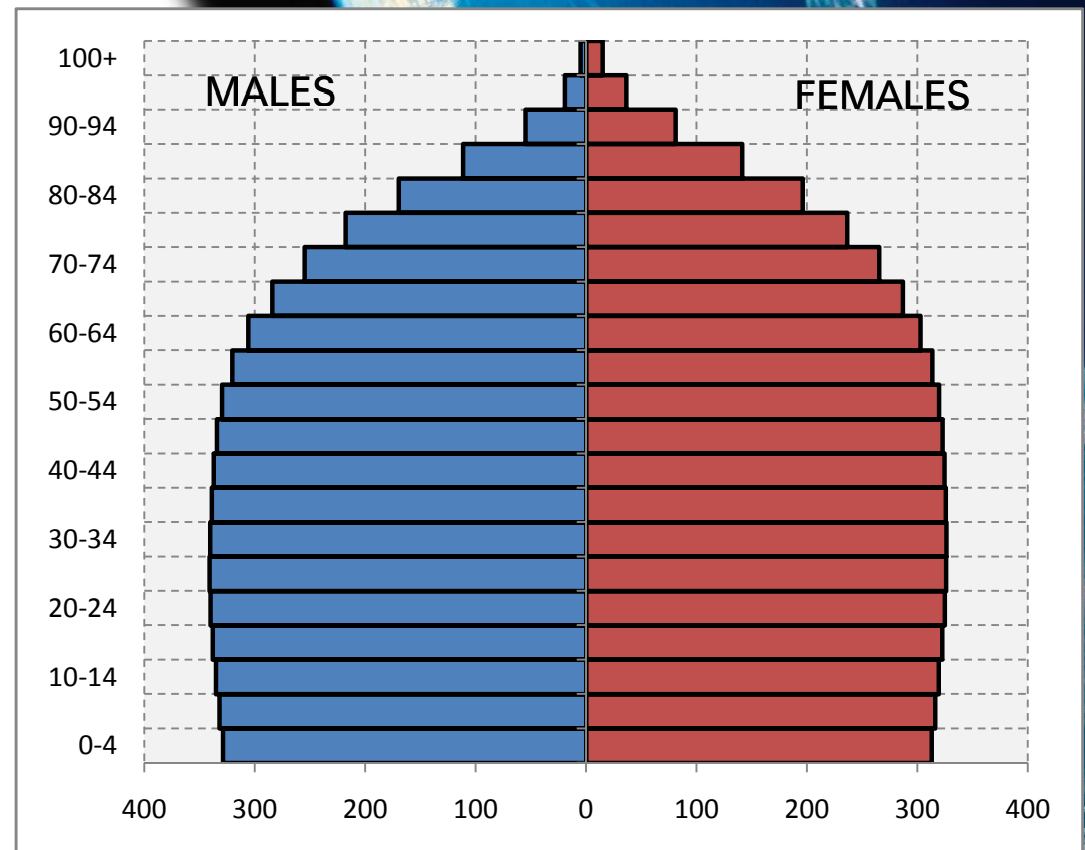
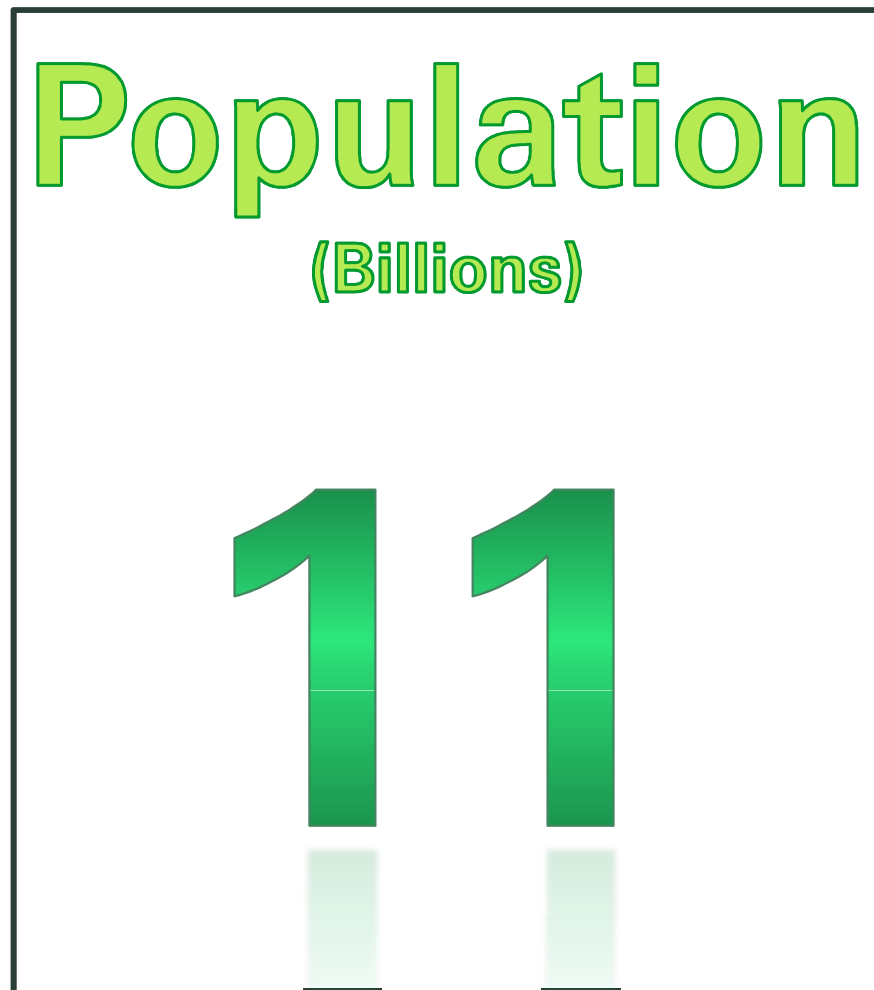
The Globe in Play

2075

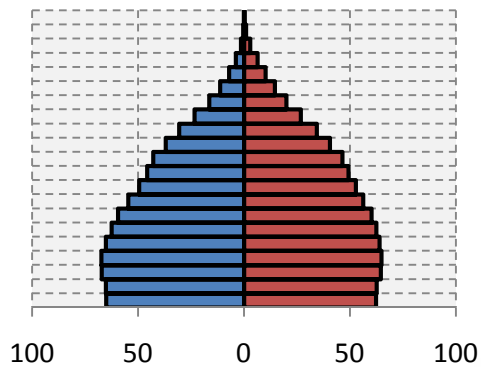


The Globe in Play

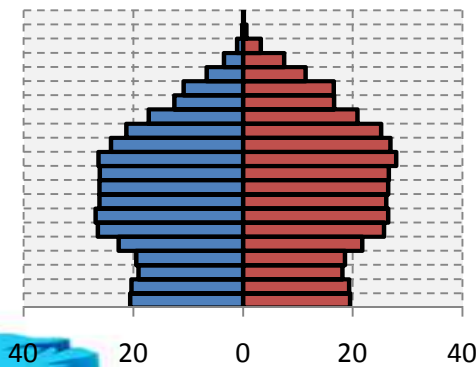
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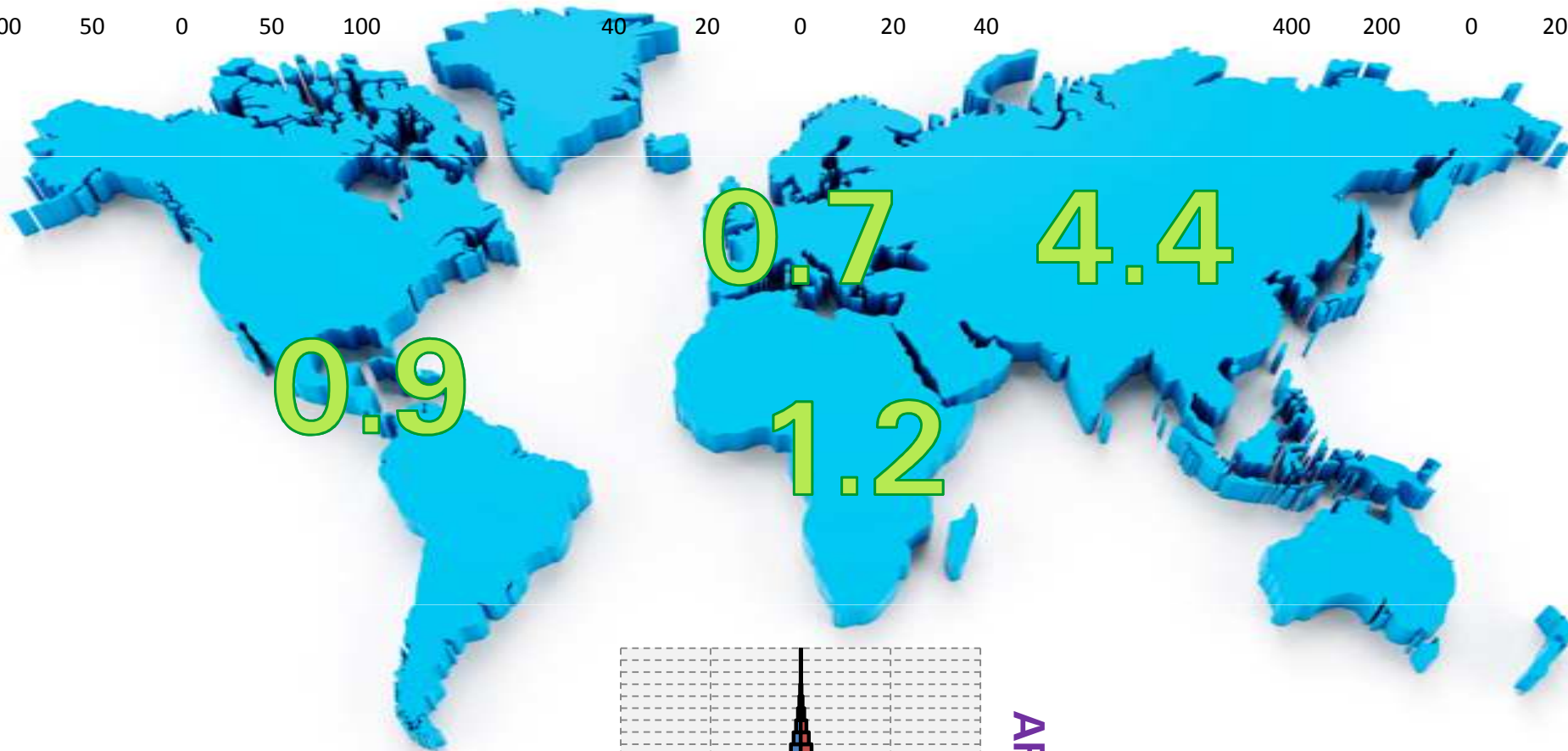
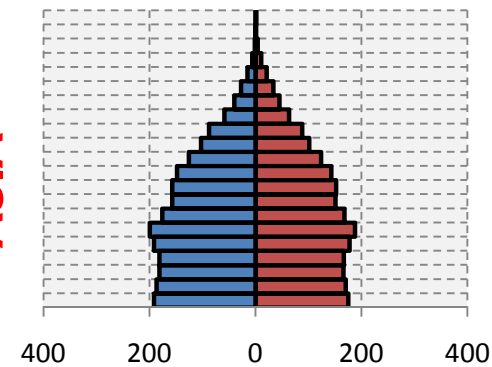
AMERICAS



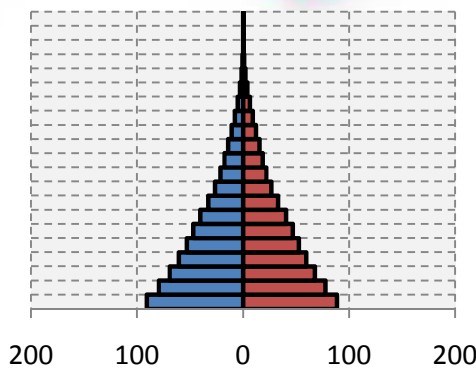
EUROPE



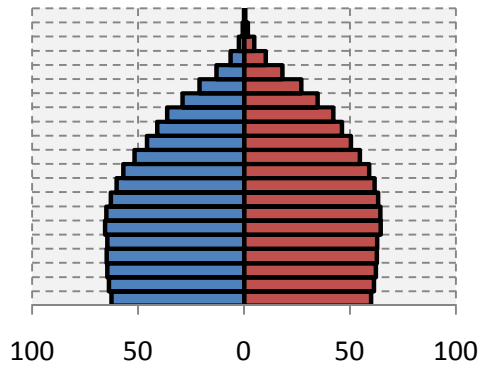
ASIA



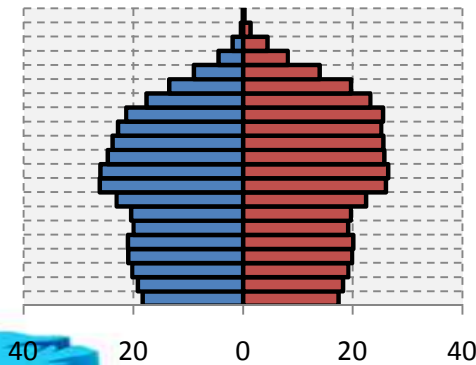
AFRICA



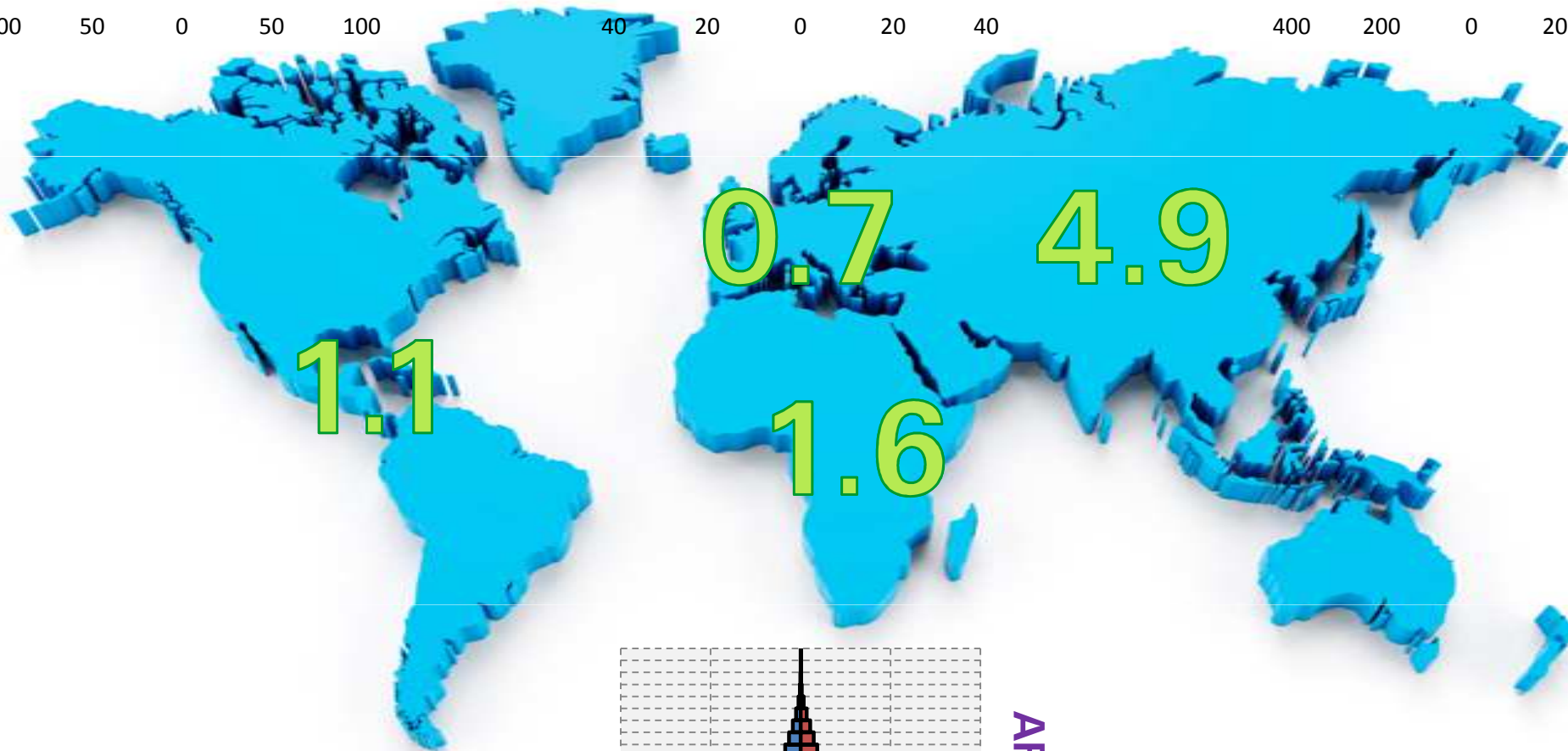
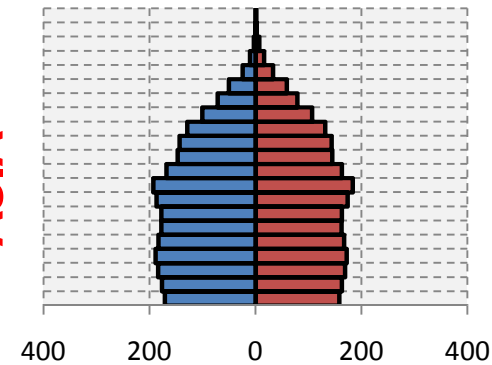
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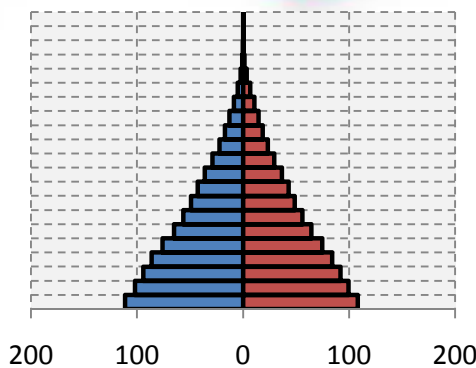
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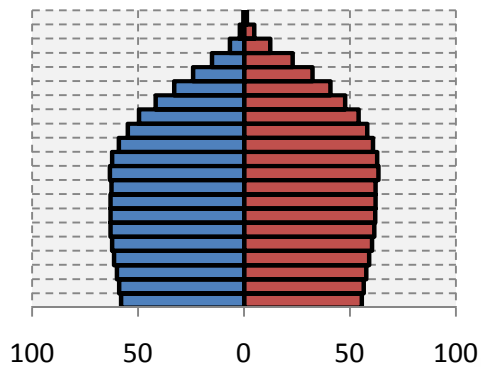
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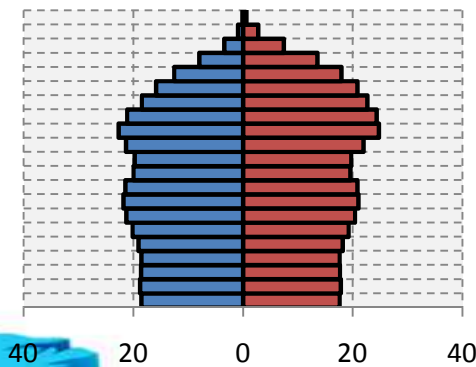
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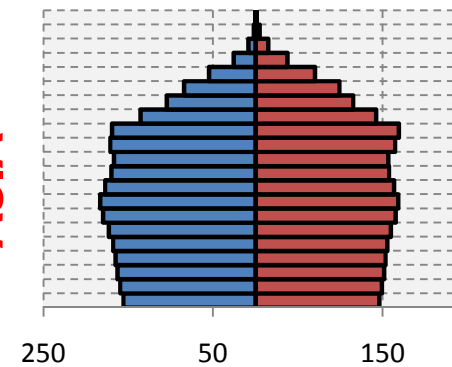
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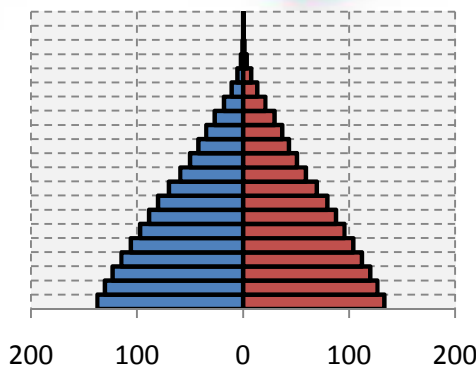
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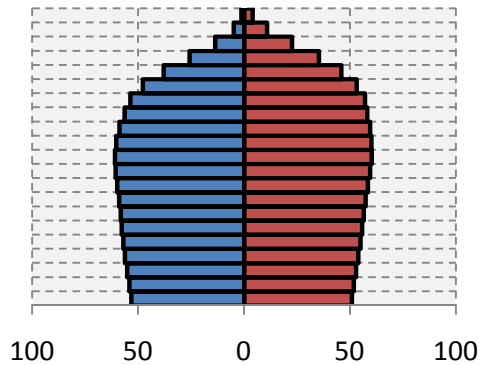
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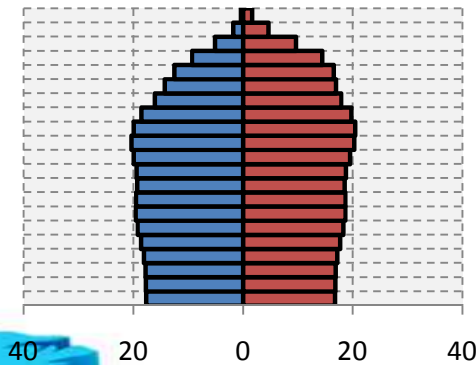
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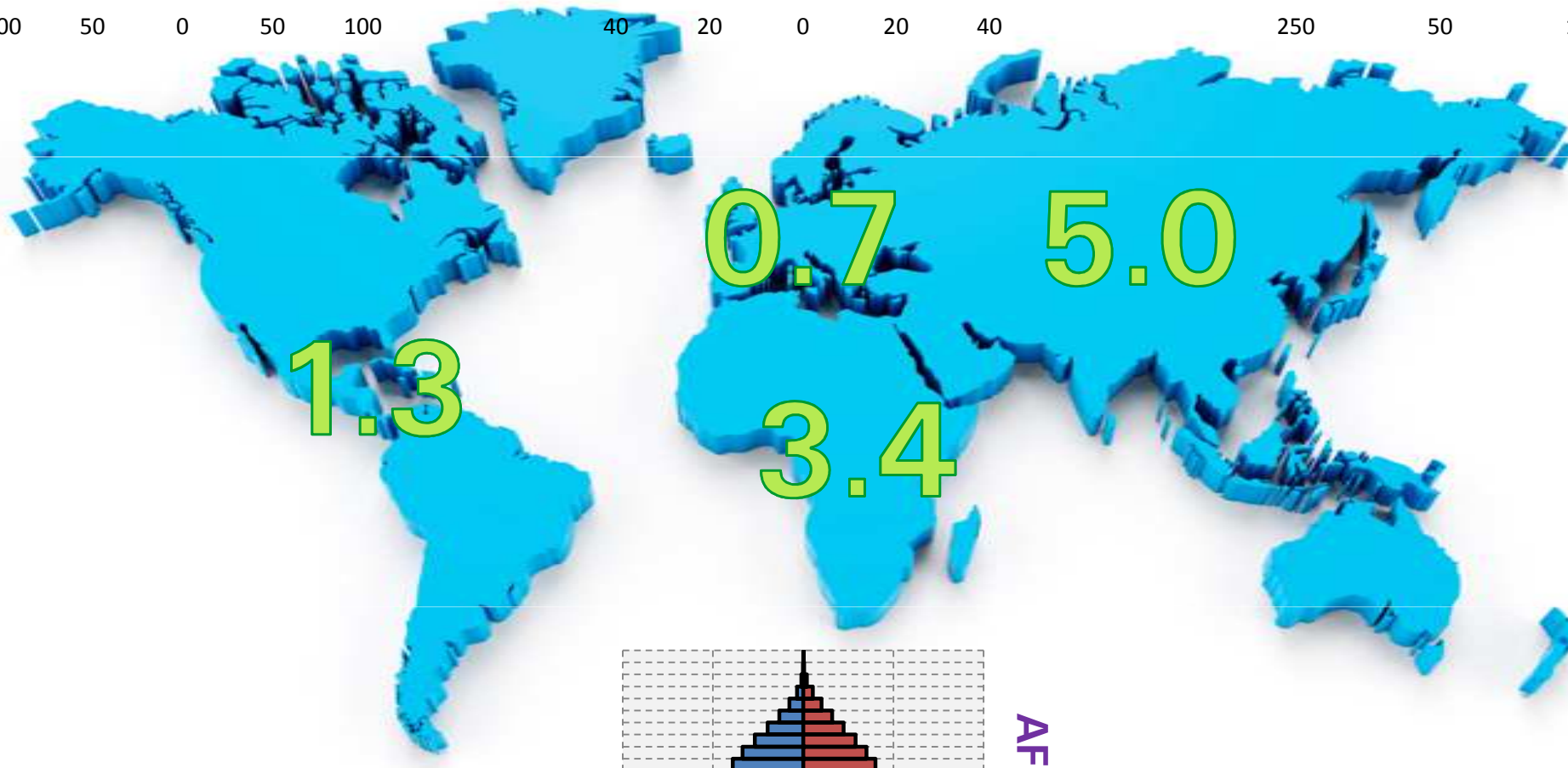
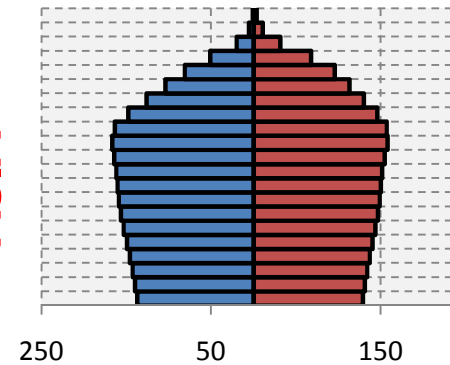
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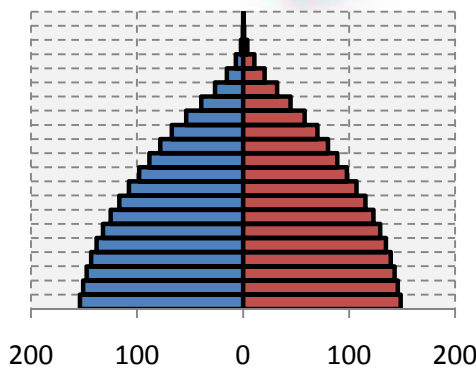
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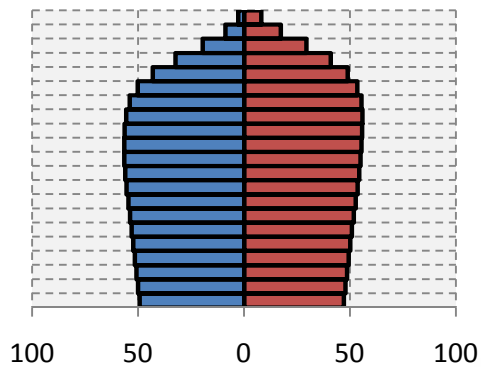
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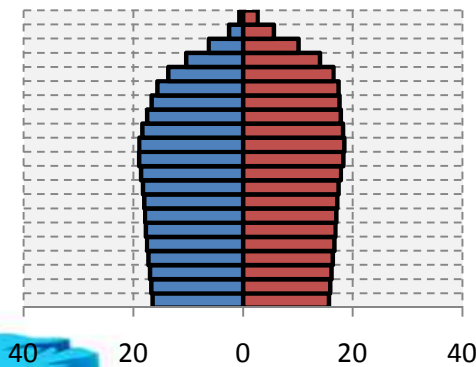
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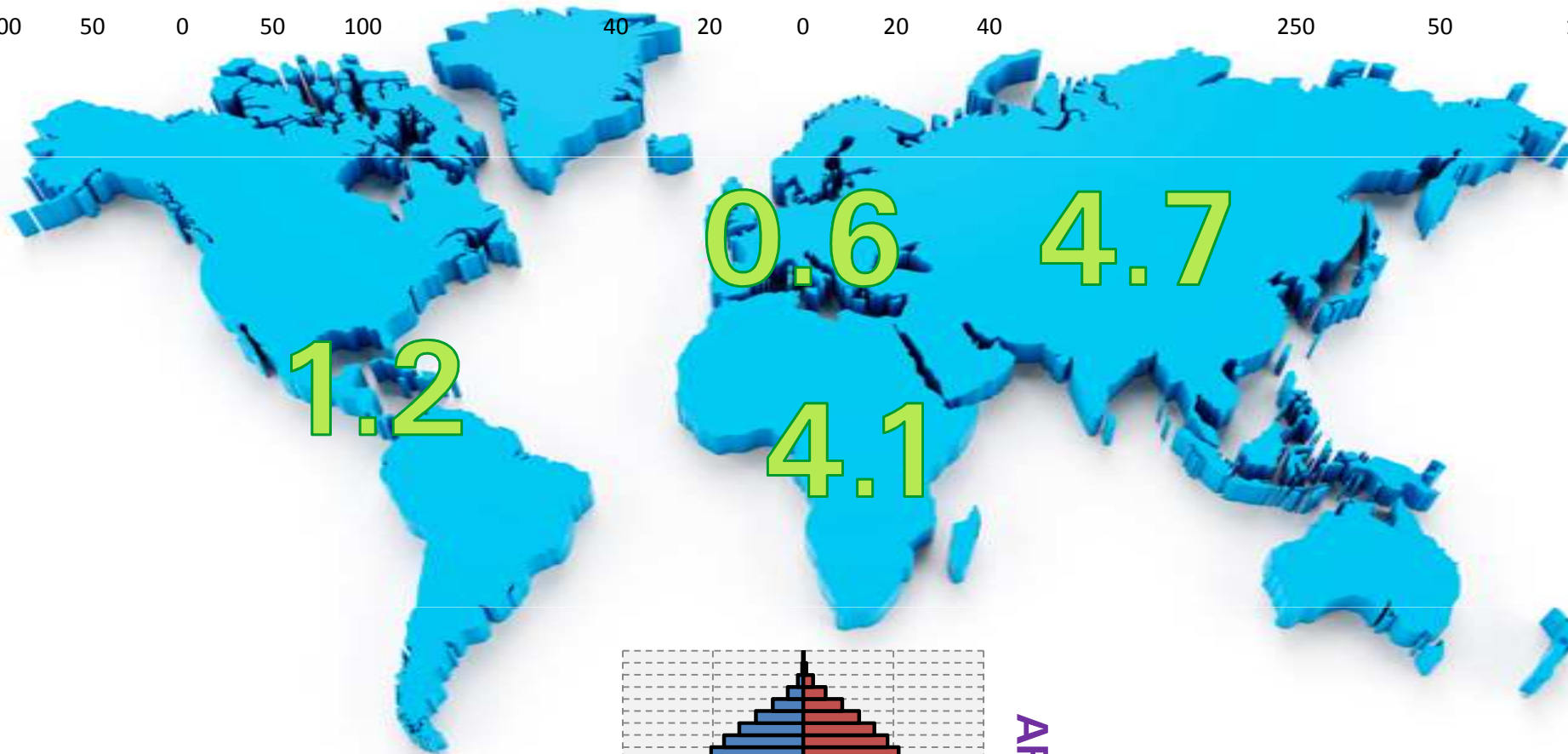
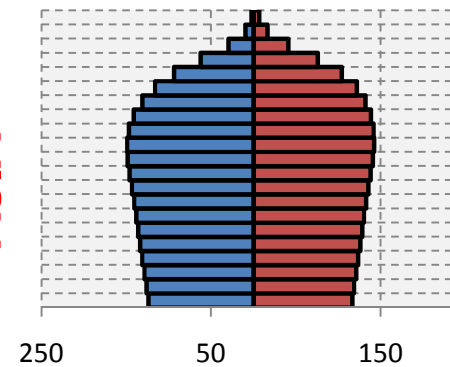
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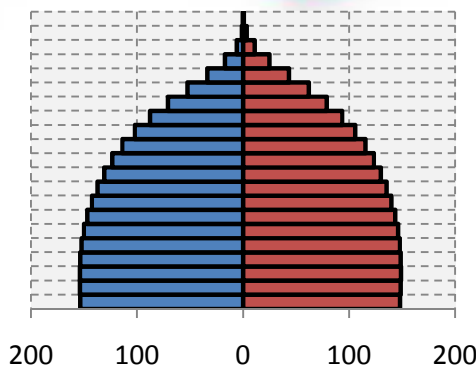
EUROPE

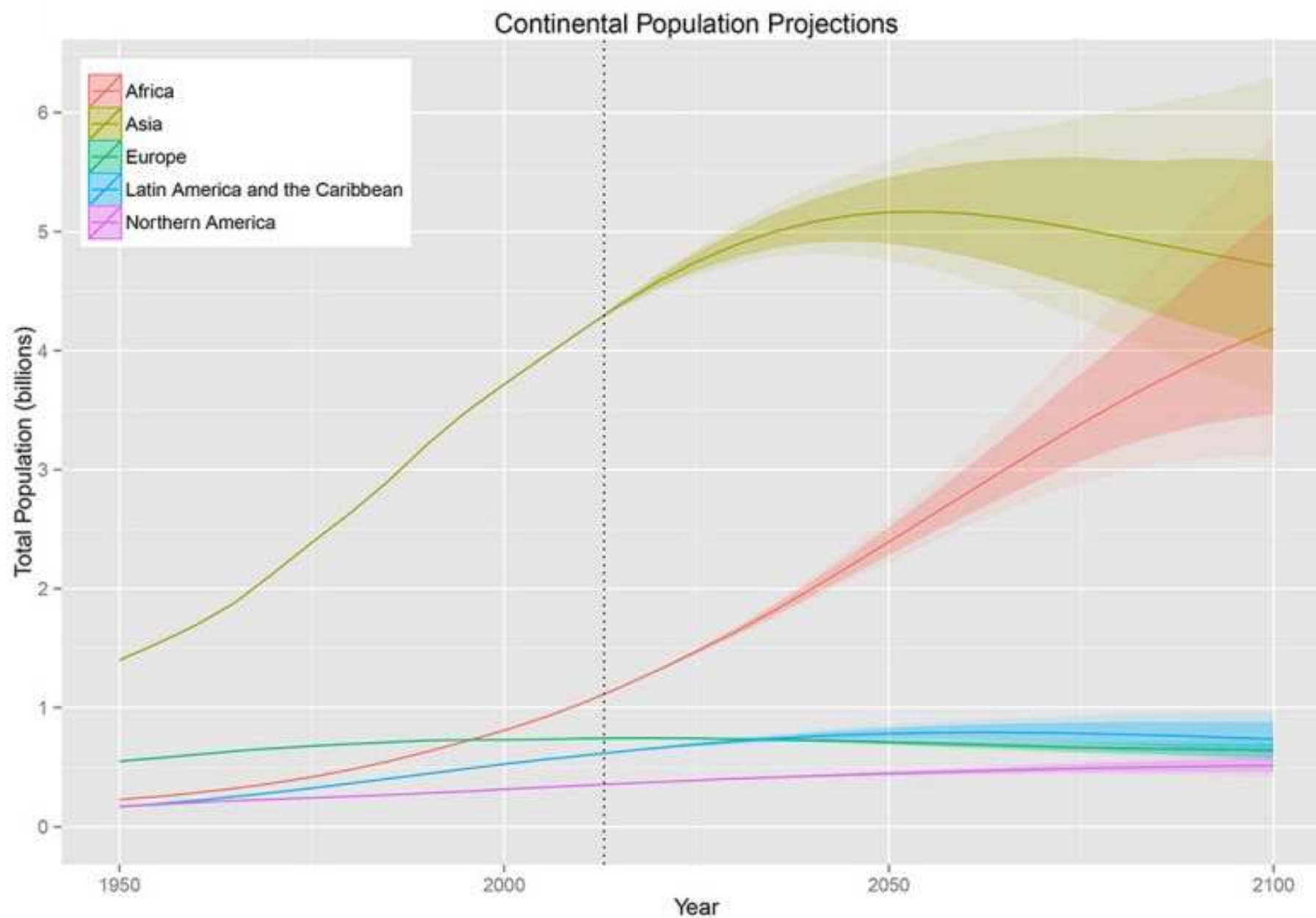


ASIA



AFRICA

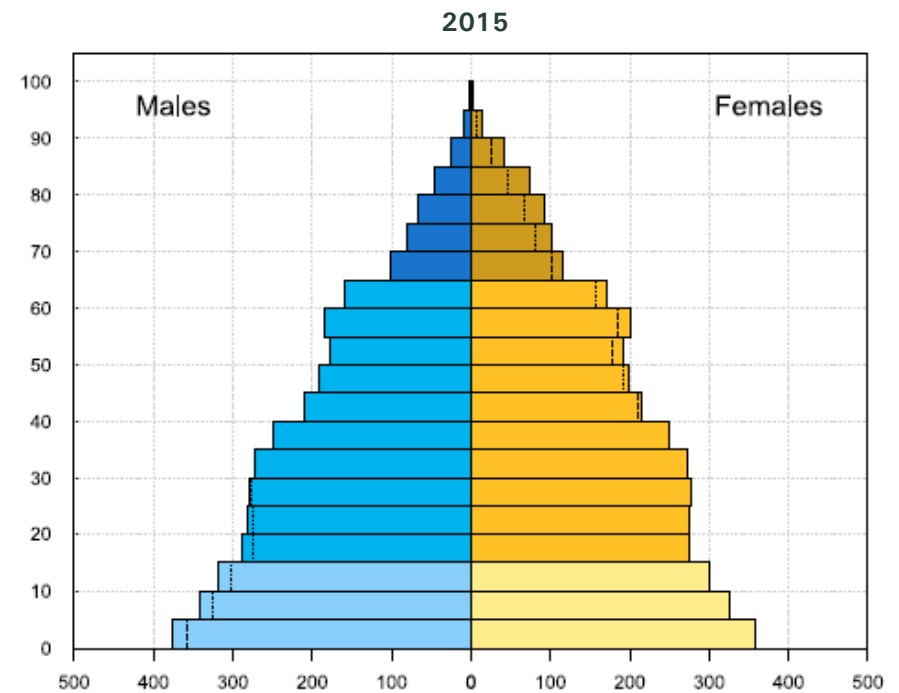




Israel

Population
(Millions)

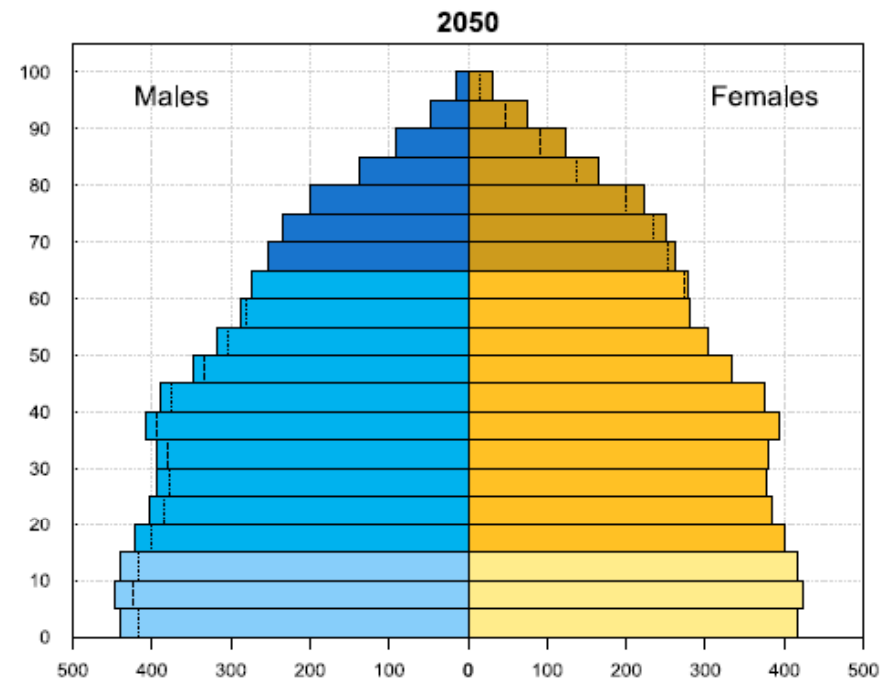
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Israel

Population
(Millions)

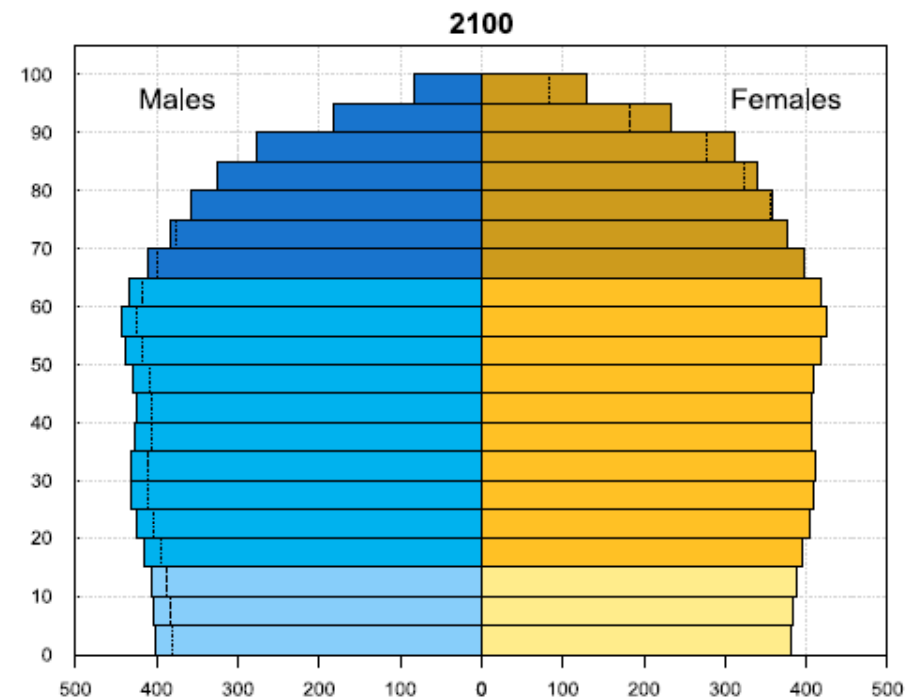
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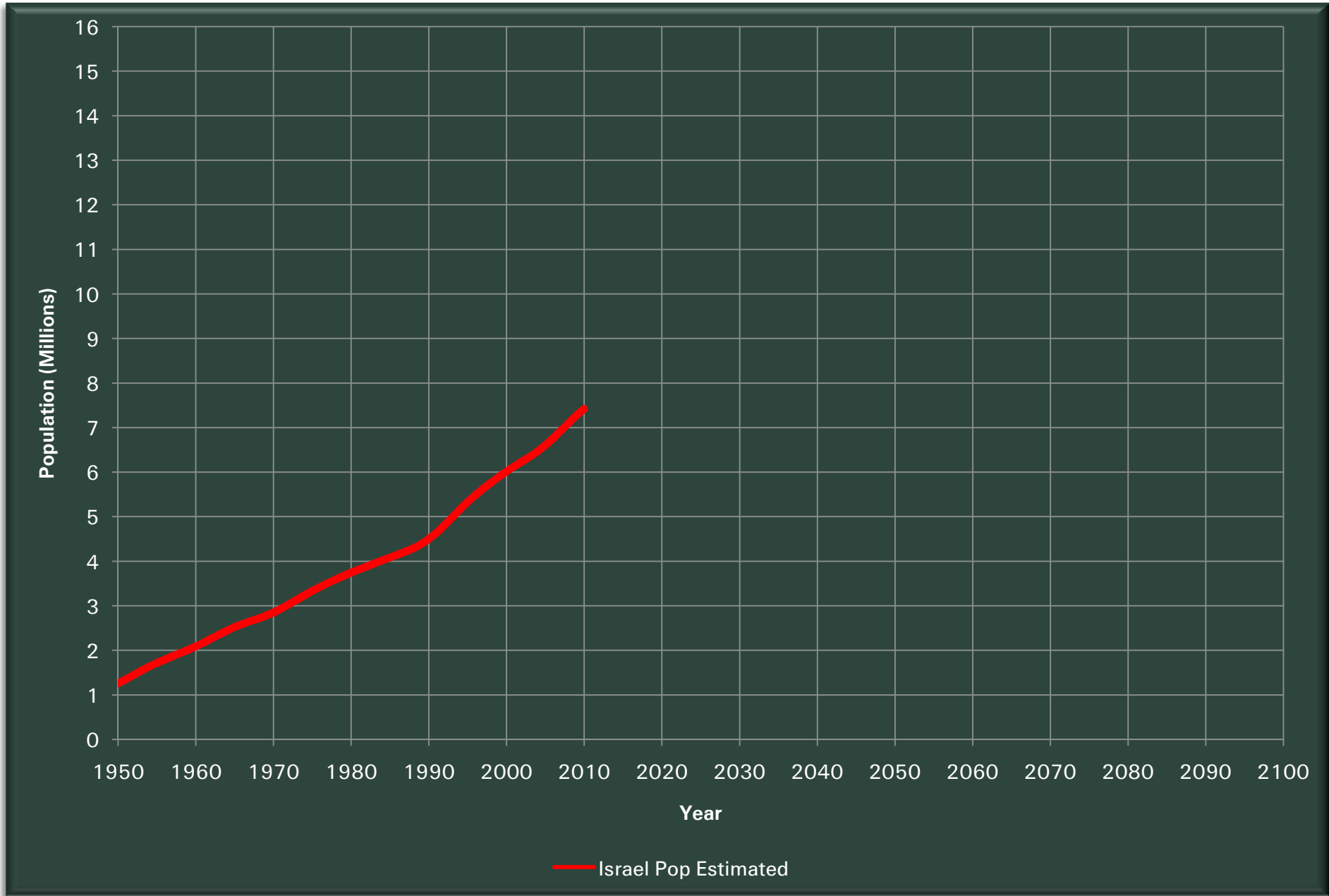


Israel

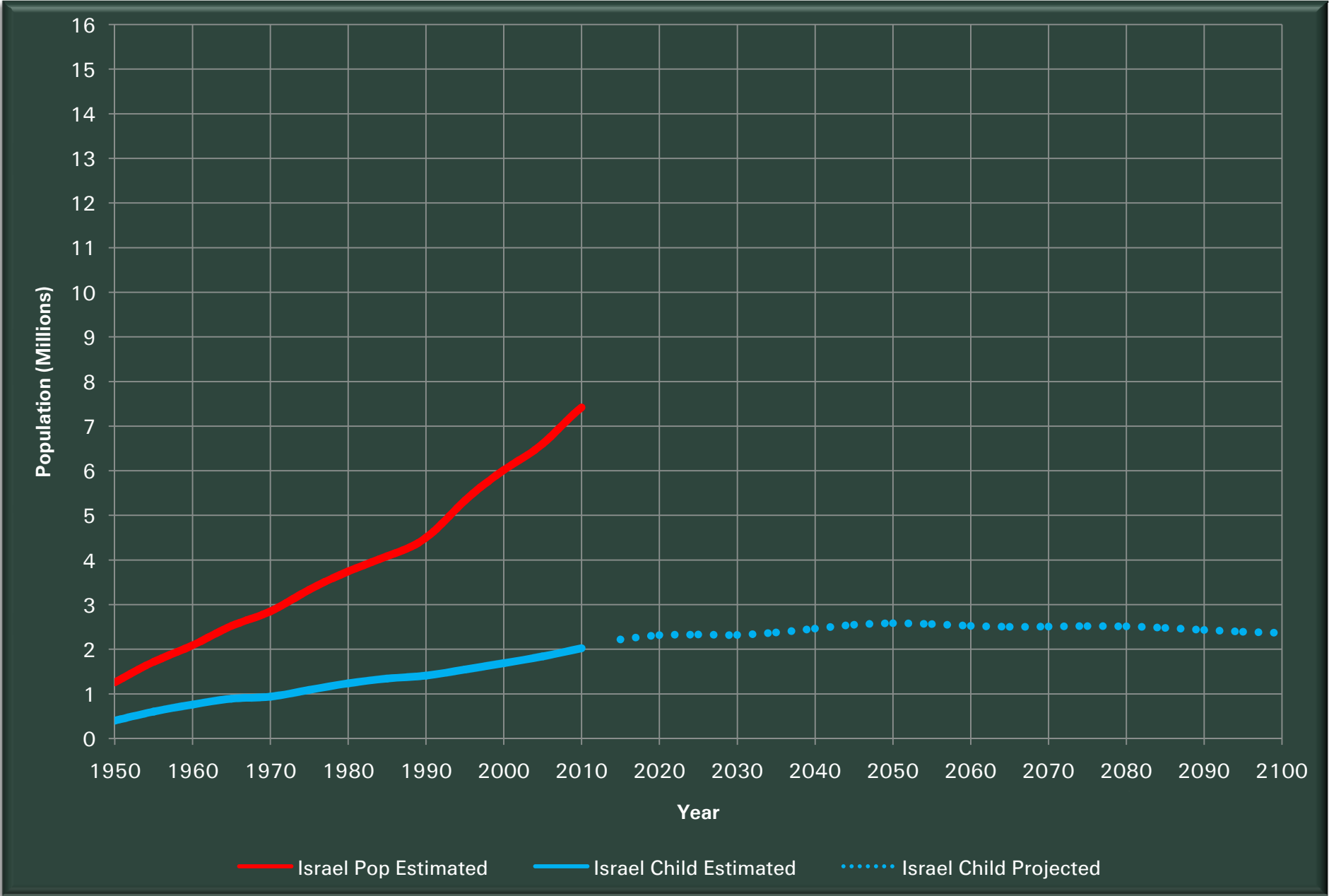
Population
(Millions)

15

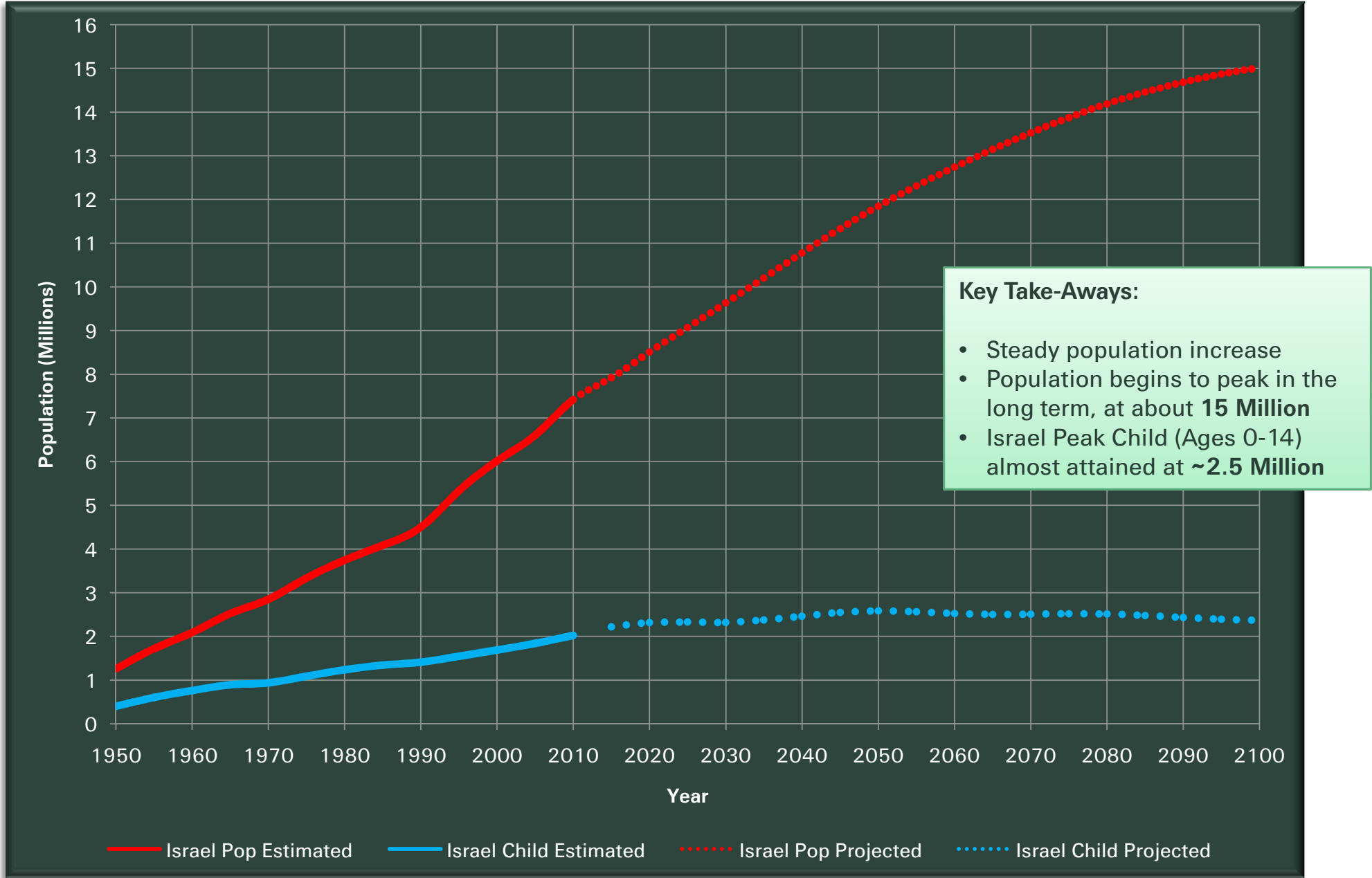




Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.



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Source: United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, DVD Edition.



Economics

A satellite map of Europe and surrounding regions, including parts of North Africa and the Middle East. The map is dark blue for water and green/brown for land. Three red circular callouts are overlaid on the map, each containing text about demographic and economic challenges.

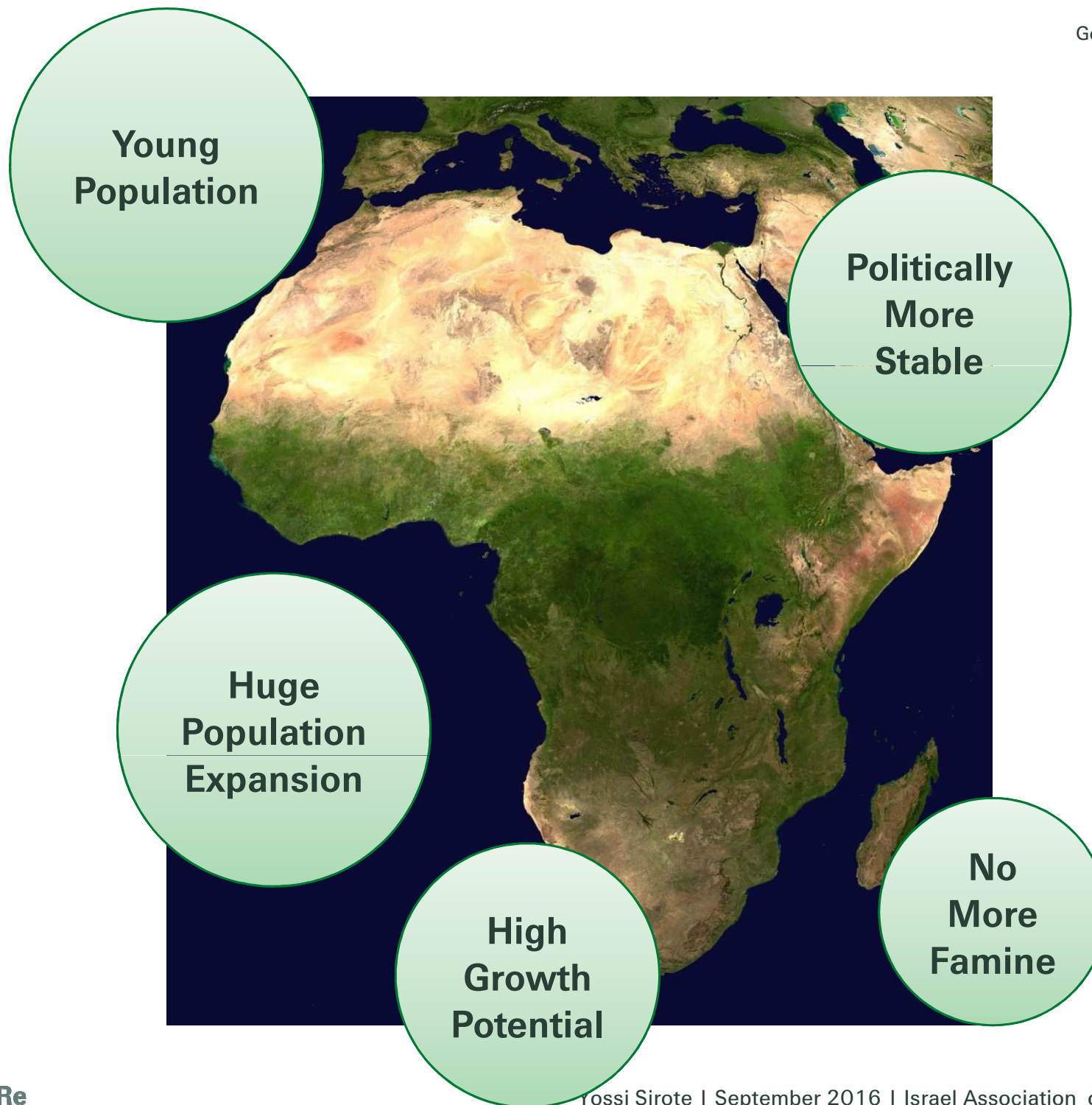
**Aging
Population**

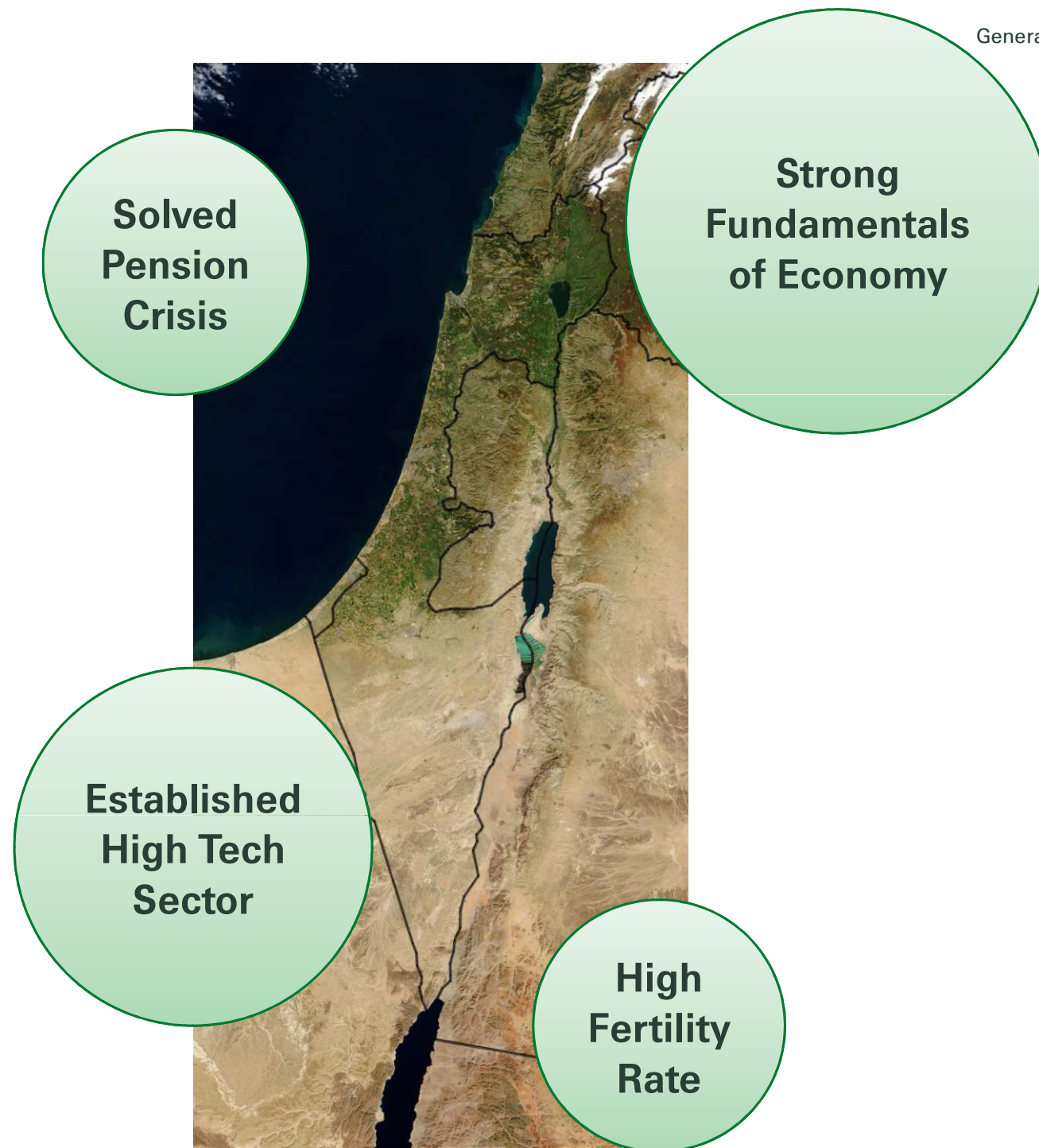
25% of
Population
> 65 by
2040

**Unrealistic
Pension
Promises**

**Welfare &
Regulation
Choking
Economy**

**Shrinking
Workforce**
-20% by
2040





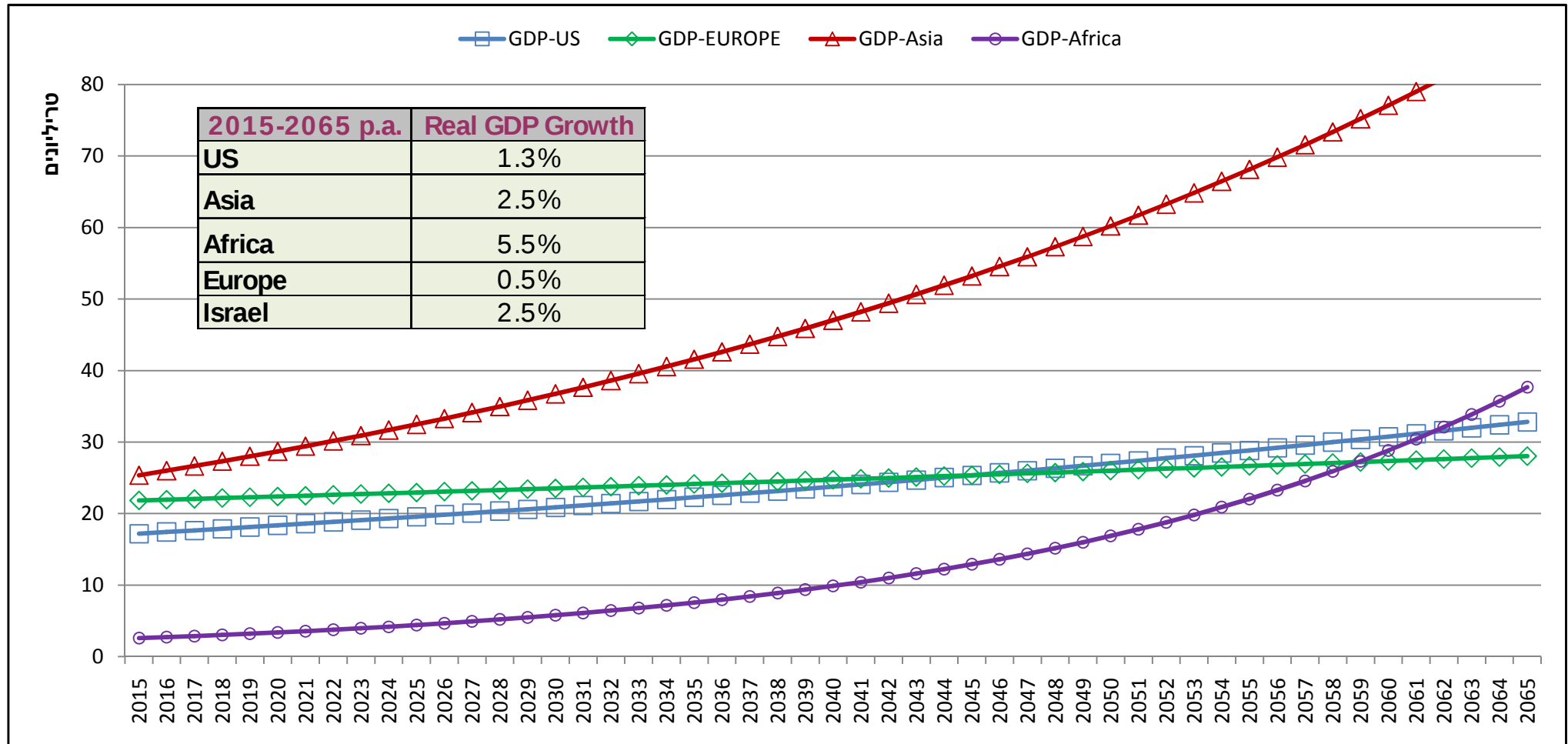
Long-Term Projections of GDP

Constant US\$ (Trillions)

2015-2065

General Public Release

Yossi's Projections

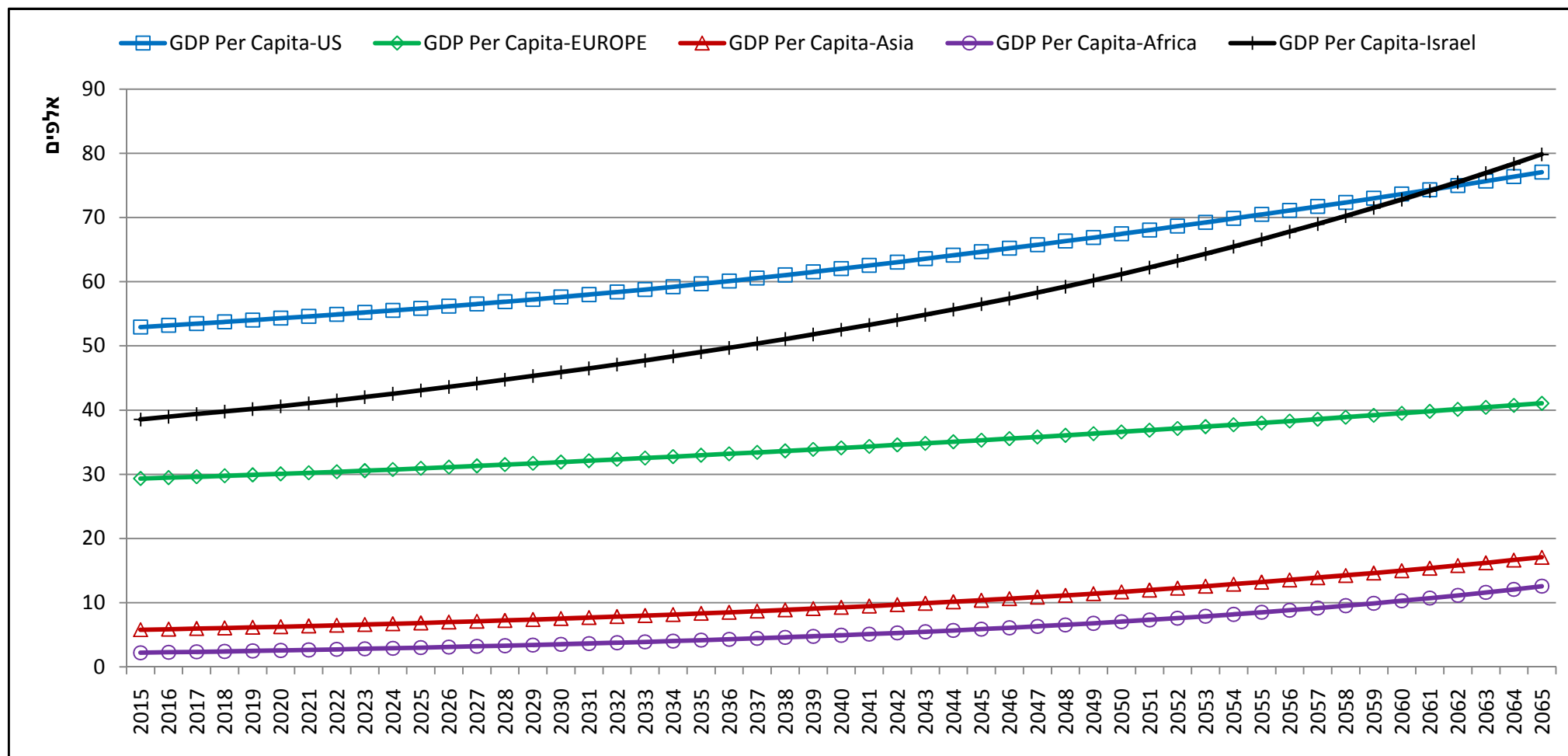


Long-Term Projections of GDP Per Capita

Constant US\$ (Thousands)

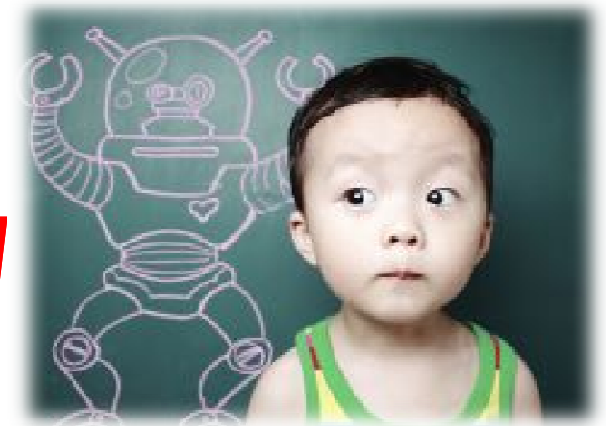
2015-2065

Yossi's Projections



2015-2065 p.a.	Real GDP Growth	Population Growth	Per Capital GDP Growth	😊
US	1.3%	0.6%	0.8%	😊
Asia	2.5%	0.3%	2.2%	😊
Africa	5.5%	2.0%	3.6%	😊
Europe	0.5%	-0.2%	0.7%	😞
Israel	2.5%	1.1%	1.5%	😊

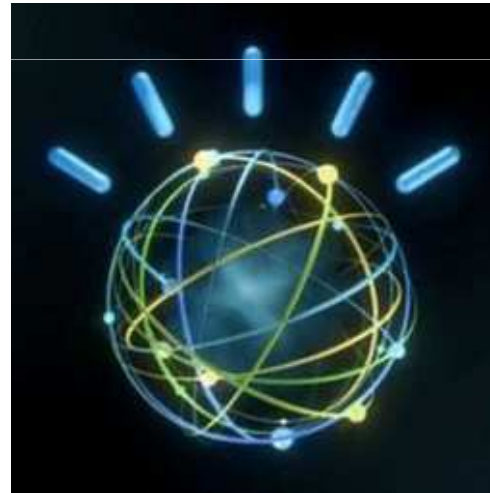
The Makeup of Society As We Know It Will Change **Fundamentally**





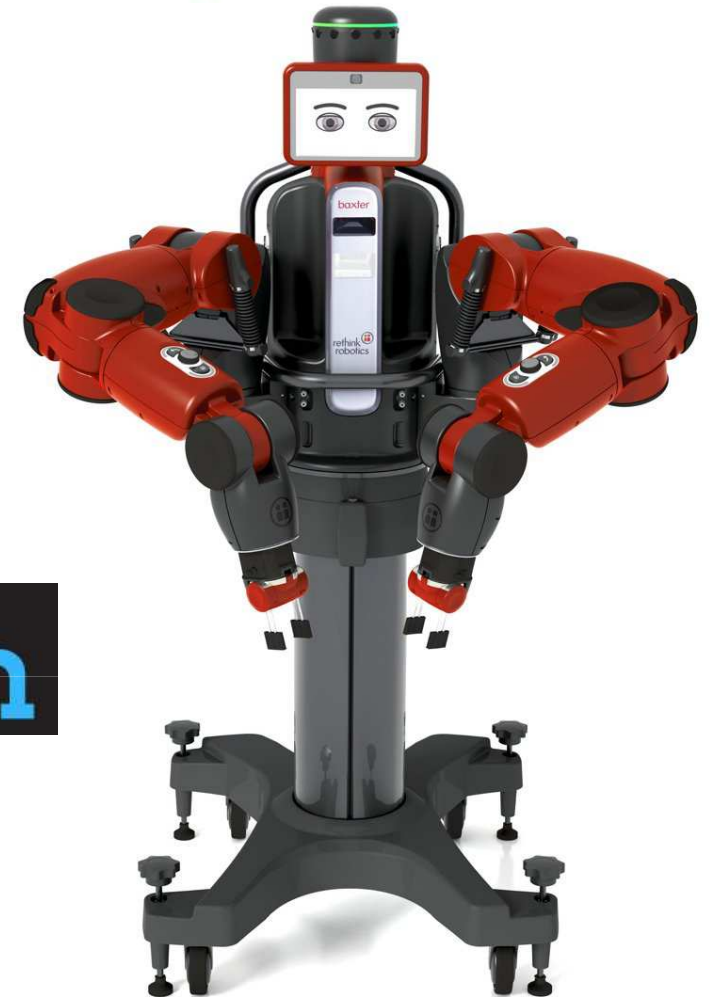
Technology

The Future Workforce Is Already Here



IBM Watson

Meet Baxter
by Rethink Robotics



Sources:

"ASIMO 4.28.11" by Vanillase - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons

"Watson's avatar" by Source. Licensed under Fair use via Wikipedia

Baxter Photo from Rethink Robotics website

ASIMO



General Public Release

NAO

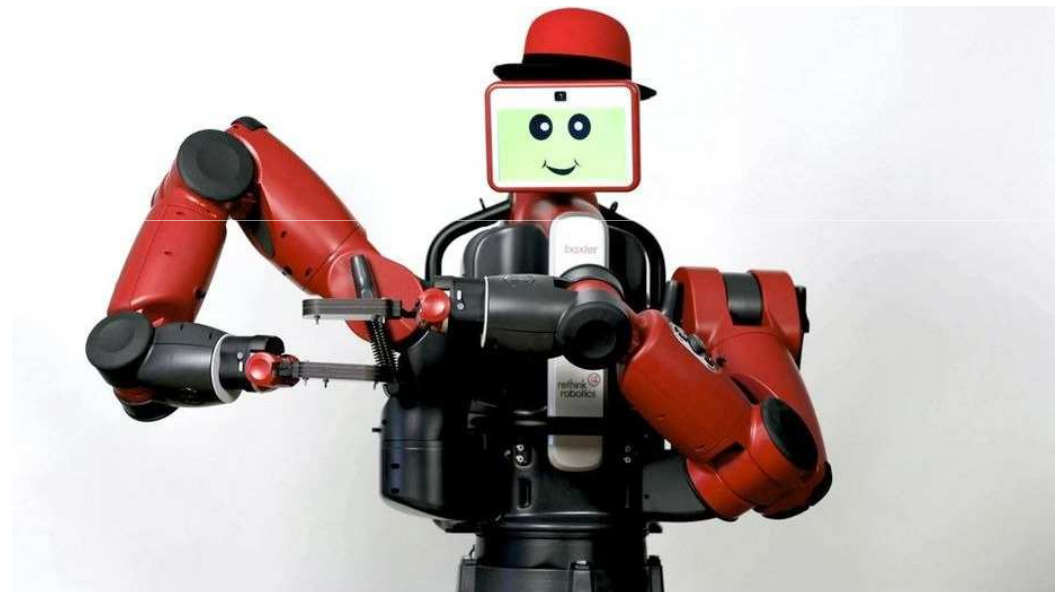
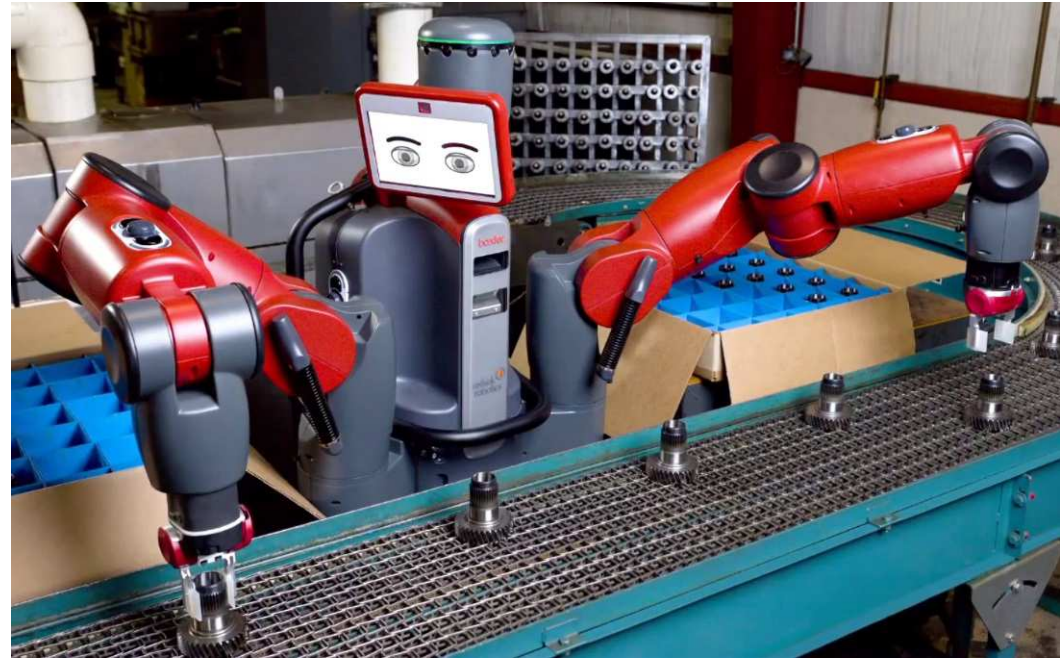


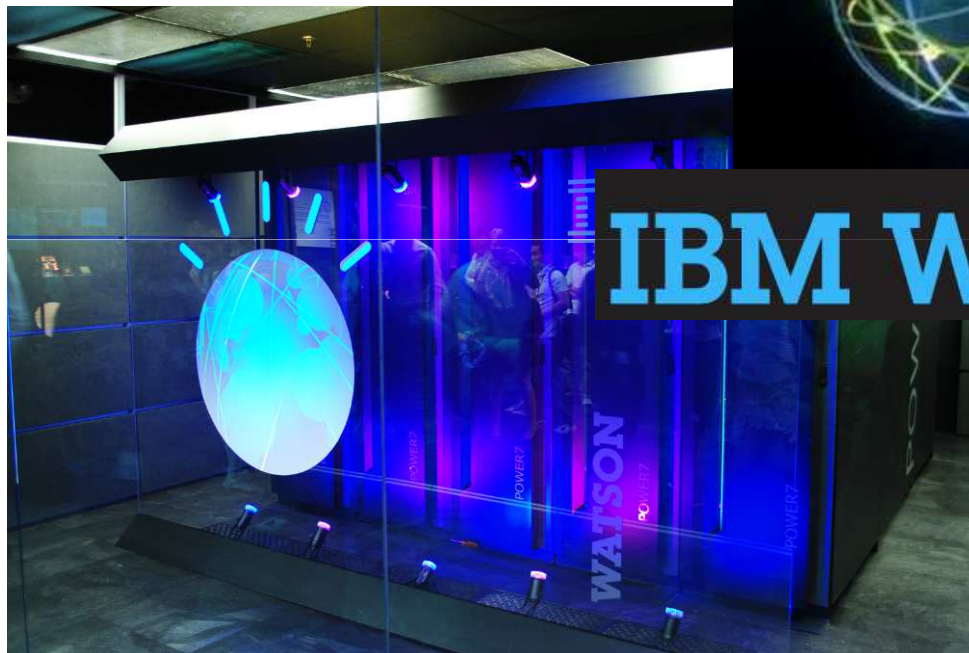
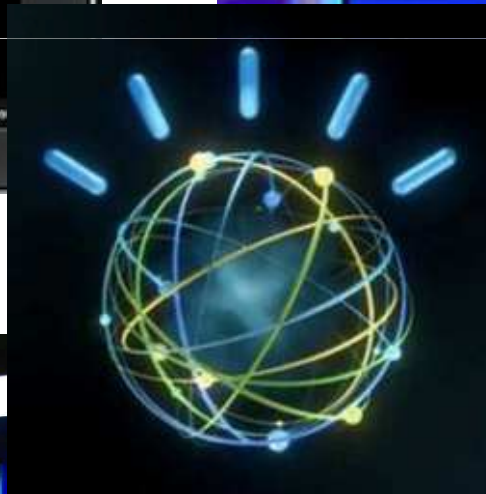
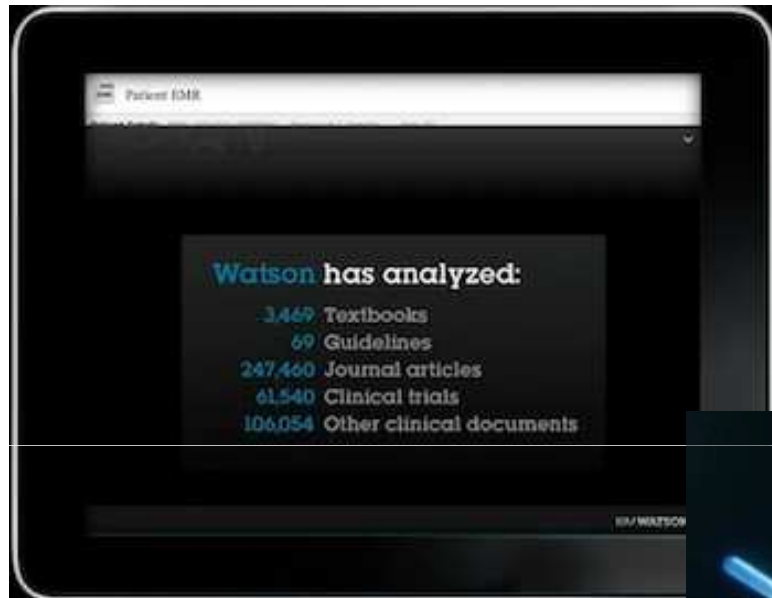
Hubo



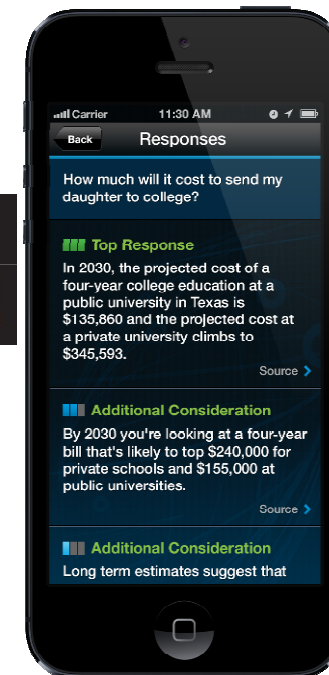
Meet Baxter

by Rethink Robotics



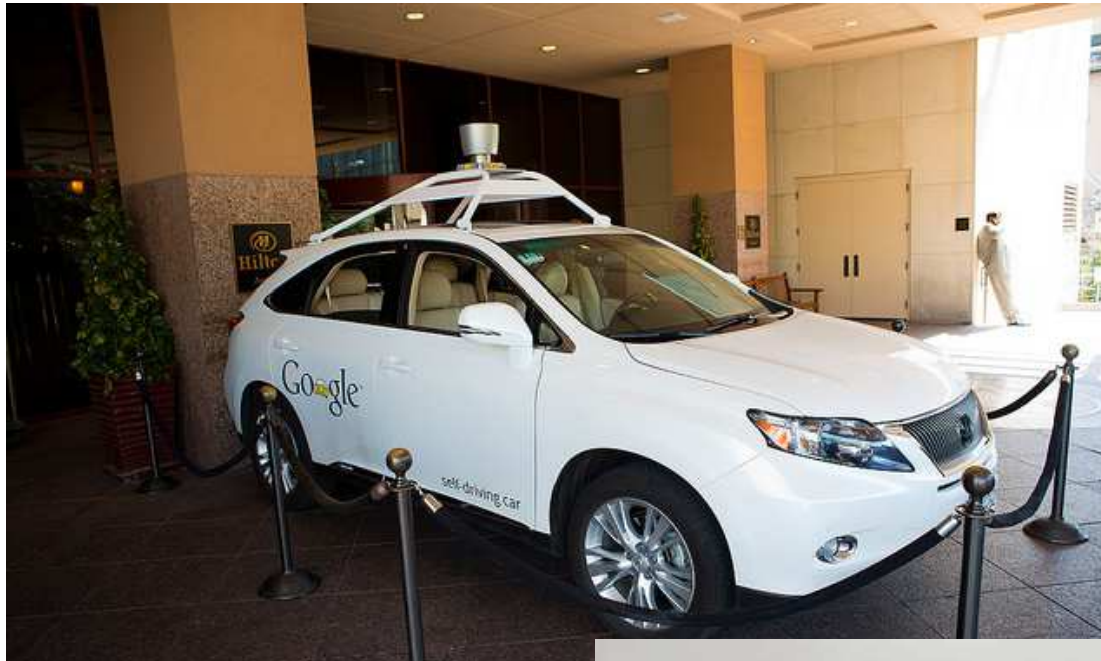


IBM Watson



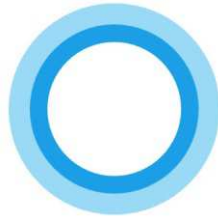
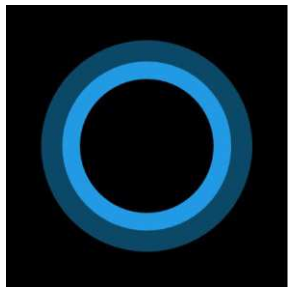
Driverless Cars: Transformative Technology Impacting All Industries

General Public Release



Intelligent Personal Assistant

General Public Release

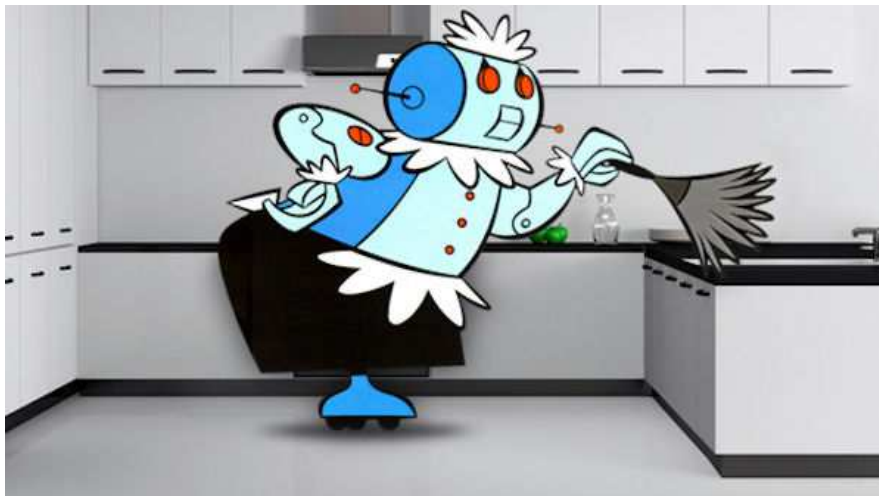


SILVIA
Intelligence On Command



Other Important Technologies

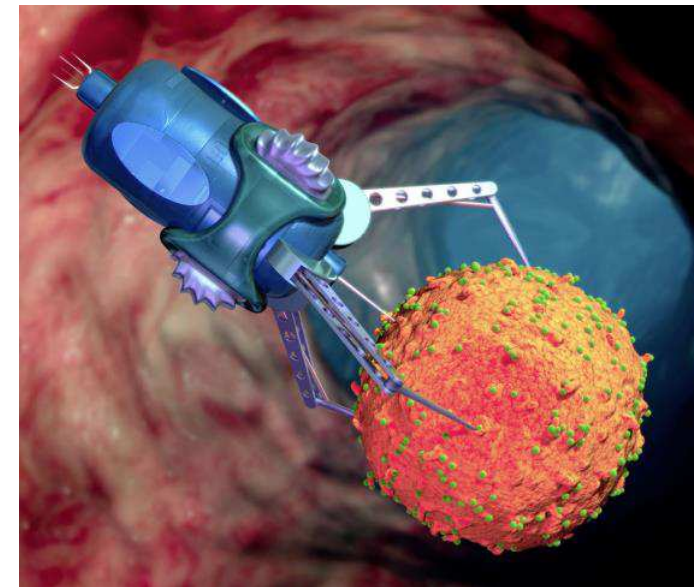
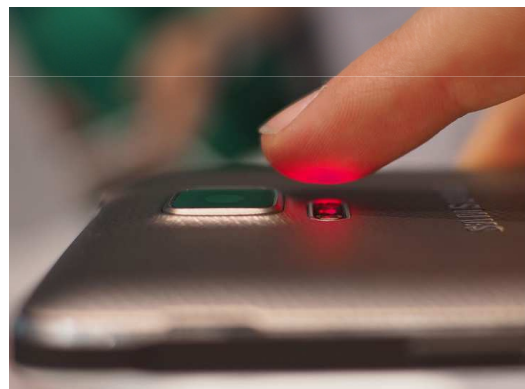
- Smart Homes
- Domestic Robots
- Machine Underwriting
- 3D Printing
- Cyber Risks
- Nanotechnology



Source: "Roomba original" by Larry D. Moore. Licensed under CC BY-SA 3.0 via Wikimedia Commons

Medical Technological Innovations In Development

- Surgical & Humanoid Robots
- Genomics & Personalized Medicine
- Body Sensors
- Medical Tricorders & Portable Diagnostics
- Flying Ambulance Drones
- Nanotechnology



The Future

Dystopia

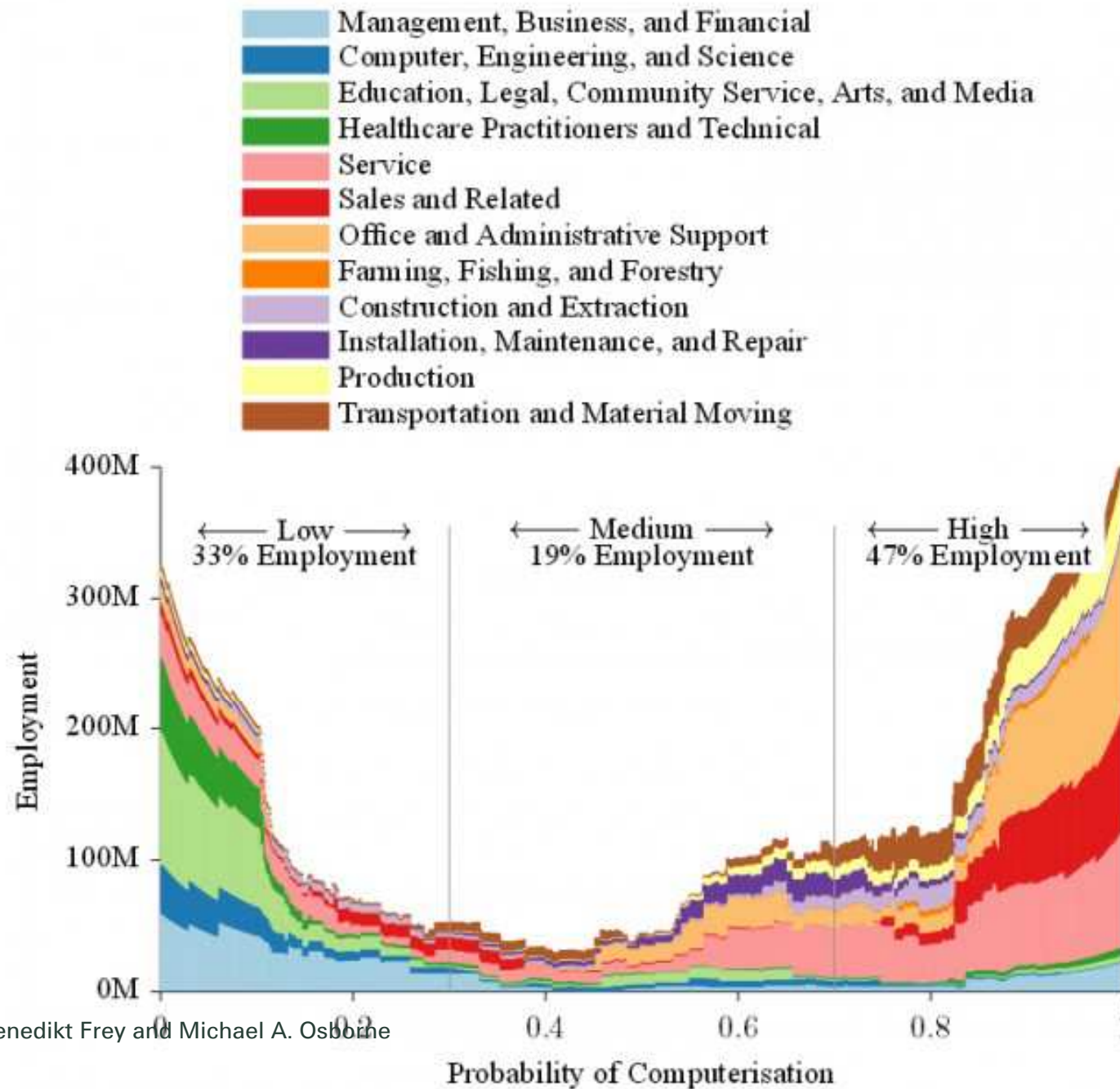
Before

Utopia

Threat of Computerization

General Public Release

Oxford Study: 47% of US Jobs Under Threat

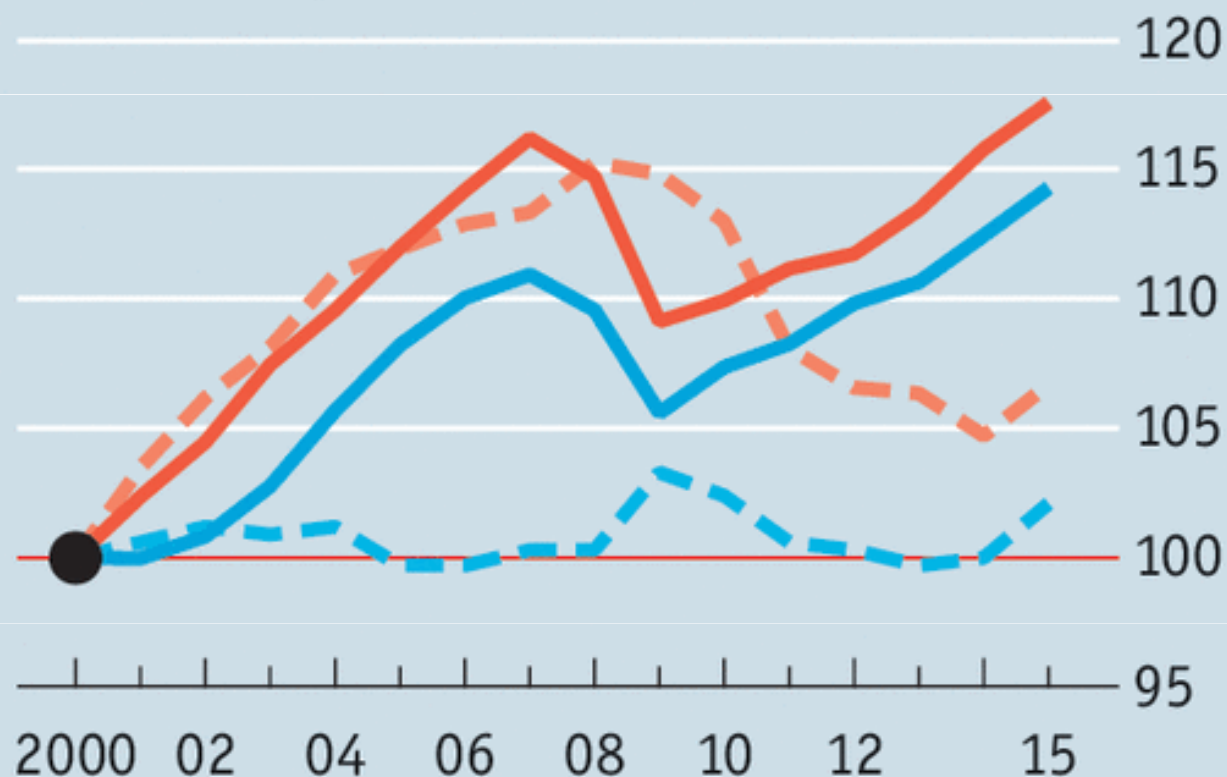


Source: Carl Benedikt Frey and Michael A. Osborne

The audacity of hope

2000=100

GDP per person: — Britain — United States
Earnings*: - - Britain - - United States



Sources: BLS;
ONS; OECD

*Full-time workers' median earnings

Economist.com

The Future

Dystopia

Before

Utopia



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