An introduction to demography

Ernesto F. L. Amaral

August 27–31, 2018
Population and Society (SOCI 312)

TEXAS A&M UNIVERSITY

Outline

- Definition of demography

- Demographic equation

- Variables and observations

- Demographic models

- Demographic transition

- Age-sex structure

- Why is demography important?

- Five contemporary aspects of importance of demography

- Demography is destiny

- Major demographic topics in the U.S.

- Global population trends

Definition of demography

- What is demography?

- How does demography connect the dots?
  - Nearly everything is connected to demography
  - The relationship of population to resources
  - The relationship of population to political and social dynamics

What is demography?

- The scientific study of human population

- The term was coined by the Belgian statistician Achille Guillard in his 1855 book

  - *Éléments de Statistique Humaine ou Démographie Comparée*

Poston's definition

- Demography is the scientific study of the size, composition, and spatial distribution of human populations

- It investigates changes in population size, composition, and distribution, resulting from fertility, mortality, and migration

Concerns of demography

- Population size

- Population growth or decline

- Population processes/components

- Population distribution

- Population structure

- Population characteristics

Primary demographic questions

- How large (or small) is the population?

- How is the population composed, in terms of age, sex, race, marital status, and so forth?
  - What are the characteristics of the population?

- How is the population distributed spatially?
  - Populations are not randomly distributed in space

- How population changes happen over time?

Source: Poston, Bouvier, 2017.

Answers to these questions

- These demographic questions are answered in terms of the three demographic processes (components of demographic change)

  – Fertility

  – Mortality

  – Migration

Demographic equation

- Population size can change only through the processes of fertility, mortality, and migration

- Two ways of entering a population
  - Being born or moving into it

- Two ways of leaving a population
  - Dying or moving out of it

- Population can only change by way of a limited, countable number of events

Source: Poston, Bouvier, 2017.

Basic demographic equation

$$P_{t+1} = P_t + B_{t\text{ to }t+1} - D_{t\text{ to }t+1} + I_{t\text{ to }t+1} - E_{t\text{ to }t+1}$$

- P_{t+1}: population at time $t+1$
- P_t: population at time t
- $B_{t\text{ to }t+1}$: births between times t and $t+1$
- $D_{t\text{ to }t+1}$: deaths between times t and $t+1$
- $I_{t\text{ to }t+1}$: immigrants (or in-migrants) to the population between times t and $t+1$
- $E_{t\text{ to }t+1}$: emigrants (or out-migrants) from the population between times t and $t+1$

Source: Poston, Bouvier, 2017.

11

Components of equation

- $P_{t+1} = P_t + B_{t \text{ to } t+1} - D_{t \text{ to } t+1} + I_{t \text{ to } t+1} - E_{t \text{ to } t+1}$

- Natural increase: $B_{t \text{ to } t+1} > D_{t \text{ to } t+1}$

- Natural decrease: $B_{t \text{ to } t+1} < D_{t \text{ to } t+1}$
  - Negative natural increase

Migration components of equation

- $I_{t \text{ to } t+1} - E_{t \text{ to } t+1}$
  - Net international migration
    - Immigration minus emigration
  - Net internal migration
    - In-migration minus out-migration
- $I_{t \text{ to } t+1} < E_{t \text{ to } t+1}$
  - Negative net international migration (sending countries)
  - Negative net internal migration (net out-migration)
- $I_{t \text{ to } t+1} > E_{t \text{ to } t+1}$
  - Positive net international migration (receiving countries)
  - Positive net internal migration (net in-migration)

Variables and observations

- ## Variables
  - Characteristics that can change values from case to case
  - E.g. gender, age, income, political party affiliation...

- ## Observations (cases)
  - Refer to the entity from which data are collected
  - Also known as "unit of analysis"
  - E.g. individuals, households, states, countries...

Source: Healey, 2015.

Variables

- **Variable:** a characteristic/phenomenon whose value varies (changes) from case to case, and is empirically quantifiable

- **Dependent variable:** a variable whose variation depends on another variable

- **Independent variable:** a variable whose variation produces ("causes") variation in another variable

Source: Poston, Bouvier, 2017.

Causation

- Theories and hypotheses are often stated in terms of the relationships between variables
  - Causes: independent variables
  - Effects or results: dependent variables

y	x	Use
Dependent variable	Independent variable	Econometrics
Explained variable	Explanatory variable	
Response variable	Control variable	Experimental science
Predicted variable	Predictor variable	
Outcome variable	Covariate	
Regressand	Regressor	

Source: Wooldridge, 2015.

Observations

- Observations (cases) are collected information used to test hypotheses

- Decide how variables will be measured and how cases will be selected and tested

- Measure social reality: collect numerical data

- Information can be organized in databases
  - Variables as columns
  - Observations as rows

Source: Healey, 2015.

Example of a database

Observation	Salary per hour	Years of schooling	Years of experience in the labor market	Female	Marital status (married)
1	3.10	11	2	1	0
2	3.24	12	22	1	1
3	3.00	11	2	0	0
4	6.00	8	44	0	1
5	5.30	12	7	0	1
...	...	...	...	...	...
525	11.56	16	5	0	1
526	3.50	14	5	1	0

Source: Wooldridge, 2015.

Demographic models

- Formal demography

- Population studies I

- Population studies II

Formal demography

Independent variable

Demographic

Dependent variable

→ Demographic

Examples

1. Age composition   → Birth rate

2. Birth rate   → Age composition

3. Sex composition of in-migrants to a city   → Sex ratio of the total population of the city

Population studies I (social demography)

Independent variable	Dependent variable
Non-demographic	→ Demographic

Examples

1. Social class (sociological)	→ Death rate
2. Attitude about motherhood (social psychology)	→ Number of children
3. Annual rainfall (geographical)	→ Population density
4. Economic opportunity (economic)	→ Migration

Source: Poston, Bouvier, 2017.

Population studies II (social demography)

Independent variable   Dependent variable

Demographic   → Non-demographic

Examples

1. Age composition   → Voting behavior (political)

2. Migration   → Social change (sociology)

3. Birth rate   → Need for infant & child goods/services (public health)

Source: Poston, Bouvier, 2017.

Demographic transition
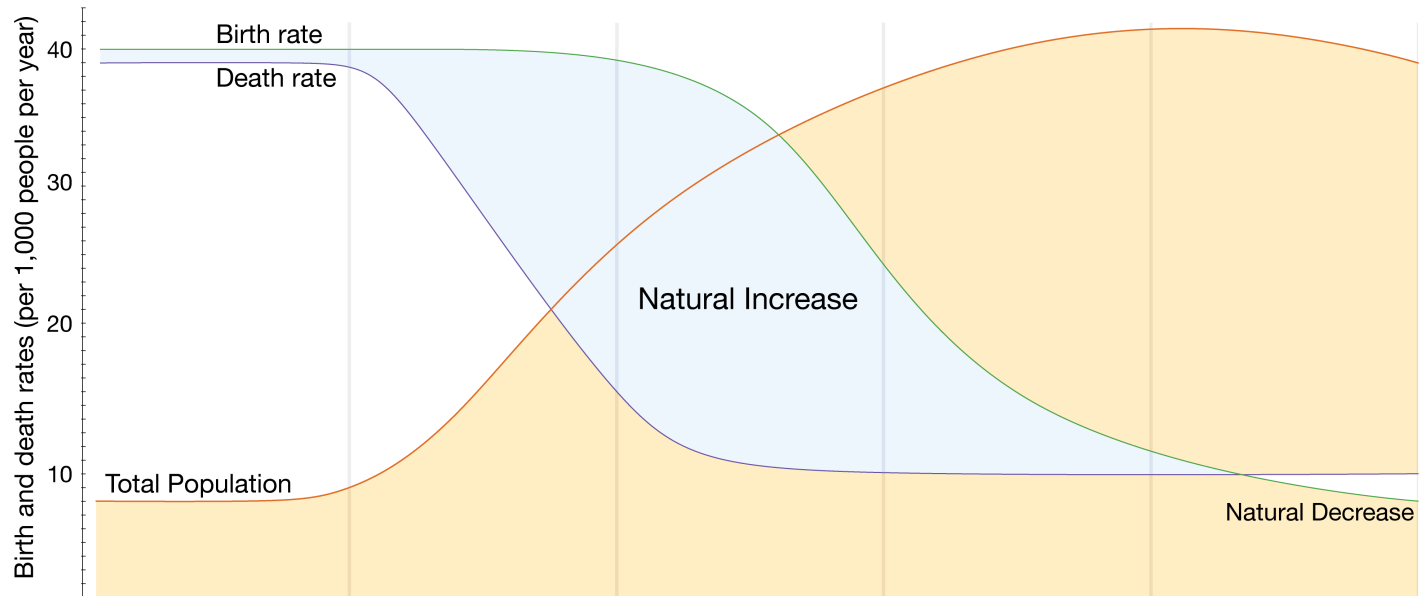
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Birth rate	High	High	Falling	Low	Very low
Death rate	High	Falls rapidly	Falls more slowly	Low	Low
Natural increase	Stable or slow increase	Very rapid increase	Increase slows down	Stable or slow increase	Stable or slow decrease

Population storm

Year	Population in billions	Annual rate of growth	Annual increase in millions
1804	1	0.4	4
1927	2	1.1	22
1960	3	1.3	52
1974	4	2.0	75
1987	5	1.6	82
2000	6	1.4	77
2011	7	1.2	80
2024	8	0.9	73
2040	9	0.7	59
2061	10	0.4	38

Population growth

- The world's population will continue to increase for the rest of our lives

- Virtually all of it will take place in cities of developing countries
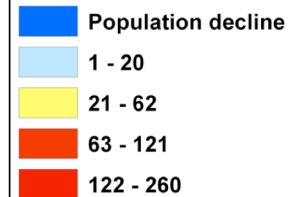
Population increase 2015–2050
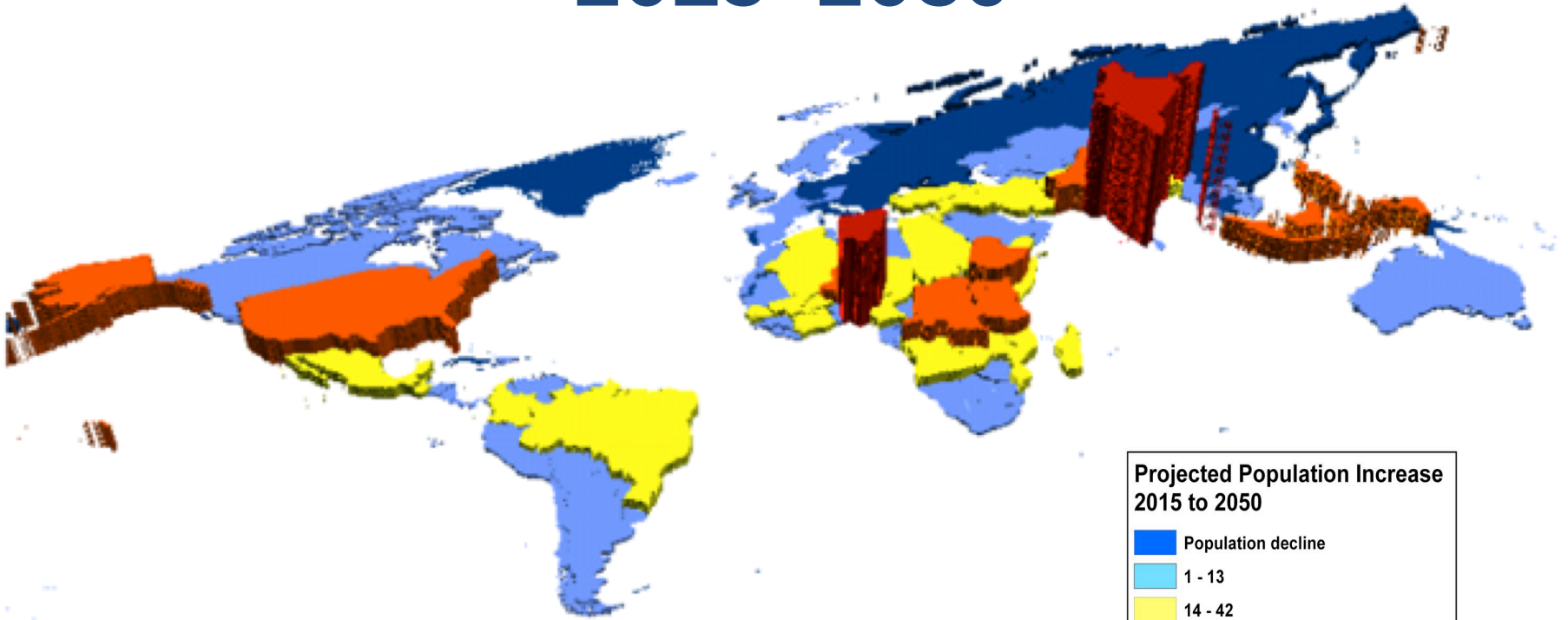
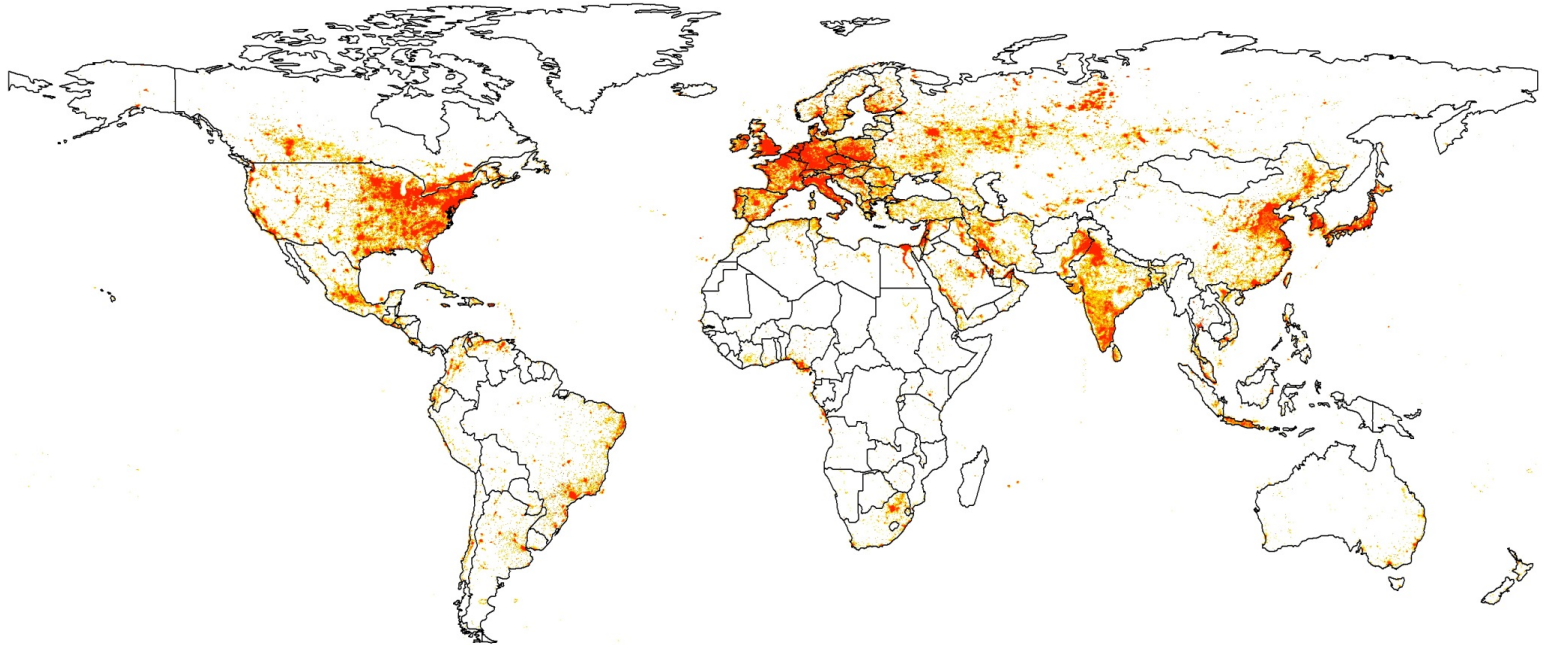**Projected Population Increase 2015 to 2050**

- Population decline
- 1 - 13
- 14 - 42
- 43 - 89
- 90 - 338

29
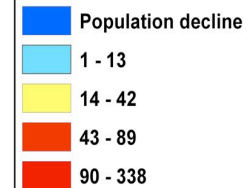
Percentage population increase 2015–2050
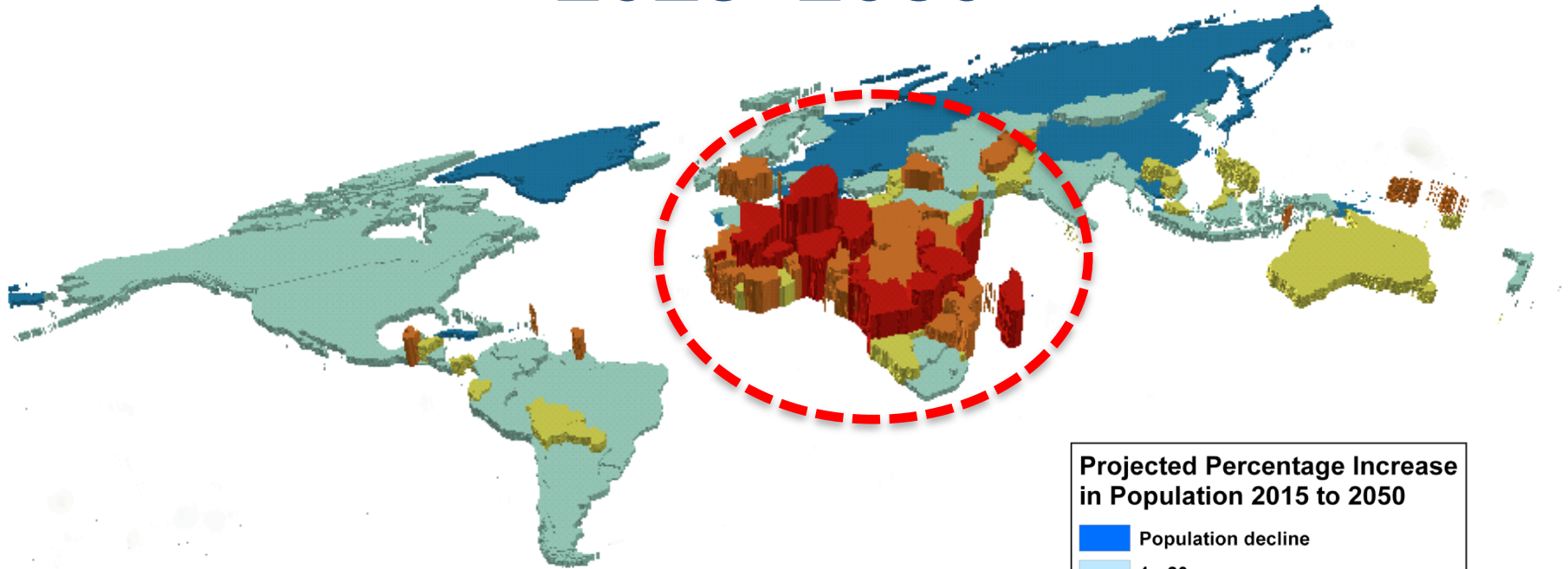
Projected Percentage Increase in Population 2015 to 2050

- Population decline
- 1 - 20
- 21 - 62
- 63 - 121
- 122 - 260

Geographic distribution of world's population, 2015

2010 POPULATION DISTRIBUTION IN THE UNITED STATES AND PUERTO RICO

One dot = 7500 people
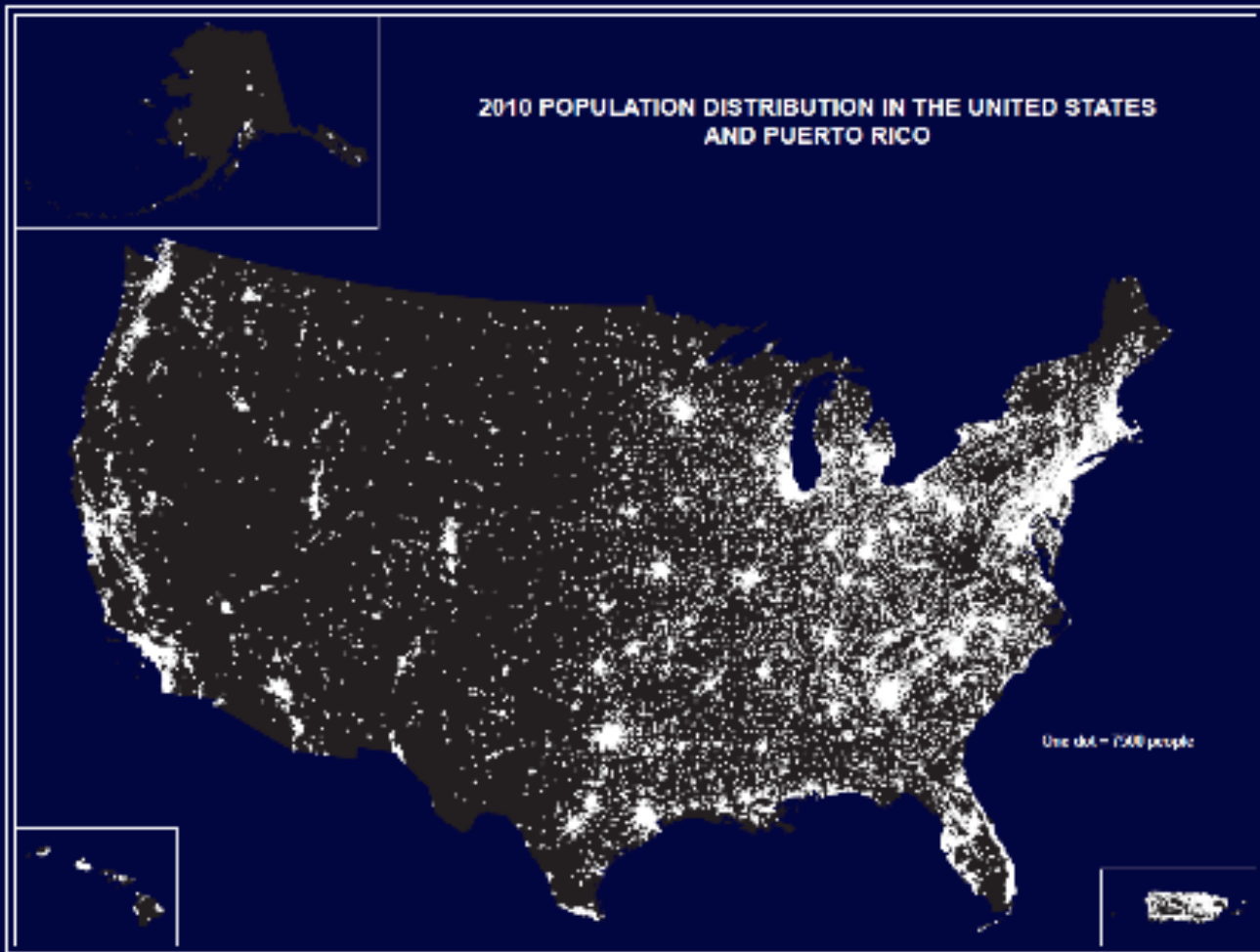
Source: Poston, Bouvier, 2017.

The past is a foreign country (1/3)

Indicators	1910	2010
World population (billions)	1.8	6.9
U.S. population (millions)	92	309
U.S. percent of world total	5.1%	4.5%
U.S. life expectancy	52	81
U.S. children per woman	3.5	1.9

The past is a foreign country (2/3)

U.S. indicators	1910	2010
Immigrants from Italy (1900–1909); (2000–2010)	1.2 million	28,000
Immigrants from Mexico (1900–1910); (2000–2010)	123,000	1.7 million (legal immigrants)
% Foreign-born	14.7%	12.9%
% Urban	46%	81%

The past is a foreign country (3/3)

| U.S. indicators	1910	2010
Number of passenger cars	450,000	190 million
% Population under 15	32.1%	19.8%
% Population 65+	4.3%	13.0%
Average persons per household	4.4	2.6
% High school graduates	~10%	87%

Age-sex structure

- The most important characteristics that tell us about population structure are age and sex

- They are known as the demographic characteristics

- Age and sex are tied in with the three demographic processes

  – Fertility, mortality, migration

Fertility varies by age and sex

- Fertility (actual production of children)
  - More males are born than females
  - Normal sex ratio at birth (SRB): around 105 boys per 100 girls
- Fecundity (ability to produce children)
  - Females: between ages of around 15 and 49
  - Males: between ages of around 15 and 79

Source: Poston, Bouvier, 2017.

Age-specific fertility rates, United States

Age group

2015-2020   2095-2100
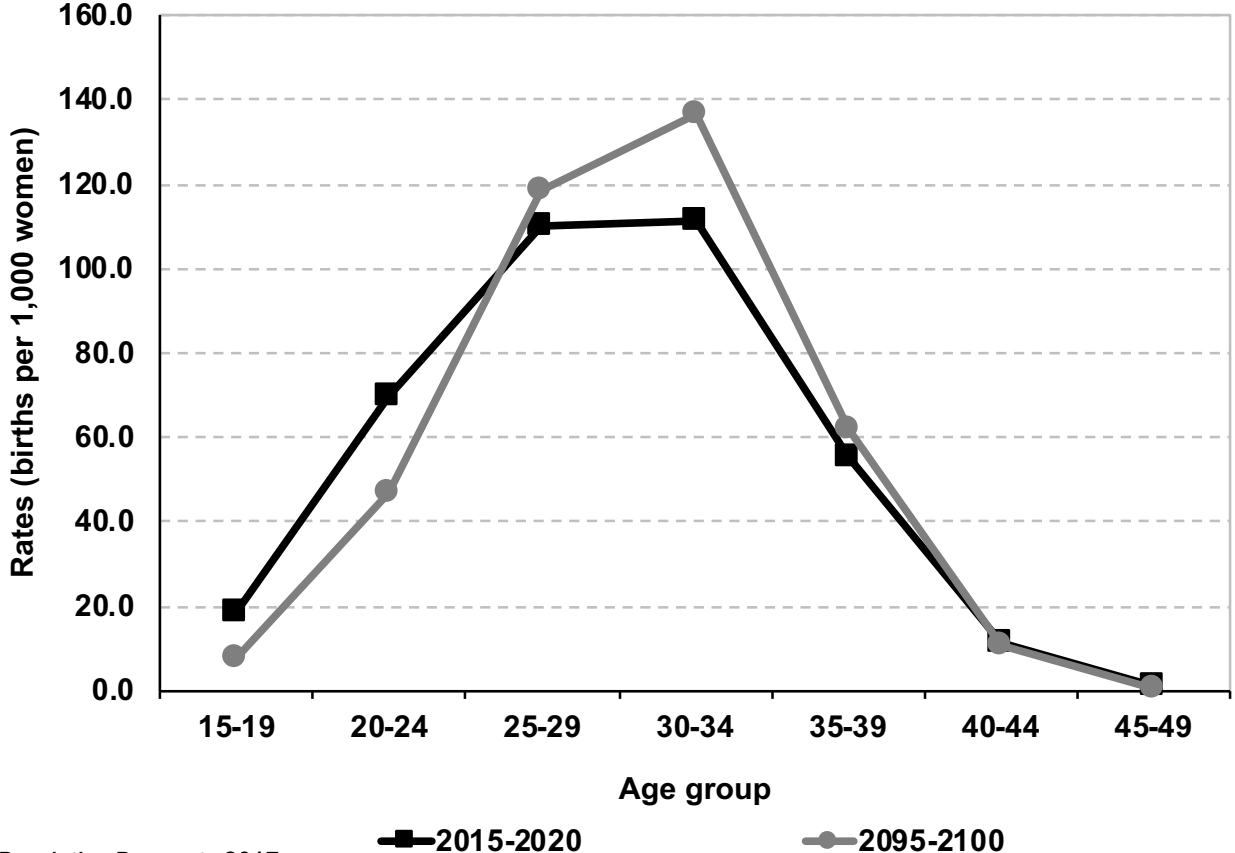
Mortality varies by age and sex

- Females have lower death rates than males at every age of life

- Death rates are high in the first year of life and then drop to very low levels

  - In modern populations, death rates do not reach the level of the first year of life for another 50–60 years

- Cause-specific mortality is often age related

Source: Poston, Bouvier, 2017.

Age-specific mortality rates, 2011

41
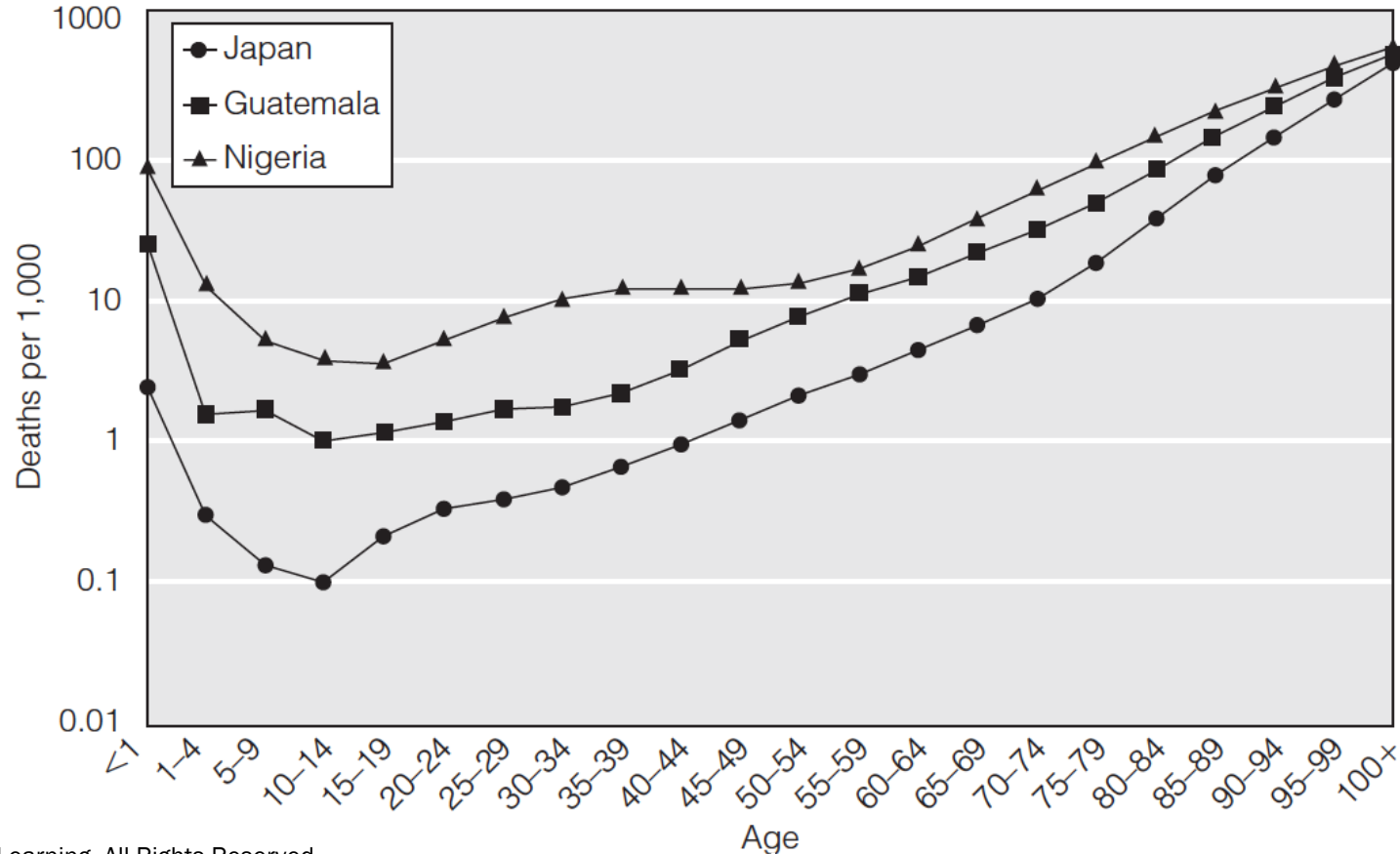
Migration varies by age and sex

- Sex is related to distance of migration

  – Long-distance migration tended to favor males

  – Short-distance migration tended to favor females

  – With increases in gender equity, migration of females and males tend to be similar

- Internal migration has highest rates among young adults

Source: Poston, Bouvier, 2017.

Age-specific migration rates, United States, 2011–2012
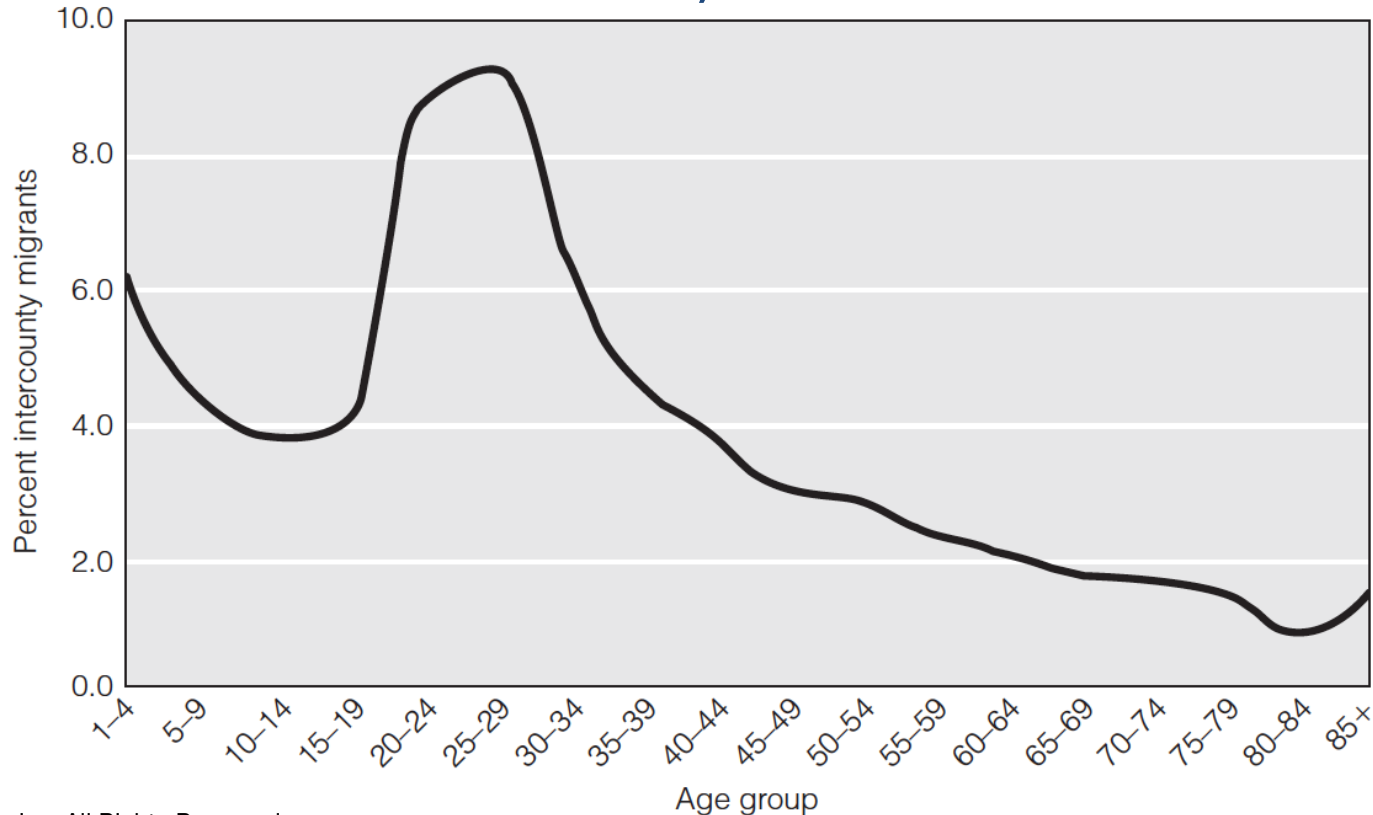
Cohort

- Cohort is a group of people who experience similar social circumstances
  - People born during the same period who experience similar circumstances throughout their lifes
    - Lucky Few: from around 1929 through 1945
    - Baby boomers: between around 1946 and 1964
    - Baby bust cohort (Gen. X): from mid-1960s to early 1980s
    - Millennials (Gen. Y): born in the 1980s and 1990s (or up to early 2000s)
    - Gen. Z: start around mid-1990s (or mid-2000s)
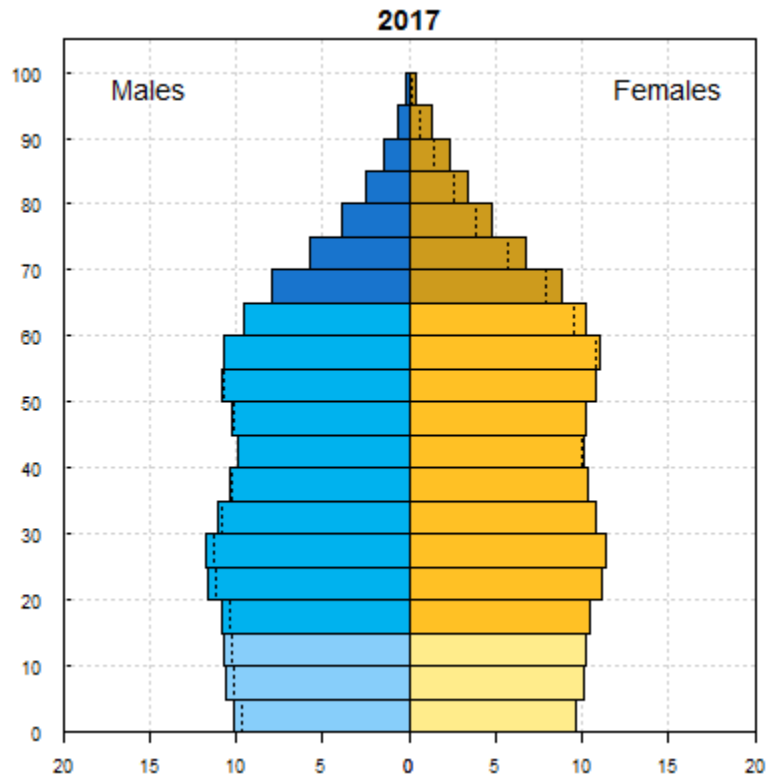
Age-sex structure, United States
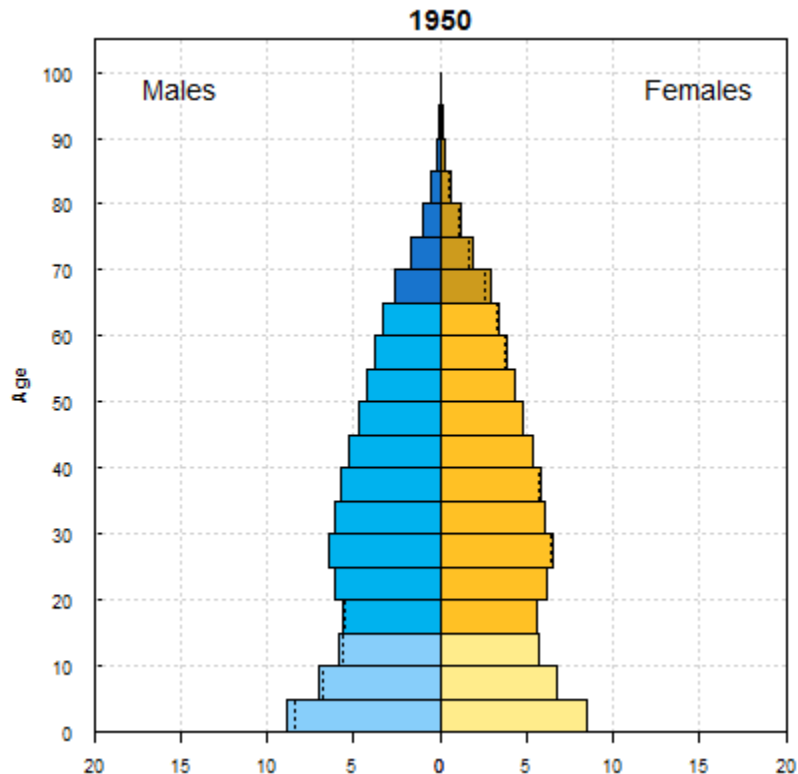
The dotted line indicates the excess male or female population in certain age groups.
Source: United Nations, World Population Prospects 2017
https://esa.un.org/unpd/wpp/Download/Standard/Population/ (medium variant).
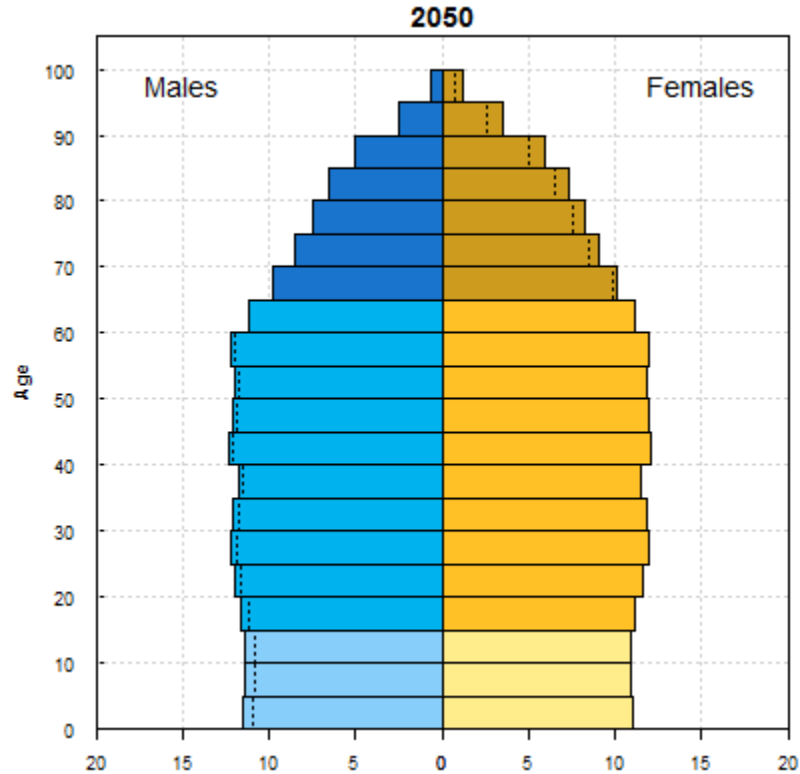
Age-sex structure, United States

The dotted line indicates the excess male or female population in certain age groups.
Source: United Nations, World Population Prospects 2017
https://esa.un.org/unpd/wpp/Download/Standard/Population/ (medium variant).
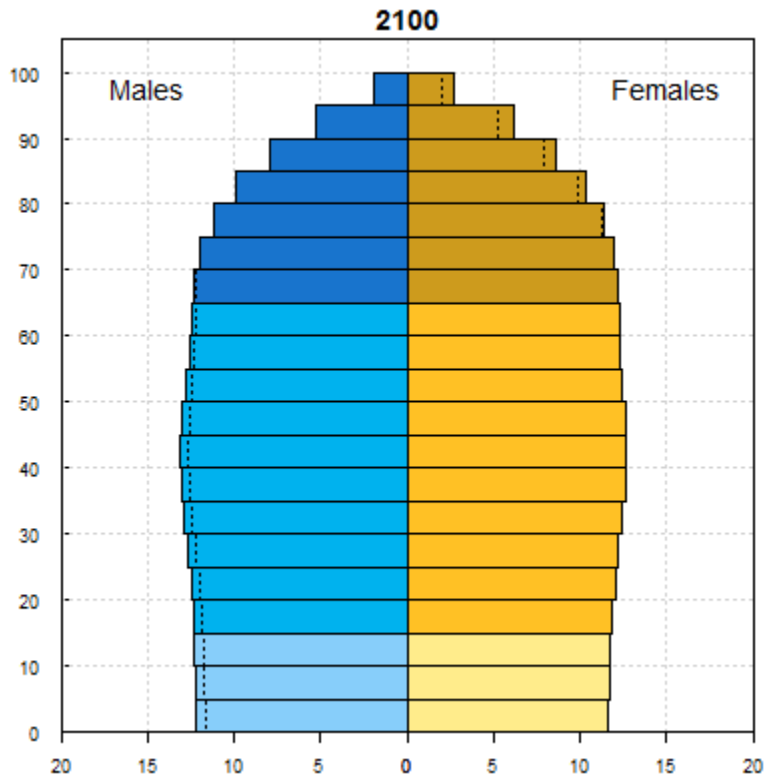
46

Age-sex structure, United States

The dotted line indicates the excess male or female population in certain age groups.
Source: United Nations, World Population Prospects 2017
https://esa.un.org/unpd/wpp/Download/Standard/Population/ (medium variant).
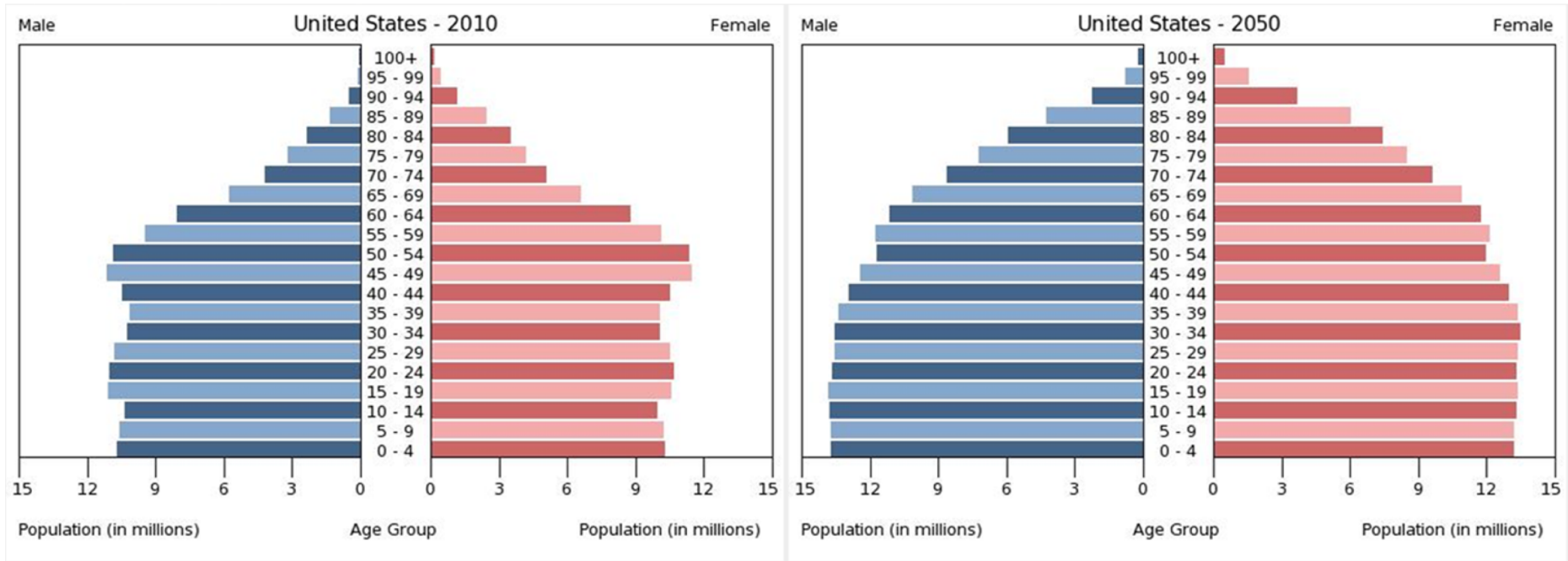
47

Age-sex structure, United States

The dotted line indicates the excess male or female population in certain age groups.
Source: United Nations, World Population Prospects 2017
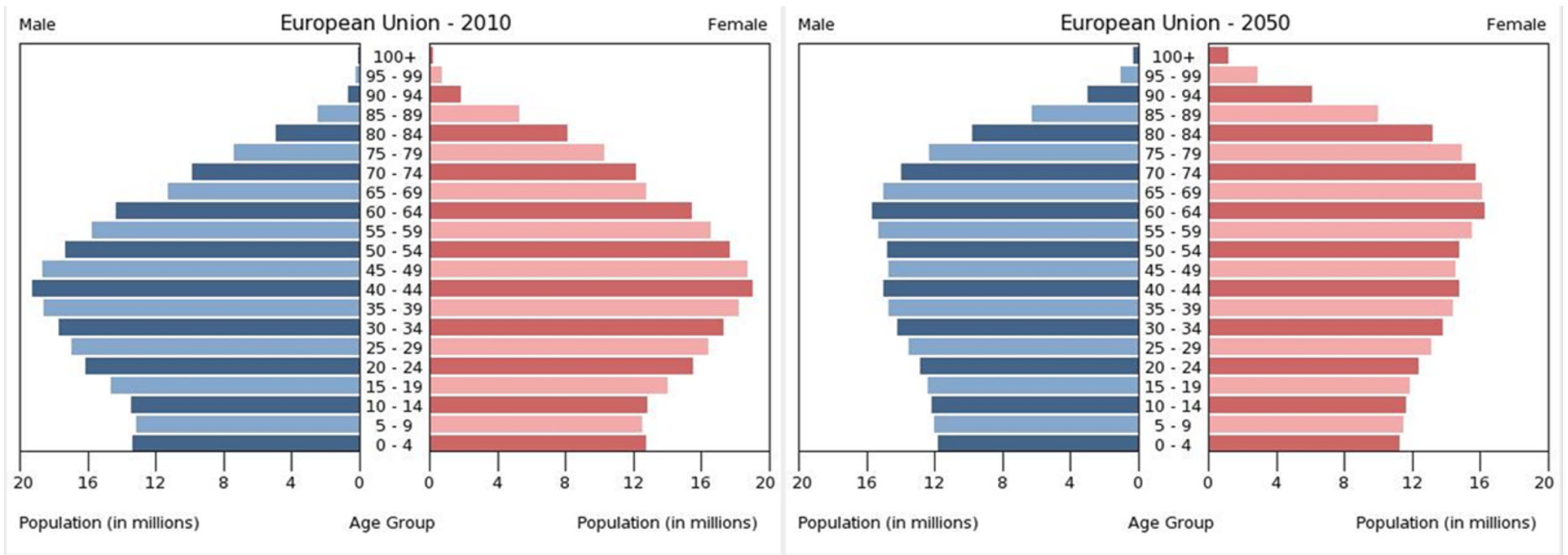https://esa.un.org/unpd/wpp/Download/Standard/Population/ (medium variant).

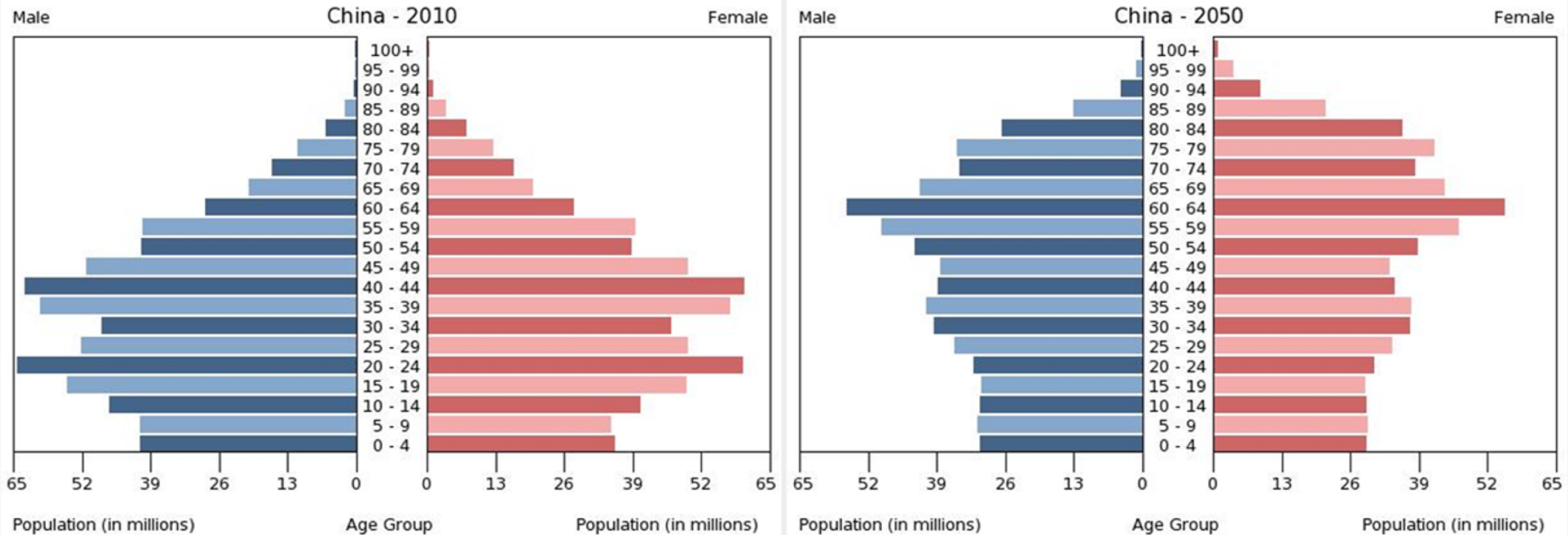# Population structure by age and sex, United States, 2010–2050

Population structure by age and sex, European Union, 2010–2050

Population structure by age and sex, China, 2010–2050

Population structure by age and sex, India, 2010–2050
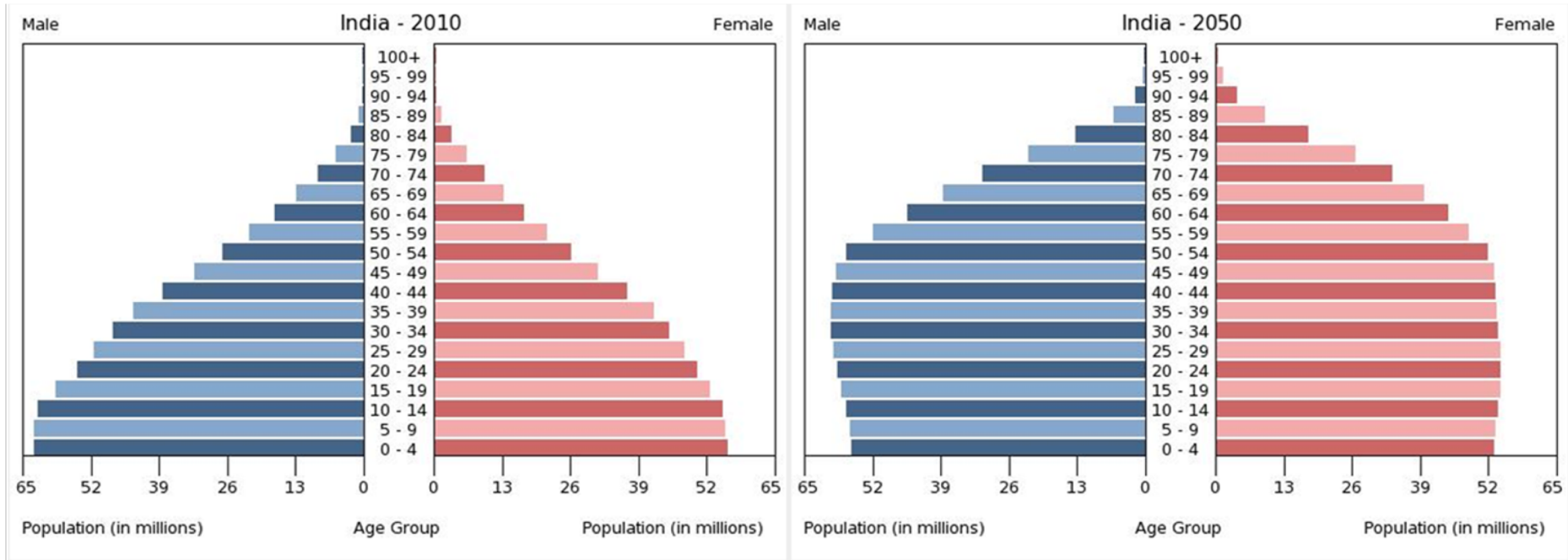
Why is demography important?

- Demography helps understand what the past says about the future, given expected population changes

  - Population change is a prime force behind social and technological change, because societies must adjust to demographic change

  - Population change is often provocative, bursting other dilemmas that face human society

Population and earth's resources

- How will we feed an even larger population than we currently have?

- Will we have enough fresh water?

- Where will we get energy to sustain our lifestyle?

- Who will build housing and infrastructure for an increasing urban population?

- How do we minimize the environmental impact?

# Populations and women's rights

- Women live longer than men, unless society intervenes
- Getting pregnant was the most dangerous thing a woman could do until very recently
- Women are capable of the same levels of education and occupation as men
  - Many societies still do not provide these opportunities
- Status of women underlies many conflicts in the world and influences demographic trends

Population and
social and political dynamics

- Globalization is related to search for cheap labor

- Backlash against immigrants is aggravated by xenophobia in the face of the need for workers in the richer, aging countries

- Regional conflict is aggravated by population growth and especially by youth bulges in the Middle East and South Asia

Middle East and North Africa (MENA) Region
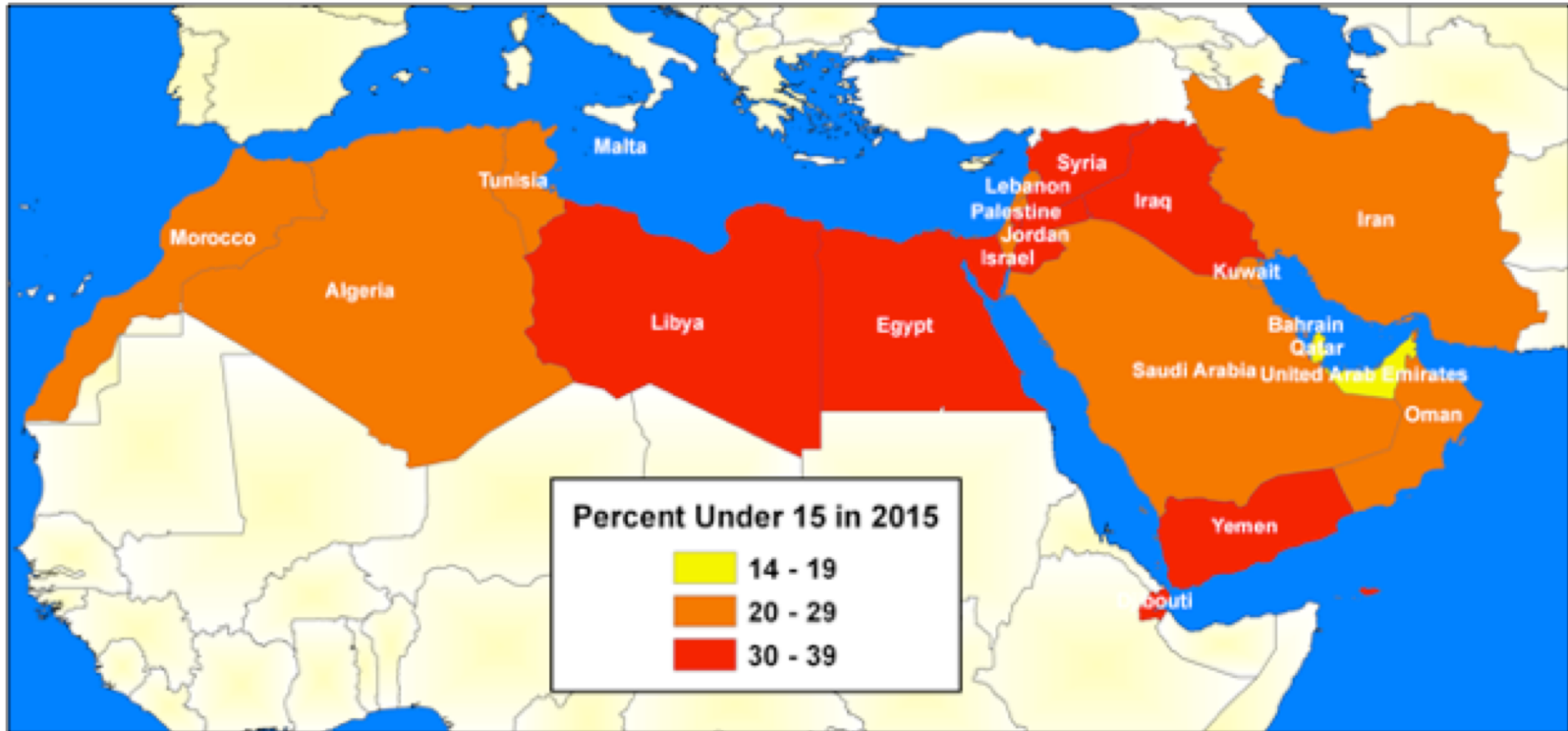
Country	Population (millions)			Ratio		% Pop < 15 in 2015
	1950	2015	2050	2015/ 1950	2050/ 2015	
MENA	81	418	604	5.1	1.4	29
Iraq	6	36	71	6.0	2.0	39
Syria	3	22	37	7.3	1.7	35
U.S.	103	325	401	3.2	1.2	19
Germany	70	83	73	1.2	0.9	13
Japan	82	127	108	1.5	0.9	13

Impact of population change

- Less about population growth *per se*
- More about population growth in different age groups and places over time, affecting
  - Education
  - Health
  - Crime
  - Consumer desires and fashions
  - Economic opportunities

Dependency ratios, Brazil, 1950–2050
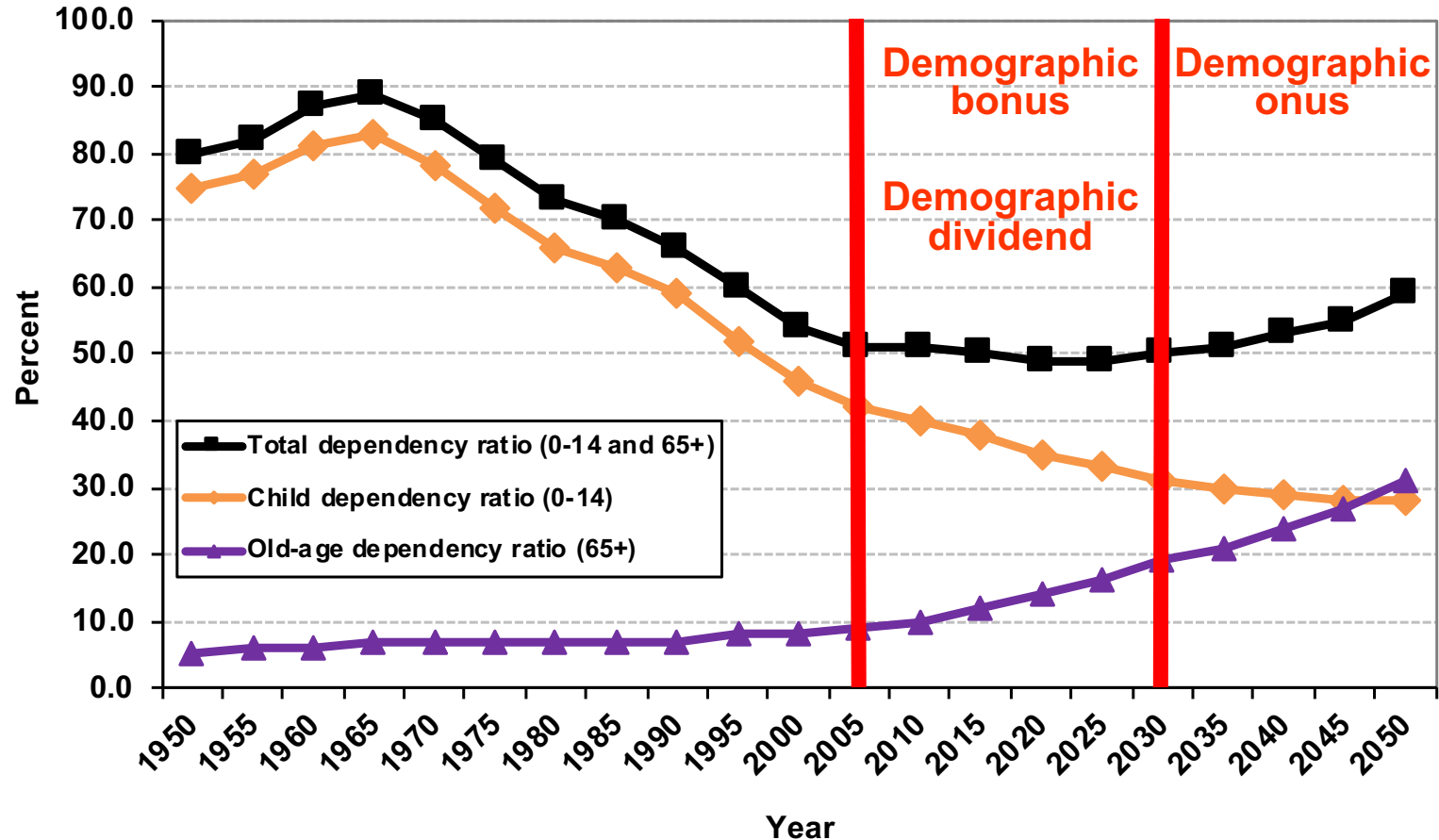
Source: United Nations - http://esa.un.org/unpp (medium variant).
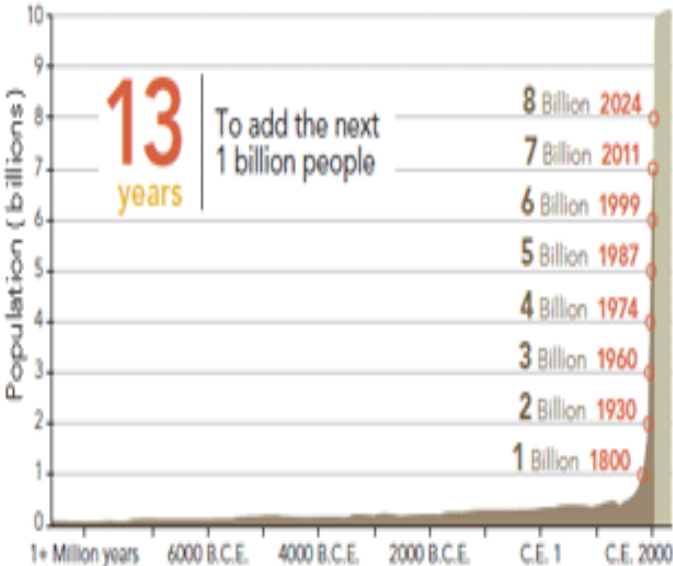
61

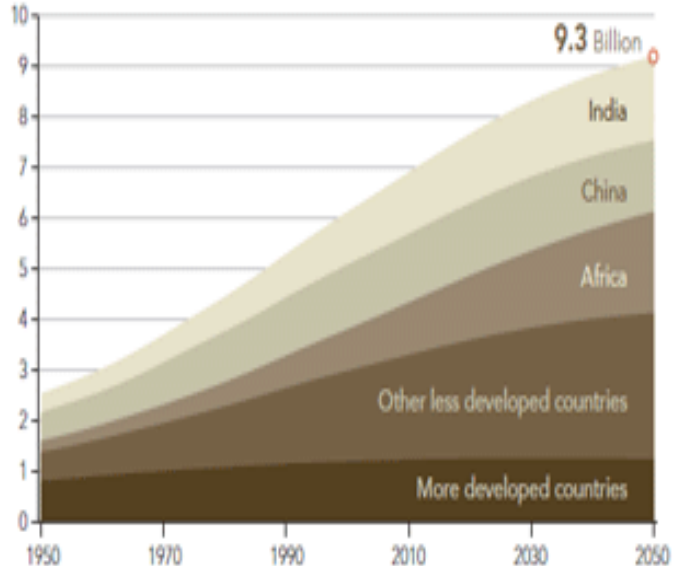# Five contemporary aspects of importance of demography

1. The greatest demographic change in human history
2. Spectacular gains in life expectancy
3. Below replacement fertility
4. Unbalanced sex ratios at birth
5. Population ageing

Source: Poston, Bouvier, 2017.

1. The greatest demographic change in human history

Historic and Projected Population Growth

To add the next 1 billion people: **13 years**

Population	Year
8 Billion	2024
7 Billion	2011
6 Billion	1999
5 Billion	1987
4 Billion	1974
3 Billion	1960
2 Billion	1930
1 Billion	1800

SOURCES: CARL HAUB, POPULATION REFERENCE BUREAU (PRB), 2010; U.N. POPULATION DIVISION (UNPD), 2011

World Population Growth, 1950–2050 (medium variant)

9.3 Billion

India, China, Africa, Other less developed countries, More developed countries

SOURCE: UNPD, 2011

Source: Poston, Bouvier, 2017.
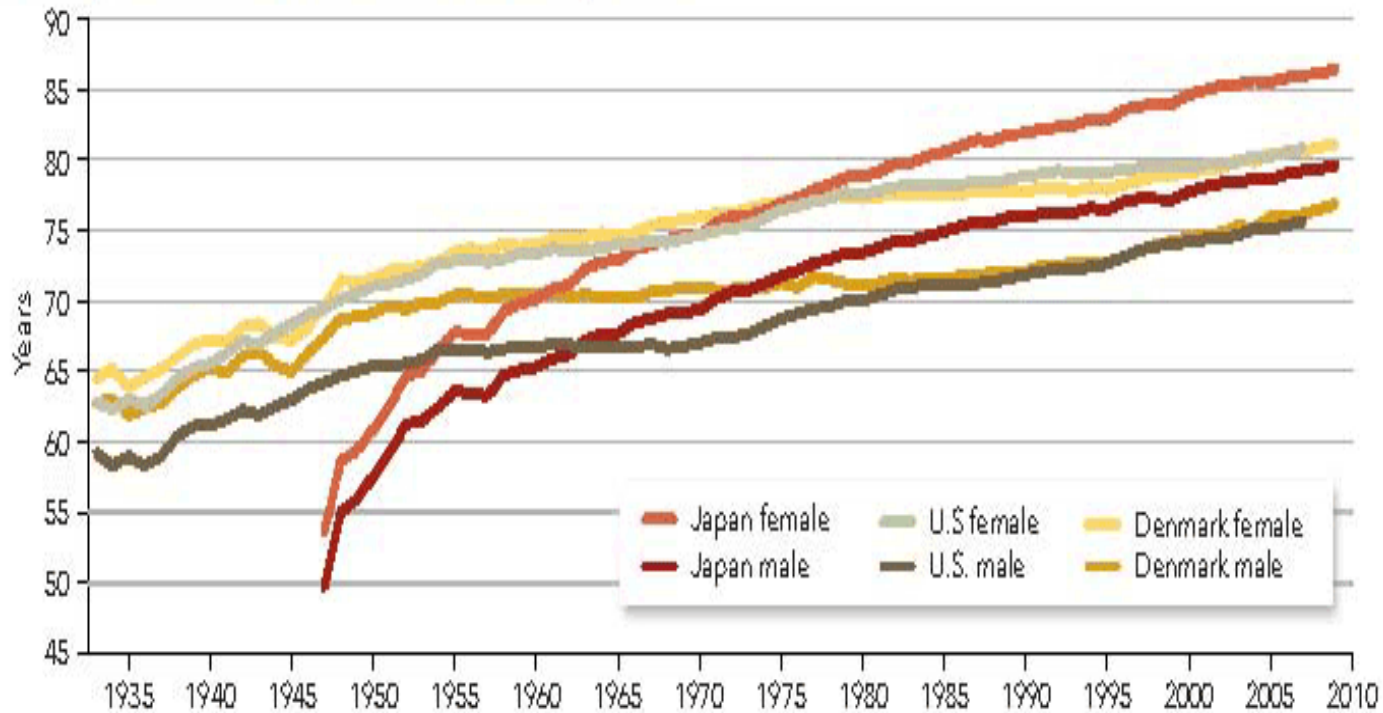
2. Spectacular gains in life expectancy

- Over the past two centuries
- Especially since the end of WWII
- Most important thing in human history
- Consequence and cause of a new way of viewing the world
- Transitions that accompanied it have been enormously transformative
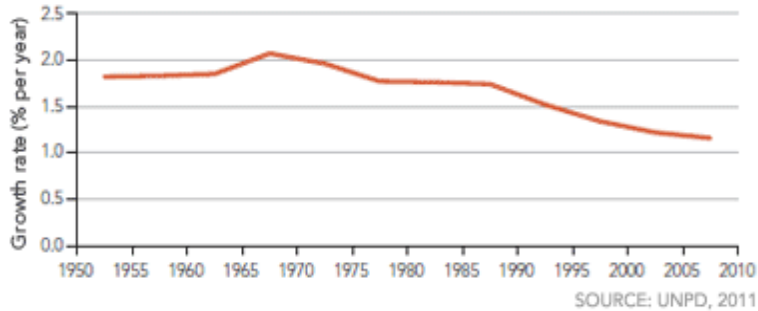
Rise in life expectancy

Longer Lived With Each Passing Year

Source: Poston, Bouvier, 2017.

3. Below replacement fertility

Population Growth Rate, 1950–2010

Tipping point. The period of most rapid population growth is behind us. Since its peak in 1965–70, the growth rate has declined, falling roughly by half in 40 years as women have had fewer children.

SOURCE: UNPD, 2011

Global Decline in Fertility, 1950–2010

- Less developed countries (excluding China)
- World
- More developed countries
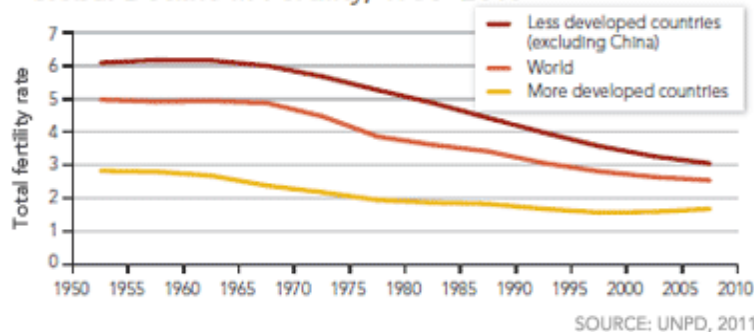
More women, fewer kids. The global fertility rate has dropped from 5 to 2.5 in roughly 50 years, and the average woman in developing countries (outside of China) now has three children, down from six.

SOURCE: UNPD, 2011

Source: Poston, Bouvier, 2017.

4. Unbalanced sex ratios at birth

Roads to gendercide
Males per 100 females, 0-4 year olds

Northwest India (Punjab and Haryana)

China

India

South Korea

1949 60 70 80 90 2000 05

100 105 110 115 120 125

Source: World Bank

Source: Poston, Bouvier, 2017.
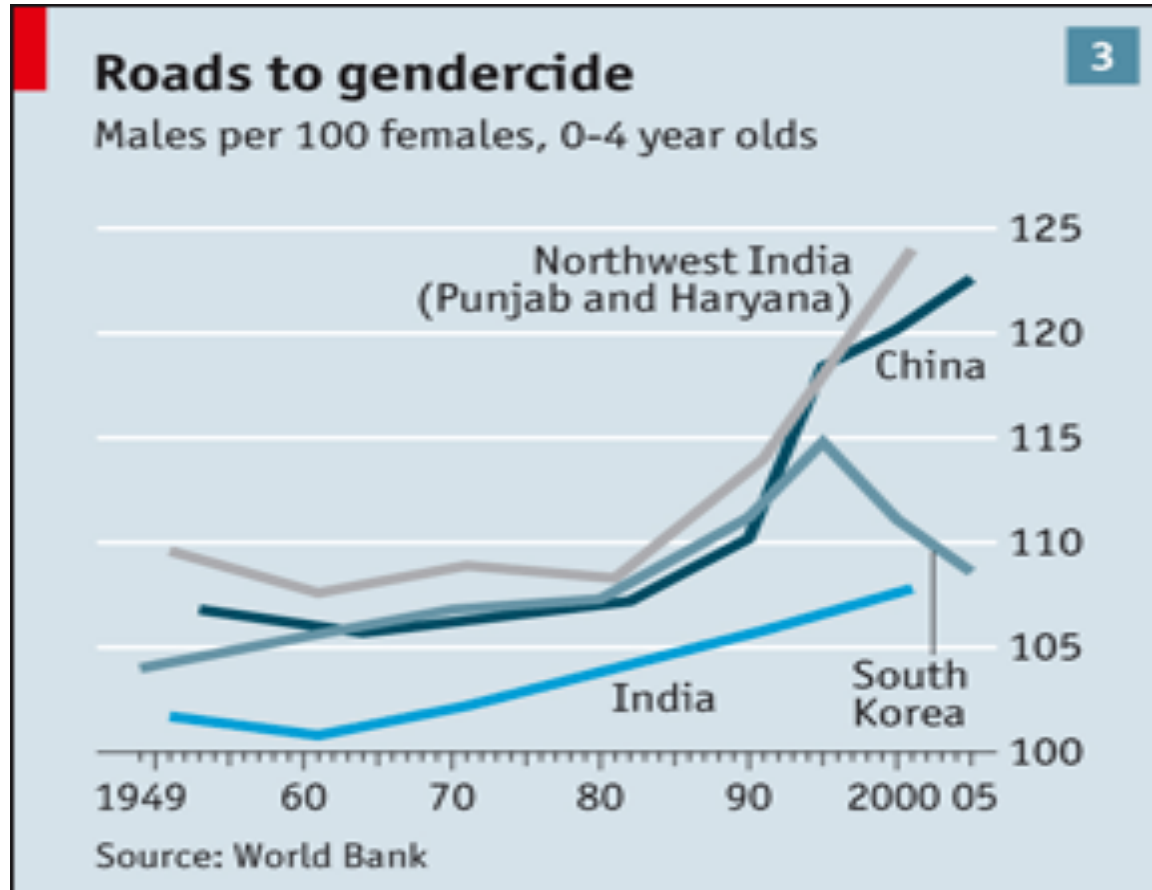
5. Population ageing

By the numbers

43% Population <15, sub-Saharan Africa   **3%** Population 65+, sub-Saharan Africa   **16%** Population <15, Europe   **16%** Population 65+, Europe

SOURCE: UNPD, 2011

Source: Poston, Bouvier, 2017.

5. Population ageing

Percentage of population aged 60 or over

World and development regions, 1950-2050

Source: Poston, Bouvier, 2017.
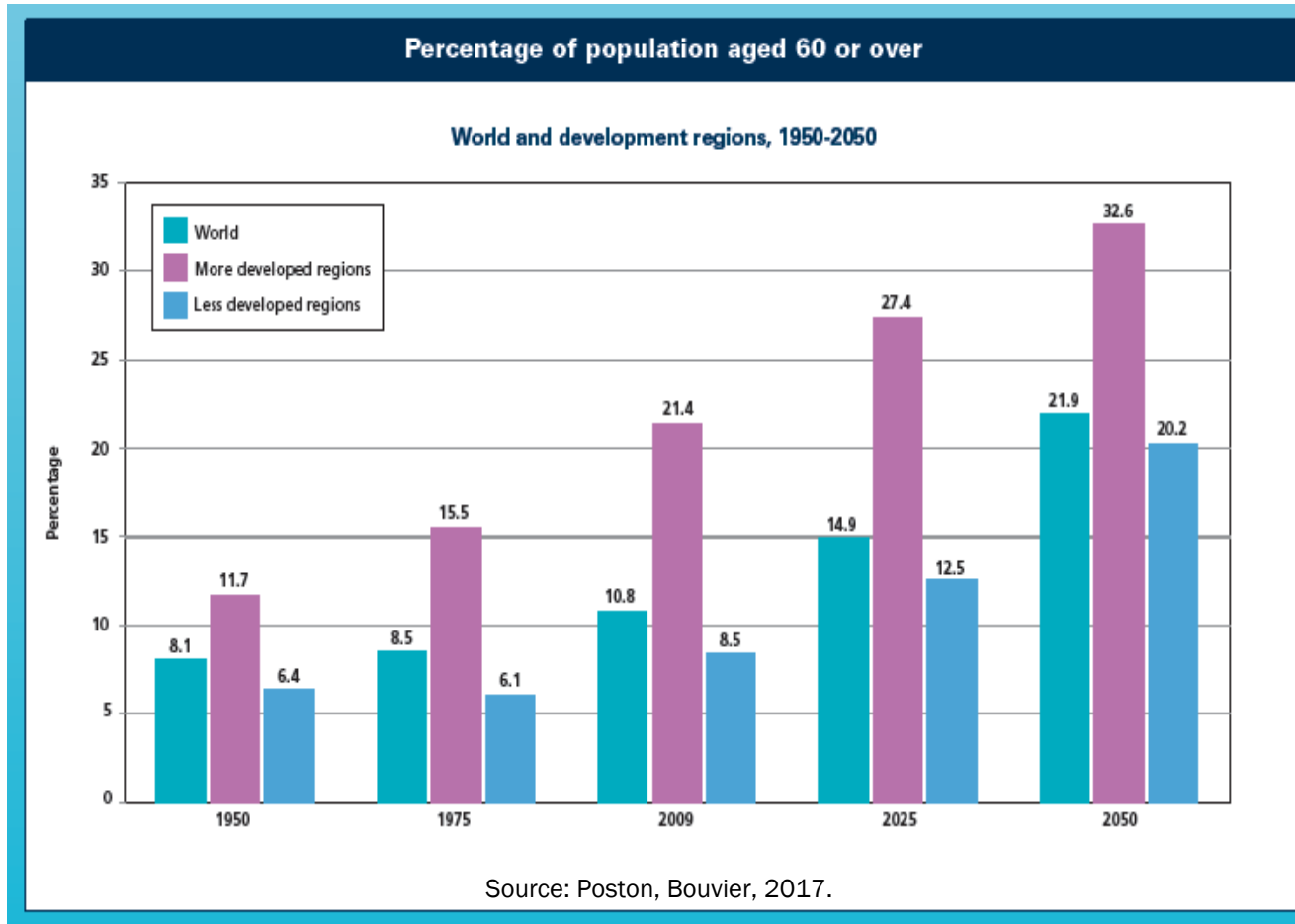
Demography is destiny

- This phrase is attributed to the French mathematician and philosopher, Auguste Comte (1798–1857)
  - He is known as the "father of sociology"
  - Demography shapes the world, even if it does not determine it
  - Population change is an underlying component of almost everything happening in the world today, and therefore in the future as well

Source: Poston, Bouvier, 2017.

Our course

- A great deal that we will learn in this class has a special relevance and importance for society and the world

- A great deal of demography is more than academic exercise

- Demographic concepts, theories, data, and results have tremendous practical importance and policy implications

Example: Sex ratio at birth in China

- Biologically normal level of sex ratio at birth
  - Around 105 males for every 100 females

- Several societies have much higher SRBs
  - Rapid fertility transition
  - Son preference
  - Available technology to determine sex of the fetus
  - Ease of access to abortion

Source: Poston, Bouvier, 2017.

Total Fertility Rates: China 1950-2010

Year
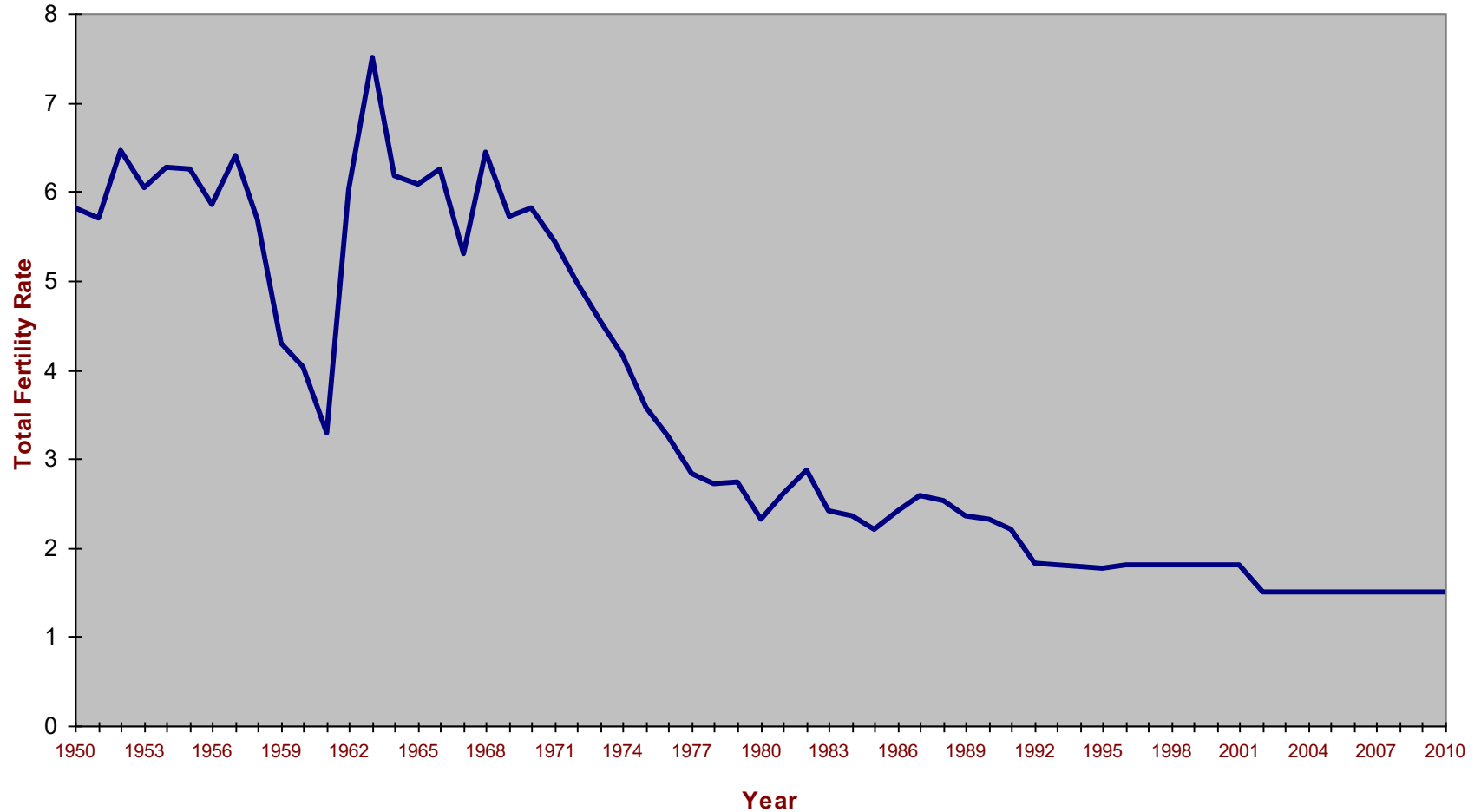
Source: Poston, Bouvier, 2017.

Sex Ratios at Birth (SRB): Taiwan, China, and United States 1980-2010
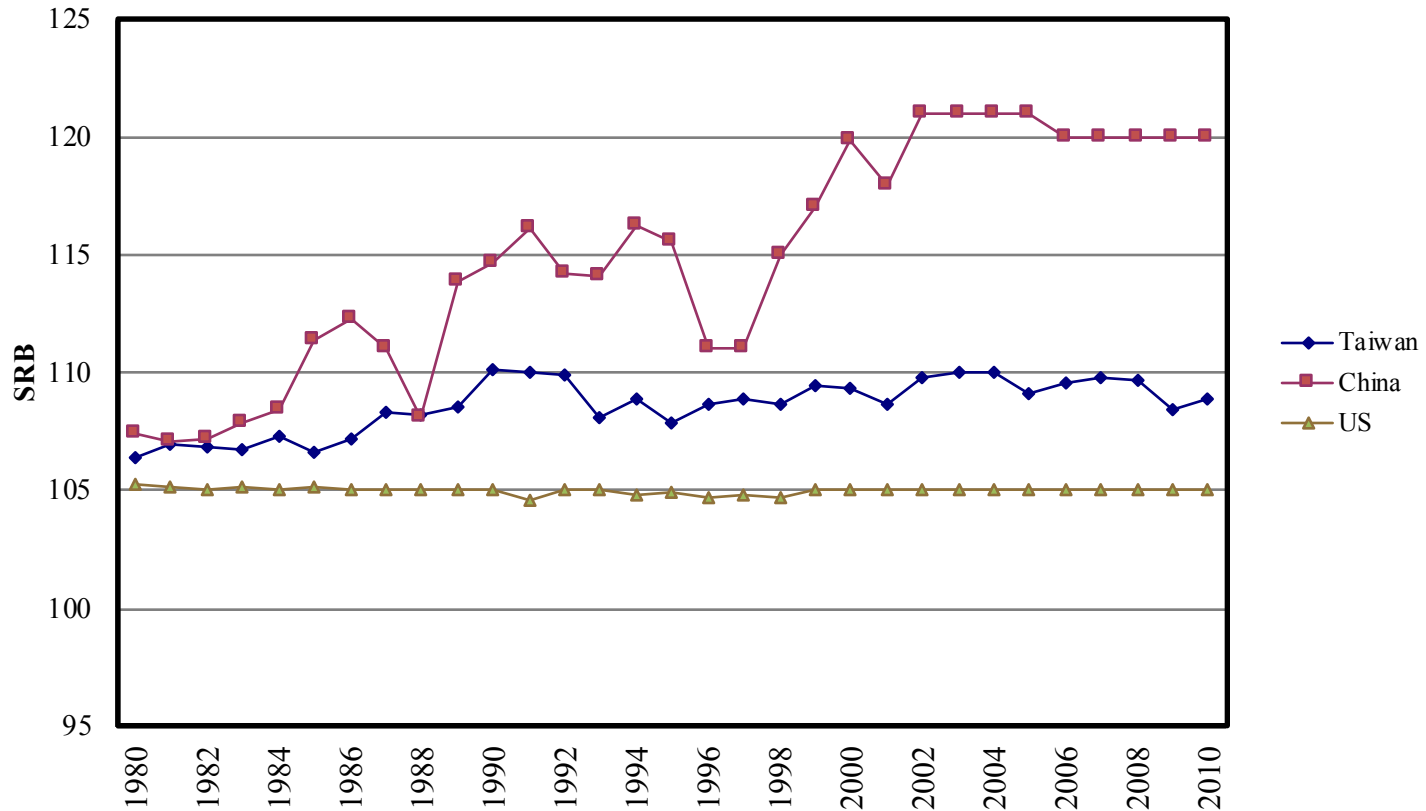
Source: Poston, Bouvier, 2017.

The destiny of China is already set

- Why does China have high SRBs?
  - Pre-natal sex identification via sonar technology, followed by female-specific abortion
- What will be the result of the high SRBs?
  - Between 1983 and 2010 over 41 million extra boys were born than girls
  - Larger number of bachelors in China than the total population of California in 2010 (37 million) or Texas (25 million)

Source: Poston, Bouvier, 2017.

What might happen if boys don't marry?

- Most men unable to find sex partners will be poor, uneducated, unemployed, and migrate from rural to urban areas
- Some likely consequences
  - Increase in crime, violence
  - Increase prostitution
  - Increase of STDs mainly among unmarried men
  - Unprecedented spread of HIV

Source: Poston, Bouvier, 2017.

HIV

- In sub-Saharan Africa
  - In 2013, 24.7 million adults infected with HIV
    - This is almost 71% of adult infections worldwide
  - In 2010
    - Around 1.2 million people died from AIDS
    - 1.9 million people became infected with HIV
- China could equal or exceed these numbers by 2020–2030
  - The country is beginning to take seriously the issue of HIV/AIDS and a possible epidemic

Source: Poston, Bouvier, 2017.

Major demographic topics in the U.S.

1. Highest fertility rate among developed countries
2. Majority-minority society around 2044
3. Changes of origin of undocumented immigrants
4. Increasing ages at first marriage
5. Decreasing percentages of persons marrying
6. Increasing levels of cohabitation
7. Increasing percentages of births to unwed mothers

Source: Poston, Bouvier, 2017.

1. Highest fertility rate among developed countries

Number of children per woman
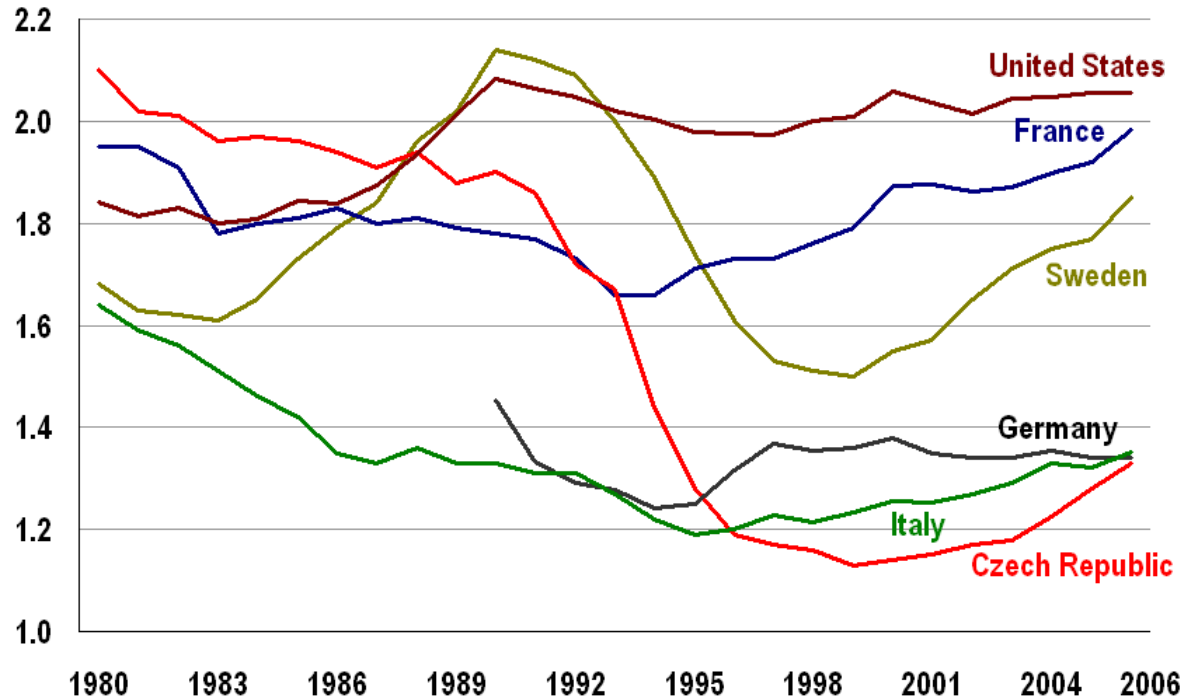
2. Majority-minority society around 2044

- Around 2044, the U.S. should be a majority-minority society, when less than half of the country will be non-Hispanic White
  - 5 states (California, Hawaii, New Mexico, Texas, Nevada) and the District of Columbia are now majority-minority
  - 8 other states (Arizona, Florida, Georgia, Louisiana, Maryland, Mississippi, New Jersey, New York) are now between 40–49% minority, and will probably become majority-minority by 2020

Source: Poston, Bouvier, 2017.

Majority-minority states, 2016

State	White percentage
Hawaii	22.1
District of Columbia	36.4
California	37.7
New Mexico	38.1
Texas	42.6
Nevada	49.9
Maryland	51.5
Georgia	53.4
Florida	54.9
Arizona	55.5
New York	55.8
New Jersey	55.8
Mississippi	56.9
Louisiana	59.0

Source: Poston, Bouvier, 2017.

Diversity in Texas

- Texas already is a majority-minority state
  - The non-Hispanic White population dropped below 50% in 2004

- The demographic destiny of Texas is with the Hispanic population
  - Texas will become majority Hispanic sometime between 2020 and 2030
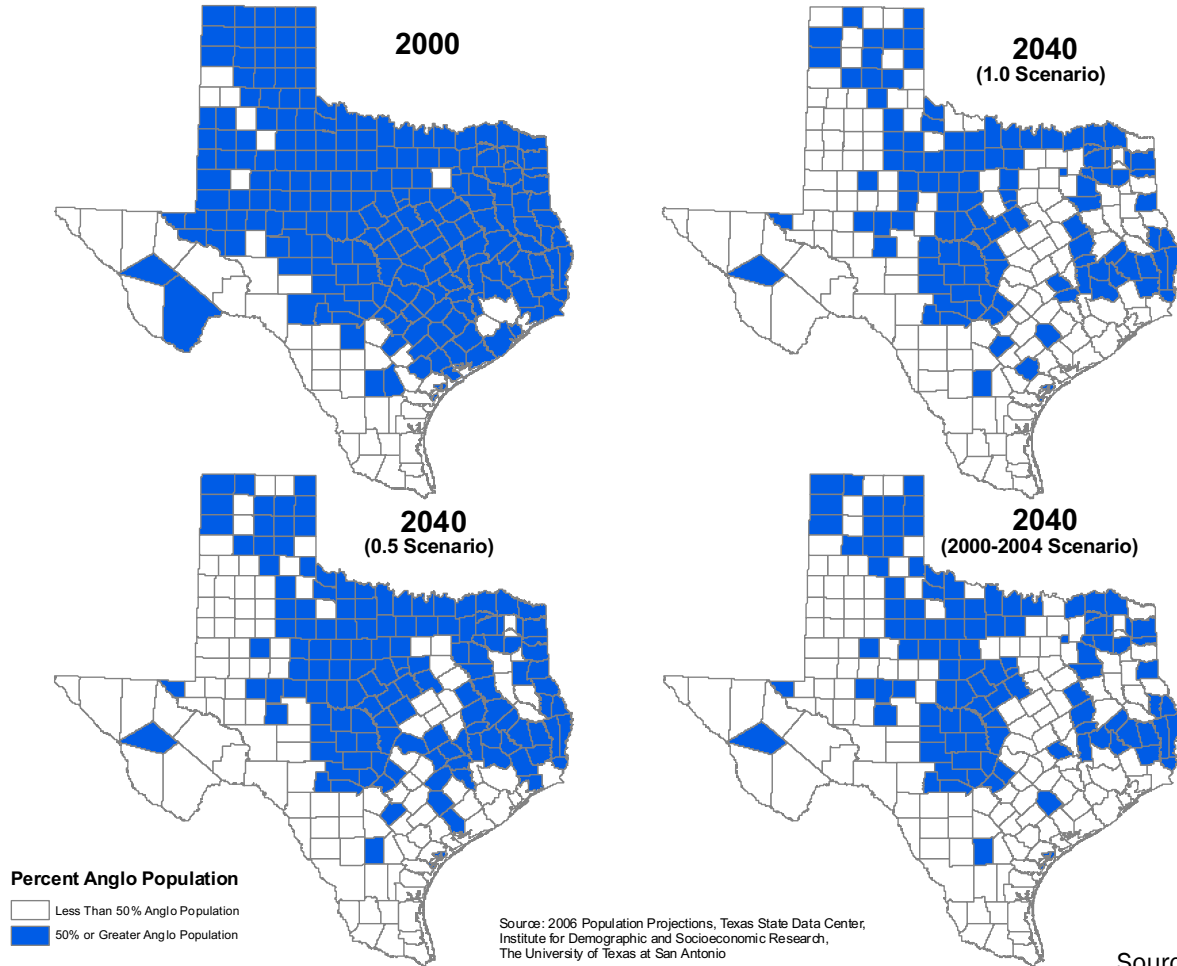
Source: Poston, Bouvier, 2017.

Projected population by race/ethnicity in Texas, 2000–2040
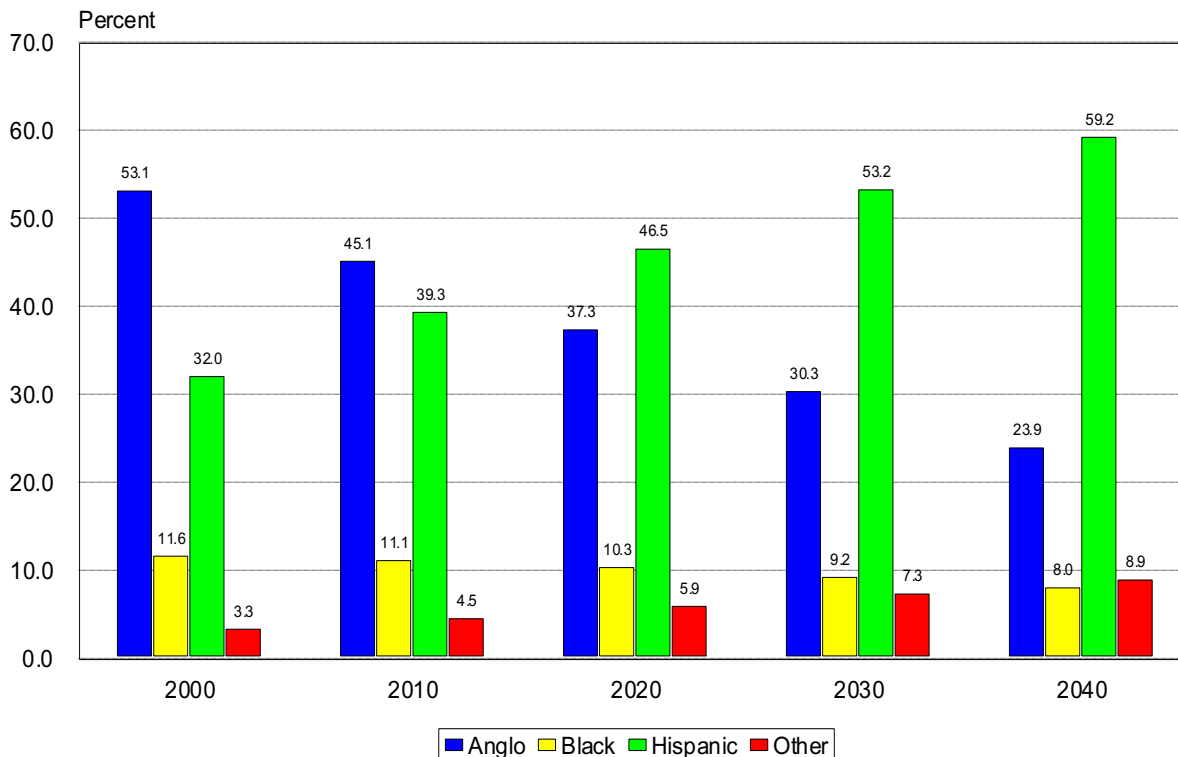
Source: Poston, Bouvier, 2017.

*Using U.S. Census count for 2000 and Texas State Data Center 1.0 population projection scenario for 2010-2040.

Texas counties with 50% or more of Anglo population

2000

2040
(1.0 Scenario)

2040
(0.5 Scenario)

2040
(2000-2004 Scenario)

Percent Anglo Population

☐ Less Than 50% Anglo Population

■ 50% or Greater Anglo Population

Source: 2006 Population Projections, Texas State Data Center,
Institute for Demographic and Socioeconomic Research,
The University of Texas at San Antonio
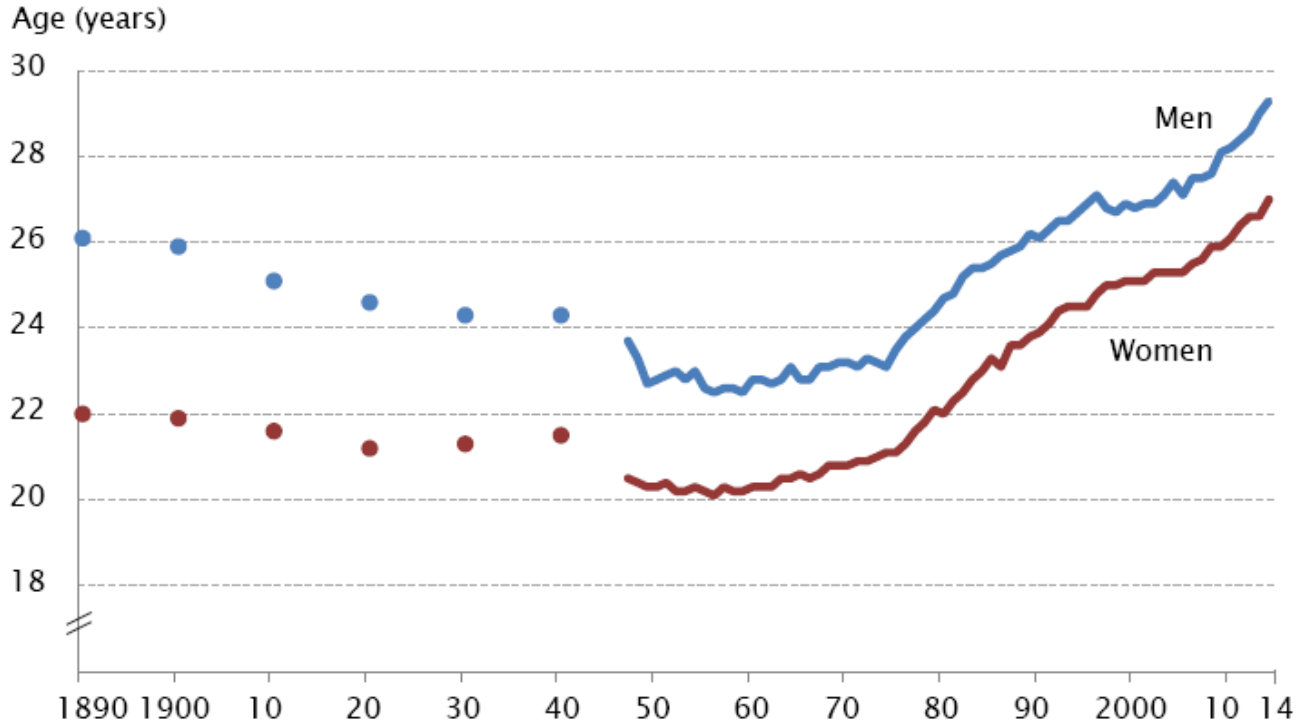
Source: Poston, Bouvier, 2017.

3. Changes of origin of undocumented immigrants

- Until now, Mexico has supplied the United States, with immigrant workers to fill low-wage jobs
  - Unprecedented decline in Mexican immigration
- Chinese workers could replace Mexican immigrants (Poston, Morrison 2011)
  - New influx of immigrant workers who will be fleeing hopeless conditions in China
  - Many of them will enter the U.S. undocumented

http://www.chron.com/disp/story.mpl/editorial/outlook/7695428.html
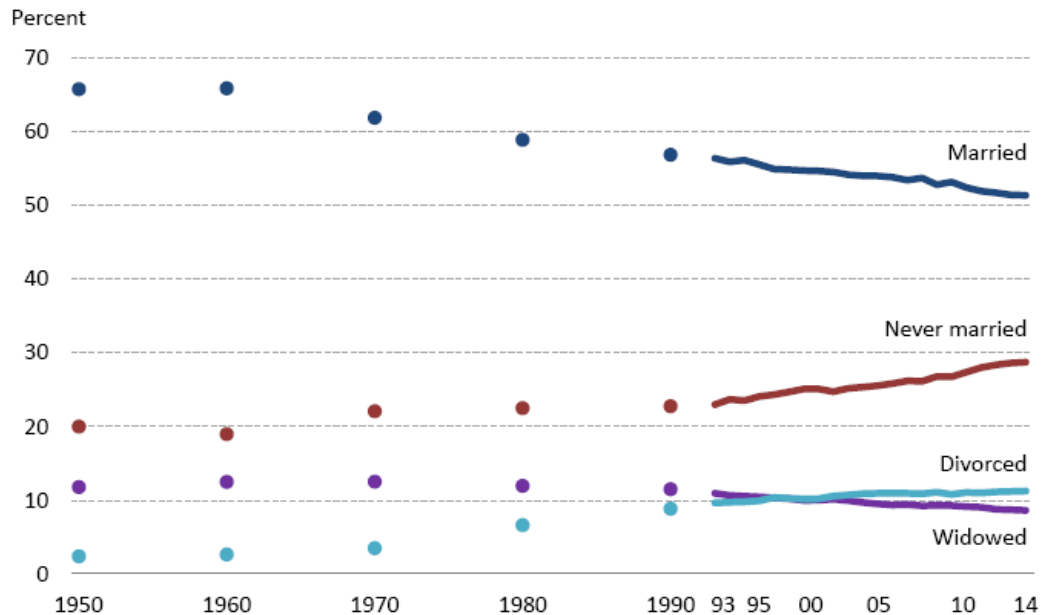
4. Increasing ages at first marriage
Median Age at First Marriage: United States, 1890-2014

Source: U.S. Census Bureau, https://www.census.gov/hhes/families/files/graphics/MS-2.pdf
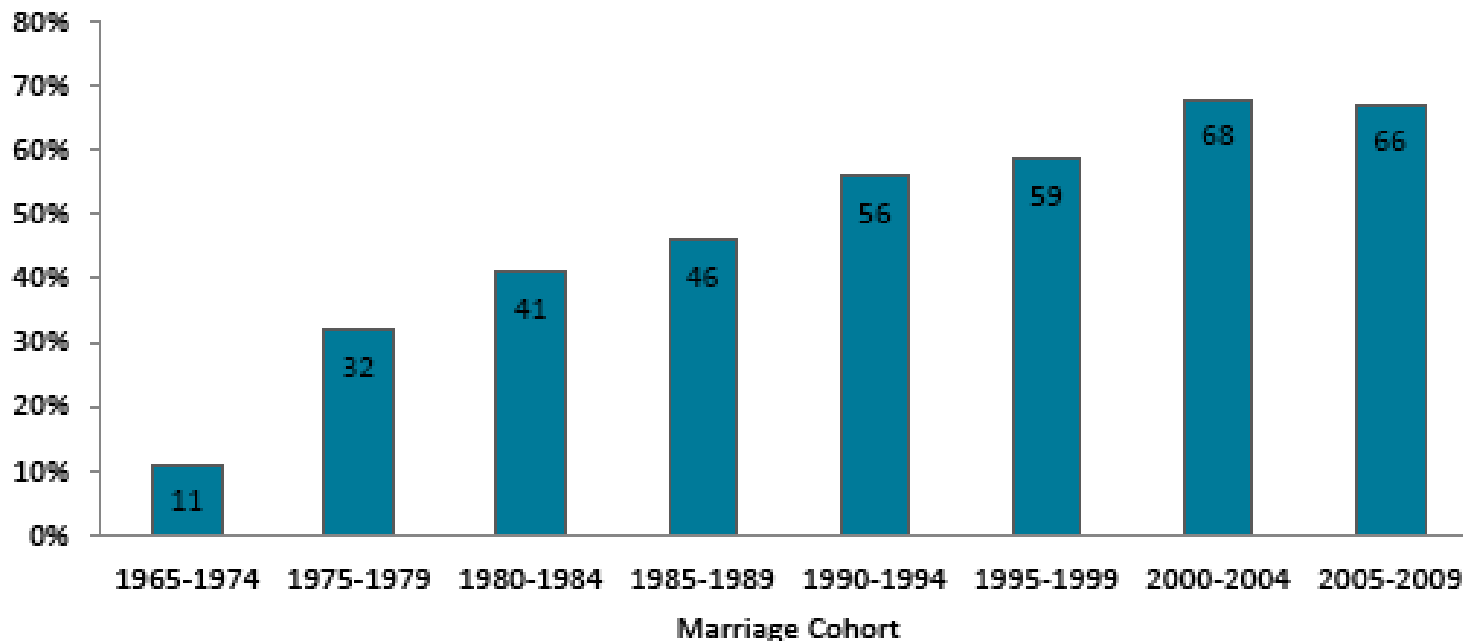
5. Decreasing percentages of persons marrying

Marital Status of Women 15 years of Age and Older: United States, 1950 - 2014

6. Increasing levels of cohabitation

**Percentages of Women (ages 19-44) Who Cohabited
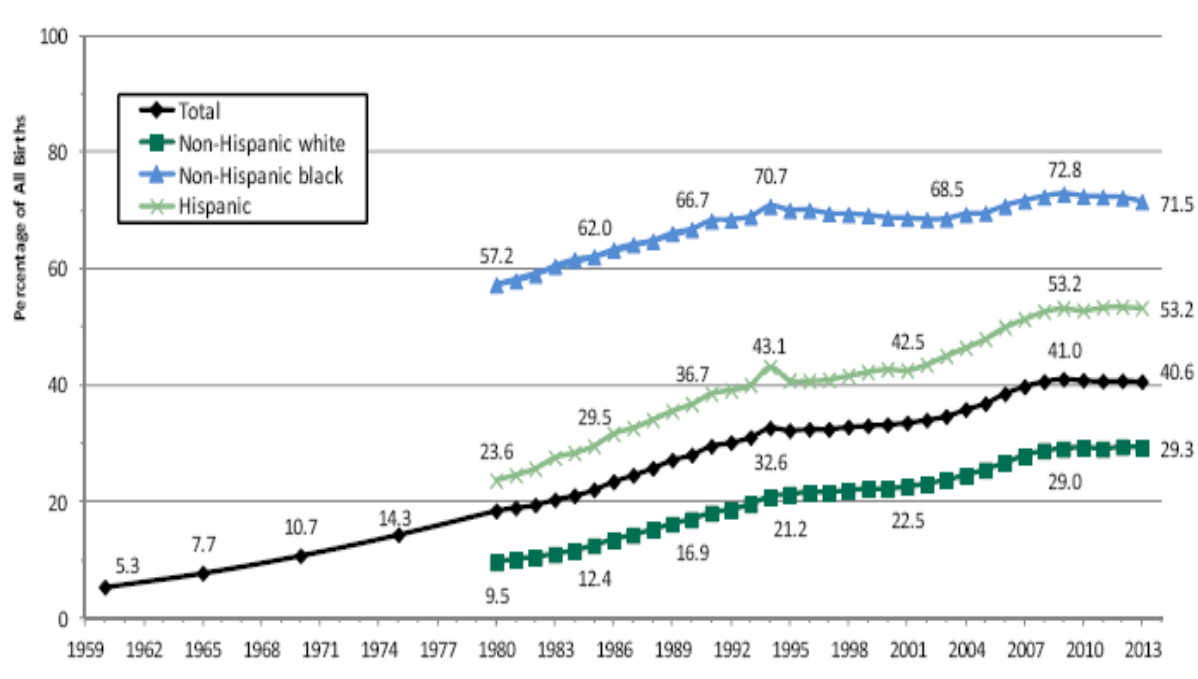Prior to Their First Marriage:
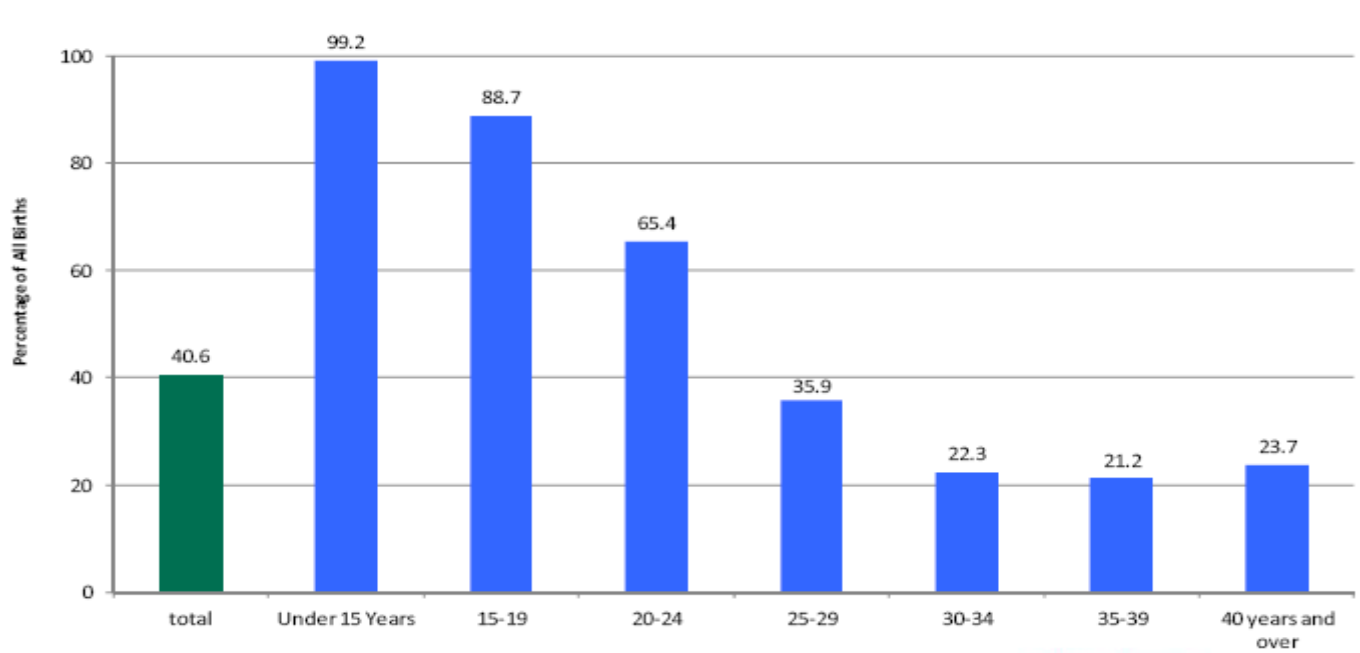United States, 1965-74 to 2005-09**

Source: Poston, Bouvier, 2017.

7. Increasing percentages of births to unwed mothers

Percentages of Births to Unmarried Women, by Race and Hispanic Origin, 1959 to 2013

How old are the unmarried women who had babies?

Percentage of All Births to Unmarried Women, by Age of Mother: United States, 2013

Global population trends

(Weeks 2015, Chapter 2, pp. 25–57)

- World population growth
  - A brief history
  - How fast is the world's population growing now?
  - Power of doubling — How fast can populations grow?
  - Why was early growth so slow?
  - Why are more recent increases so rapid?
  - How many people have ever lived?
- Geographic distribution of world's population
- Global variation in population size and growth

Brief demographic history

- Human beings have been around for at least 200,000 years, perhaps much longer

- For almost all of that time, humans were hunter-gatherers living a primitive existence
  - High fertility, high mortality, slow population growth

- Population on the eve of Agricultural Revolution (aka Neolithic Agrarian Revolution) 10,000 years ago is estimated at about 4 million

Agricultural Revolution

- Probably due to hunting-gathering populations' growth
  - Pushed the limit of their carrying capacity

- Previously, use of land extensively
  - Over tens of thousands of years humans moved to remote corners of the earth in search of sustenance

- People began to use resources intensively
  - Lead to agricultural lifestyle that has characterized society for the past 10,000 years

Historical population growth

- Between 8000 B.C. and 5000 B.C.

  – 333 people added each year

- By 500 B.C., major civilizations (China, Greece)

  – 100,000 people added each year

- By 1 A.D., almost 250 million people

 – 300,000 people added each year

Variations in mortality

- Between 3rd and 5th centuries A.D.

  – Increases in mortality led to declining population

  – In the Mediterranean as Roman Empire collapsed

  – In China as the Han empire collapsed

- Population growth recovered until the plague arrived in Europe by middle of the 14th century

Industrial Revolution

- Middle of 18th century
  - Eve of Industrial Revolution
  - World's population approaching 1 billion
  - Increasing by about 2.2 million every year
- Since the beginning of the Industrial Revolution
  - Approximately 250 years ago
  - Size of world's population increased dramatically

World's population exploded in size
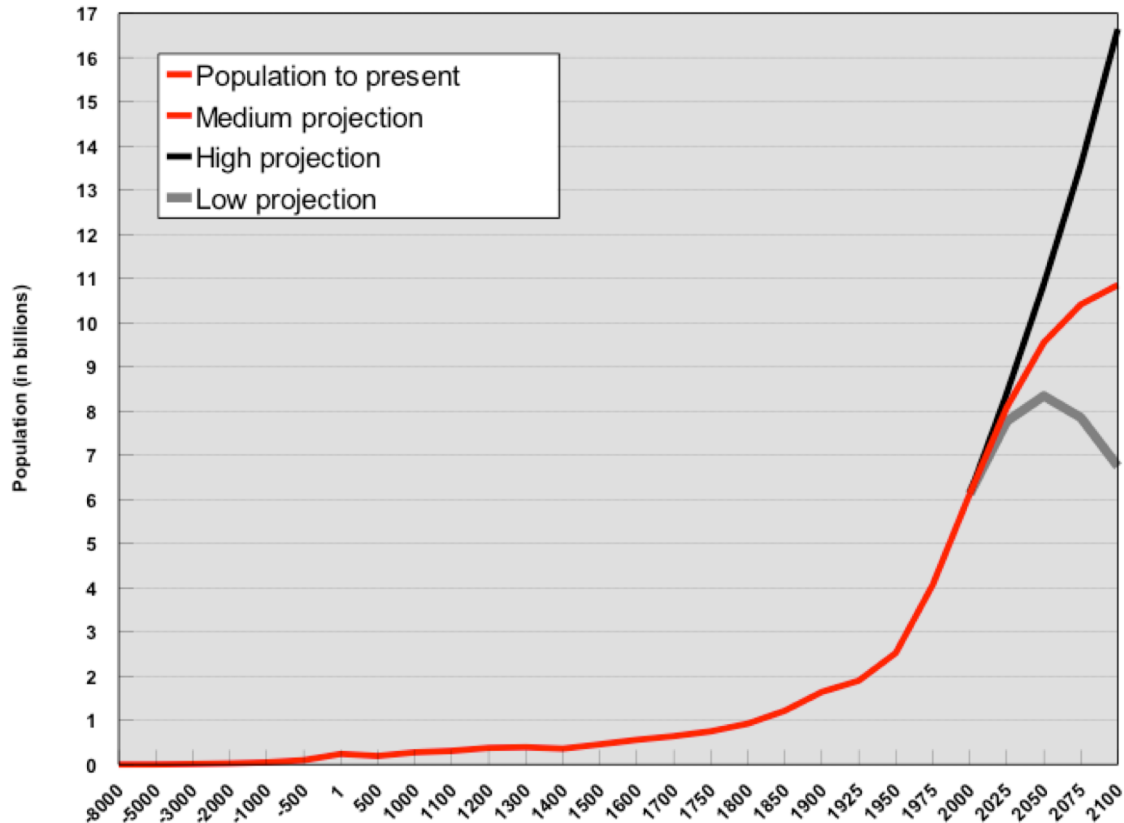
Annual growth rate & annual increase
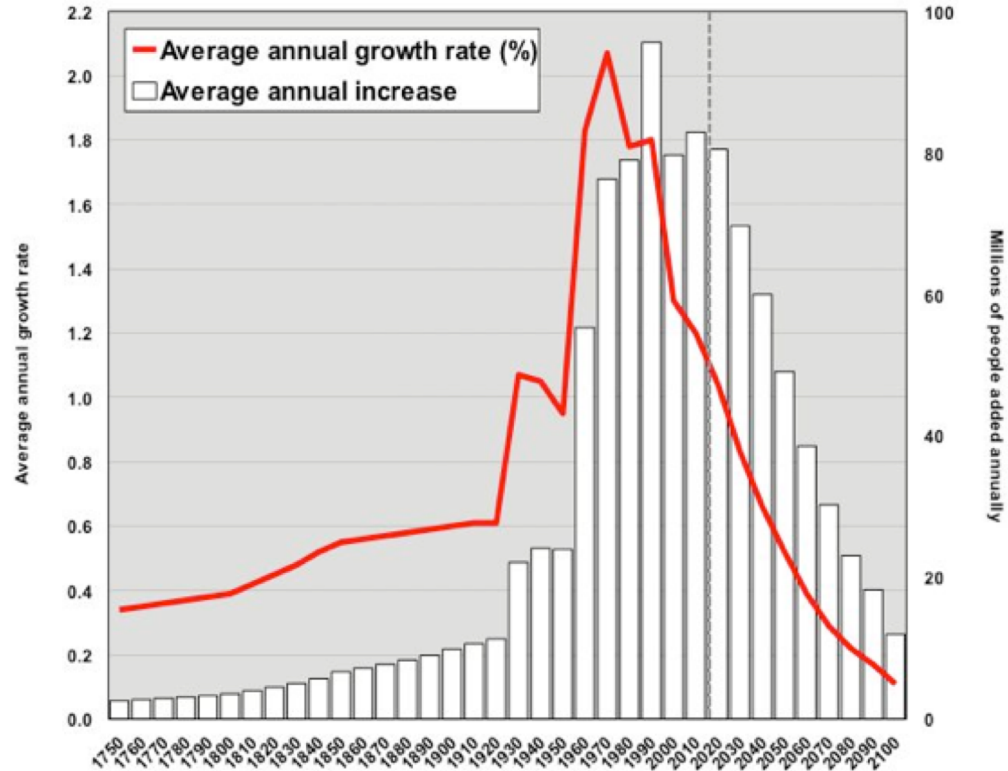
Population increase by time period

Time period	Births	Deaths	Natural increase
Year	134,176,254	56,605,700	77,570,553
Day	367,606	155,084	212,522
Hour	15,317	6,462	8,855
Minute	255	108	148
Second	4.3	1.8	2.5

# Why was early growth slow?

- During the hunting-gathering phase, life expectancy was very low: ~ 20 years

- More than half of children born died before their 5th birthday

- The average woman who survived the reproductive years would have to bear nearly 7 children to assure that 2 survived to adulthood

Why are recent increases so rapid?

- Acceleration in population after 1750
  - Declines in death rate related to Enlightenment, scientific advances, and Industrial Revolution
  - Eating better, bathing more often, drinking cleaner water, and vaccinations were being discovered

- Continuing population increases
  - Dramatic declines in mortality without compatible decline in fertility, even though fertility was declining

Population growth, 2015–2050

Population in Billions

Least Developed

Less Developed

More Developed
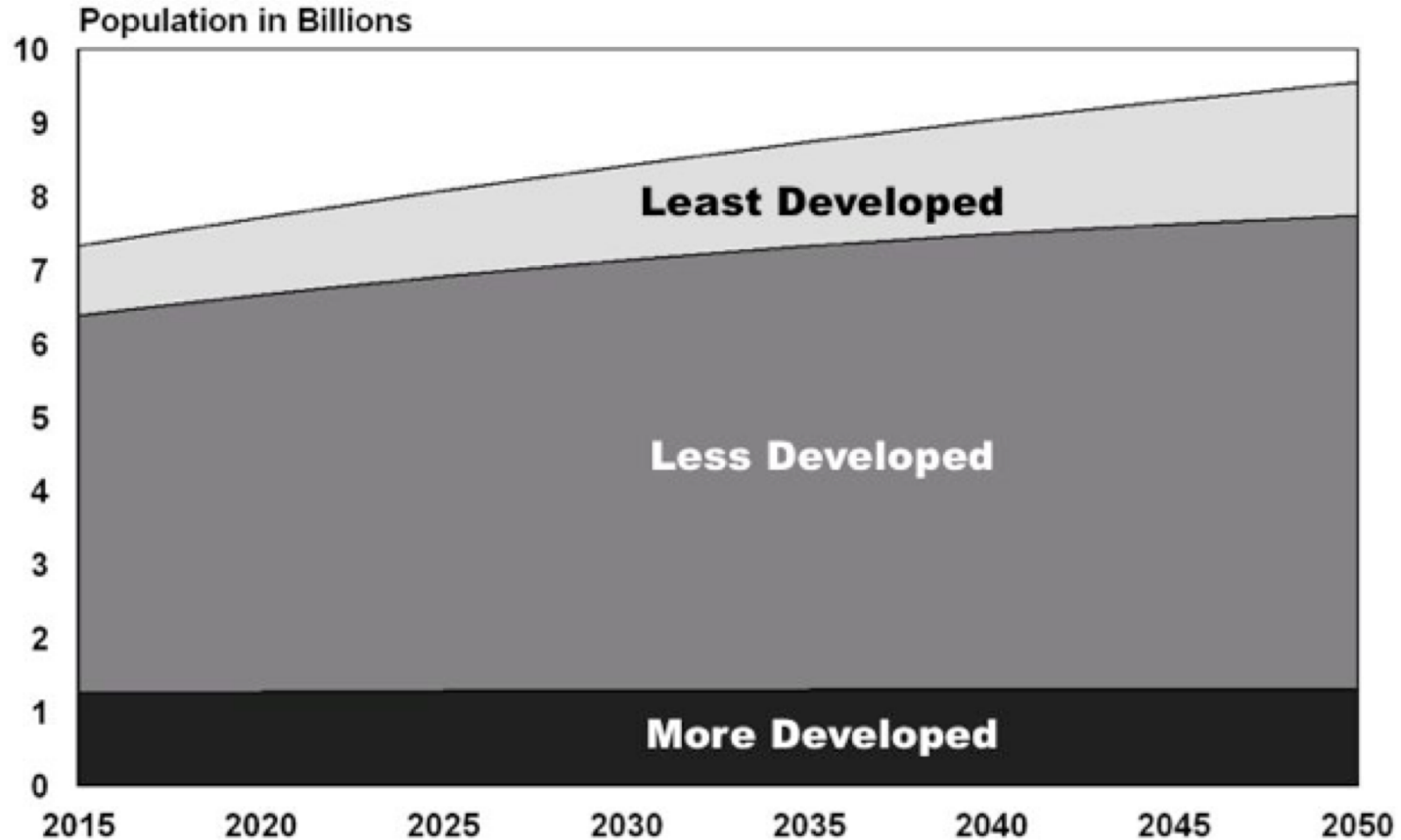
Medium variant fertility projections
©2016 Cengage Learning. All Rights Reserved.

How many people ever lived?

- Current contribution to history's total population is relatively small, but steadily growing fraction of all people who have ever lived

- Formulas of Nathan Keyfitz suggest
  - 63 billion people have been born over the past 200,000 years
  - 7.3 billion alive in 2014 constitutes 11.7%
  - Lower percentages assume more years of human history, higher birth/death rates in earlier periods

Geographic distribution

- Migration flows from rapidly growing areas into less rapidly growing ones
  - European expansion: 14th to 20th centuries
    - Europe to North and South America and Oceania
    - Africa to Latin America, Caribbean and North America
  - South to North migration: 20th & 21st centuries
    - Latin America and Asia to the United States
    - Asia to Canada
    - Africa, Asia, and Latin America to Europe

Urban revolution

- In earlier decades, as population grew dense, people moved to less populated areas
  - In 1800, less than 1% of world's population lived in cities of 100,000 or more
- Now they move to urban areas
  - More than 1/3 of humans live in 100,000+ cities
  - More than 50% live in urban places of any size
  - Urbanization grew even without industrialization
    - People moved to areas where goods and services were exchanged

10 most populous countries, millions

	Country	2015	Country	2050
1	China	1,402	India	1,620
2	India	1,282	China	1,385
3	United States	325	Nigeria	404
4	Indonesia	256	United States	401
5	Brazil	204	Indonesia	321
6	Pakistan	188	Pakistan	271
7	Nigeria	183	Brazil	231
8	Bangladesh	160	Bangladesh	202
9	Russia	142	Ethiopia	188
10	Japan	127	Philippines	157

Countries by population size, 2015
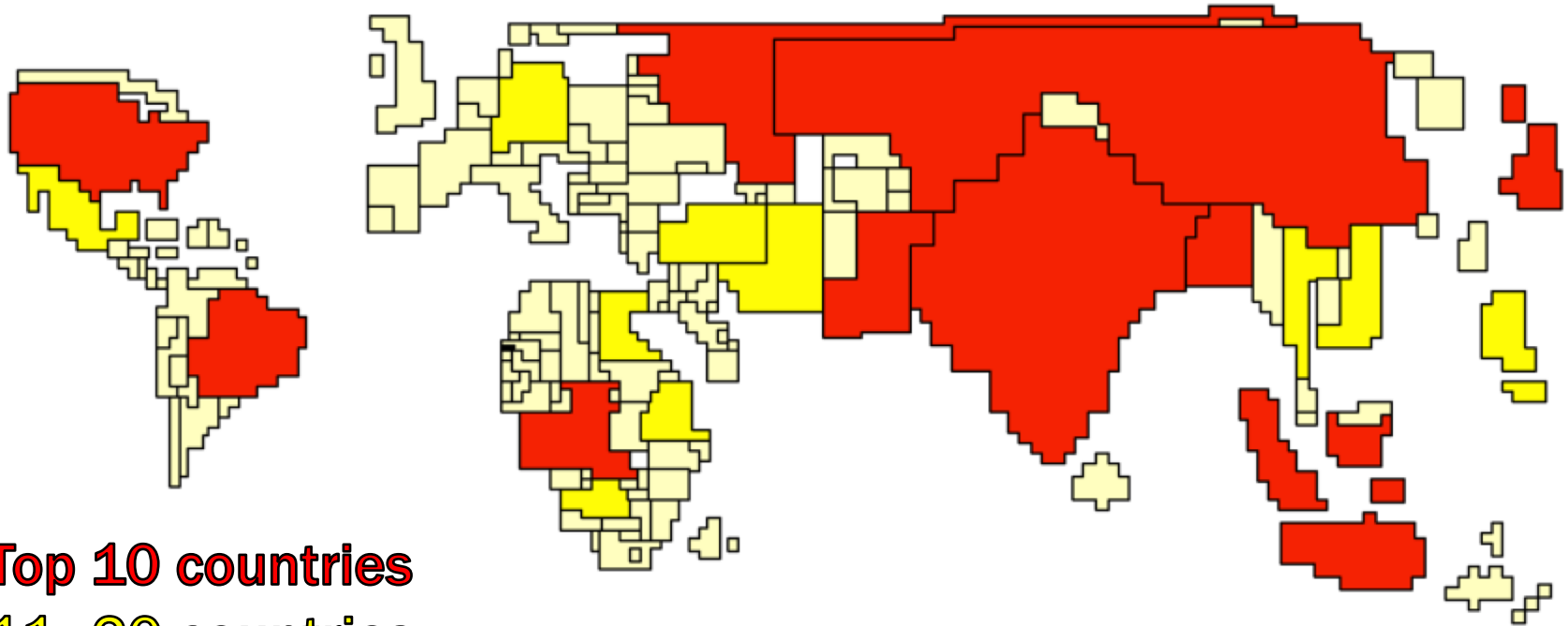
Top 10 countries
11–20 countries
All others

Rates of population growth, 2012

Rates of Population Growth

- Lower than world average
- Close to world average
- Above world average
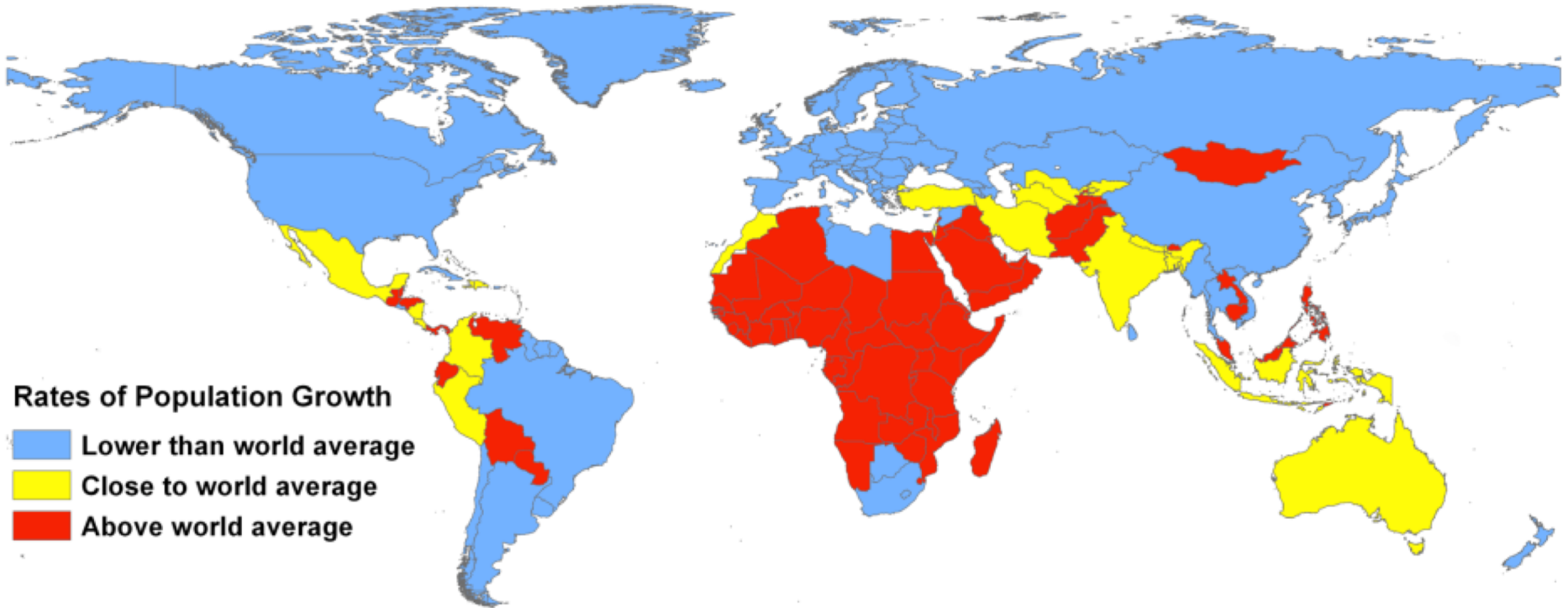
United States

- One of highest rates of population growth among rich nations

- Fertility slightly above replacement

- High life expectancy, although one of lowest among rich nations

- High levels of legal and undocumented immigration

Canada

- Demographics are more like Europe than the U.S.

- Below replacement fertility

- Higher life expectancy than the U.S.

- Very high level of immigration per person (especially from Asia), which keeps the population growing

Mexico

- Fertility rates have dropped a lot since the 1970s when the government started promoting family planning

- Life expectancy nearly as high as in the U.S.

- Net outmigration mainly to the U.S.

- Immigrants in the south from Central America

- Southern Mexico is heavily indigenous

Central America

- Heavily indigenous
  - Higher than average fertility
  - Lower than average life expectancy

- Out-migration aggravated by socioeconomic (poverty) and security (crime) issues

- Costa Rica is an exception, with European-style demographics

Brazil

- Accounts for half the population of South America

- Since the 1960s, it has experienced significant decline in fertility to below replacement level

- Predominantly Catholic country, but growing Protestant population

- Life expectancy is well above the world average

Rest of South America

- Divided roughly in two groups

- Predominantly European-origin populations with European-style demographics
  - Argentina, Chile, Uruguay

- Other nations have larger fractions of indigenous population
  - Higher fertility and mortality

118

Europe

- Experiencing depopulation, especially because
  - Russia and Germany have very low levels of fertility
  - Russia has experienced low life expectancy
- Eastern and southern
  - Fertility well below replacement level
  - High life expectancy
  - Lack of interest in receiving many immigrants
- Northern and western
  - Highest fertility levels: support for working mothers
  - Immigrants are not unwelcome: political issue

Northern Africa and Western Asia

- Predominantly Muslim: exception of Israel
  - Rapid rates of population growth
    - Contributing to conflict in the region
  - Fertility is declining, but still above death rates
    - Young populations
- Iran (technically in South Asia) and Turkey
  - Populous and European-style demographics
  - Below-replacement fertility, high life expectancy
  - Southeastern Turkey: high fertility, low female literacy, similar to Syria and Iraq

Sub-Saharan Africa

- The most rapidly growing region in the world

- Nigeria, Ethiopia, Congo: large and growing

- High birth rates, although generally declining

- Death rates: world's highest, but declining

- High incidence of HIV and Ebola

- Young populations and migration within region

South and Southeast Asia

- 1/3 of the world's population
  - India, Pakistan, Bangladesh, Indonesia, Philippines, Vietnam, Thailand

- India projected to become most populous nation by middle of this century
  - Higher birth and death rates than China

- Indonesia (1st), India (2nd), Pakistan (3rd)
  - Highest numbers of Muslims in the world

East Asia

- 1.6 billion people in all region
  - China has 1.4 billion
  - Japan, South Korea, Taiwan: next largest in pop. size
- Fertility is below replacement level
  - China had an official one-child policy
  - High life expectancy, but population will decline
- Immigration is not very popular
  - Low birth rate, aging population: not supplemented by inflow of migrants

Global demographic contrasts

- North-South divide

- South has higher birth rates, higher death rates, younger populations than north

- These differences and variability within the south will drive the future

References

Healey JF. 2015. "Statistics: A Tool for Social Research." Stamford: Cengage Learning.

Hugo G. 2011. "Future demographic change and its interactions with migration and climate change." Global Environmental Change, 21(Supplement 1): S21–S33.

Poston DL, Bouvier LF. 2017. Population and Society: An Introduction to Demography. New York: Cambridge University Press. 2nd edition. Chapter 1 (pp. 3–16).

Weeks JR. 2015. Population: An Introduction to Concepts and Issues. Boston: Cengage Learning. 12th edition. Chapters 1 (pp. 1-24), 2 (pp. 25-57).

Wooldridge JM. 2015. "Introductory Econometrics: A Modern Approach." Boston: Cengage Learning.