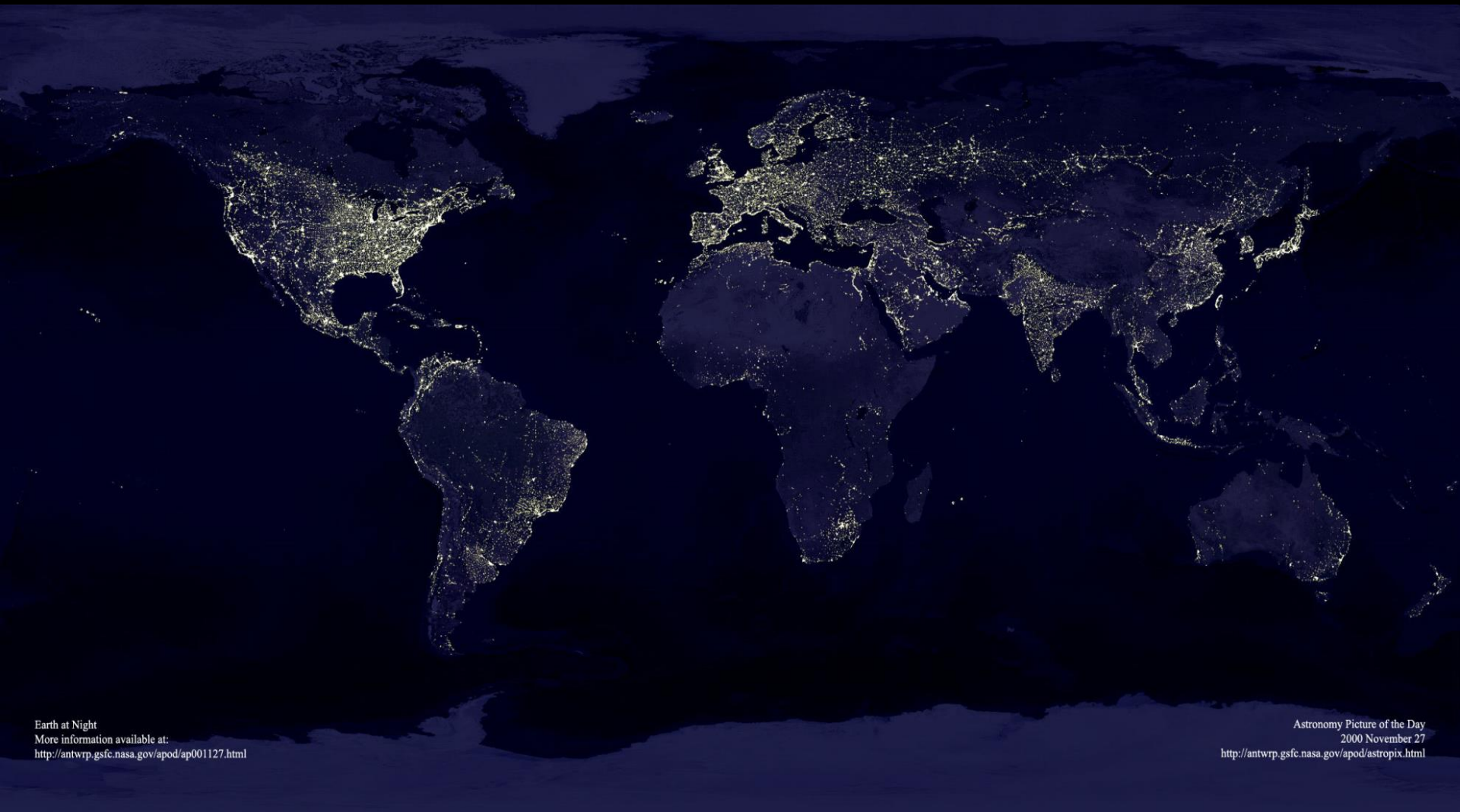
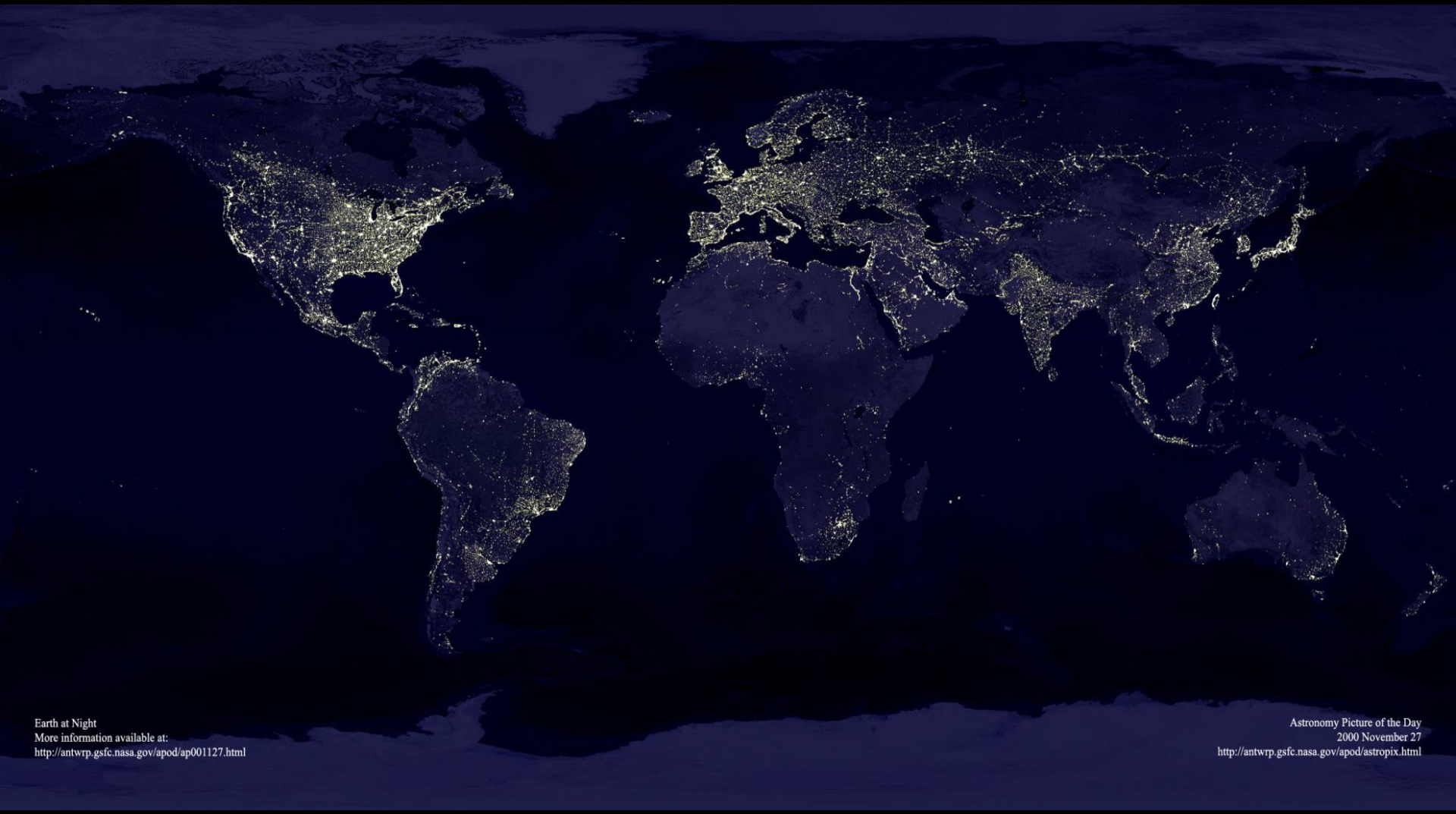
Population


Earth at Night
More information available at:
http://antwrp.gsfc.nasa.gov/apod/ap001127.html
Astronomy Picture of the Day
2000 November 27
http://antwrp.gsfc.nasa.gov/apod/astropix.html



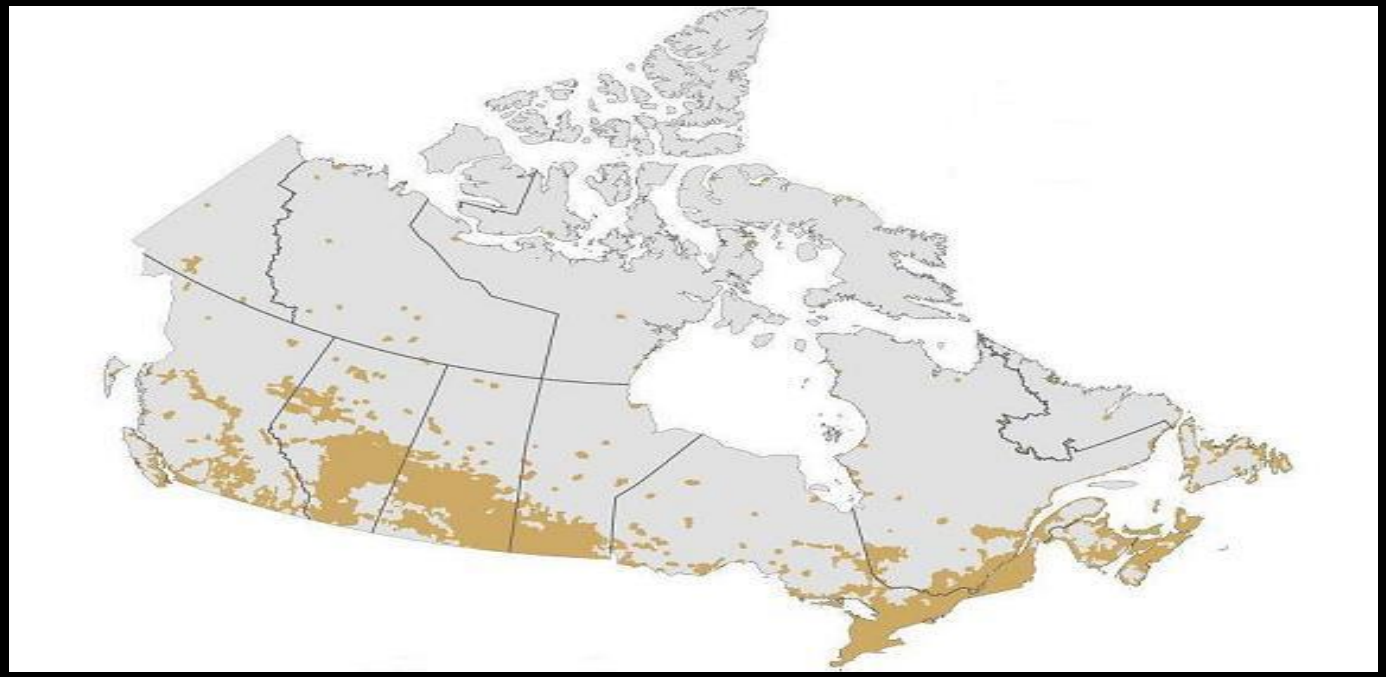
2.1 Population Distribution

Demography: The study of human populations.

- Demographers study the spatial distribution and density of humans and their movements.

Ecumene: The portion of the earth that is inhabited by humans.

- Approximately 75% of all humans live on only 5% of the Earth's surface.
- Over 50% live in cities



What is the current world population?

- 7.5 Billion +

- http://www.worldometers.info/world-population/

- Visualizing How a Population Reaches 7 Billion on Vimeo

Earth's Population History

7 billion reached 2011 (12 years later)

6 billion reached 1999 (12 years later)

5 billion reached 1987 (13 years later)

4 billion reached 1974 (15 years later)

3 billion reached 1959 (29 years later)

2 billion reached 1930 (100 years later)

1 billion reached circa 1830

Source: Kuby, HGIA

Name the three most populated countries?

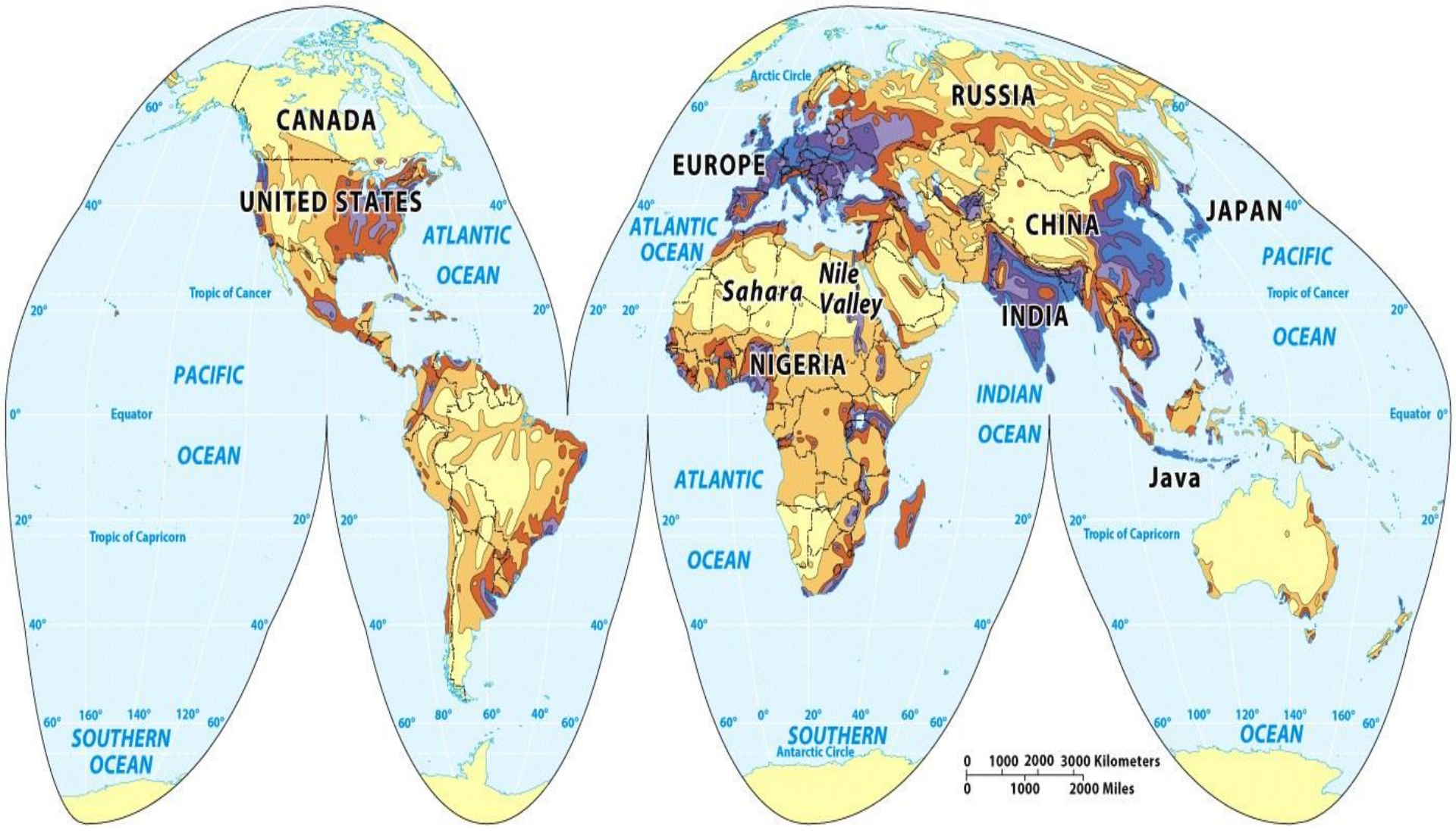
- China
- India
- United States

Population Distribution

- Descriptions of locations on the Earth's surface where individuals or groups (depending on the scale) live.

- Geographers often represent population distributions on **dot maps**, in which one dot represents a certain number of a population.

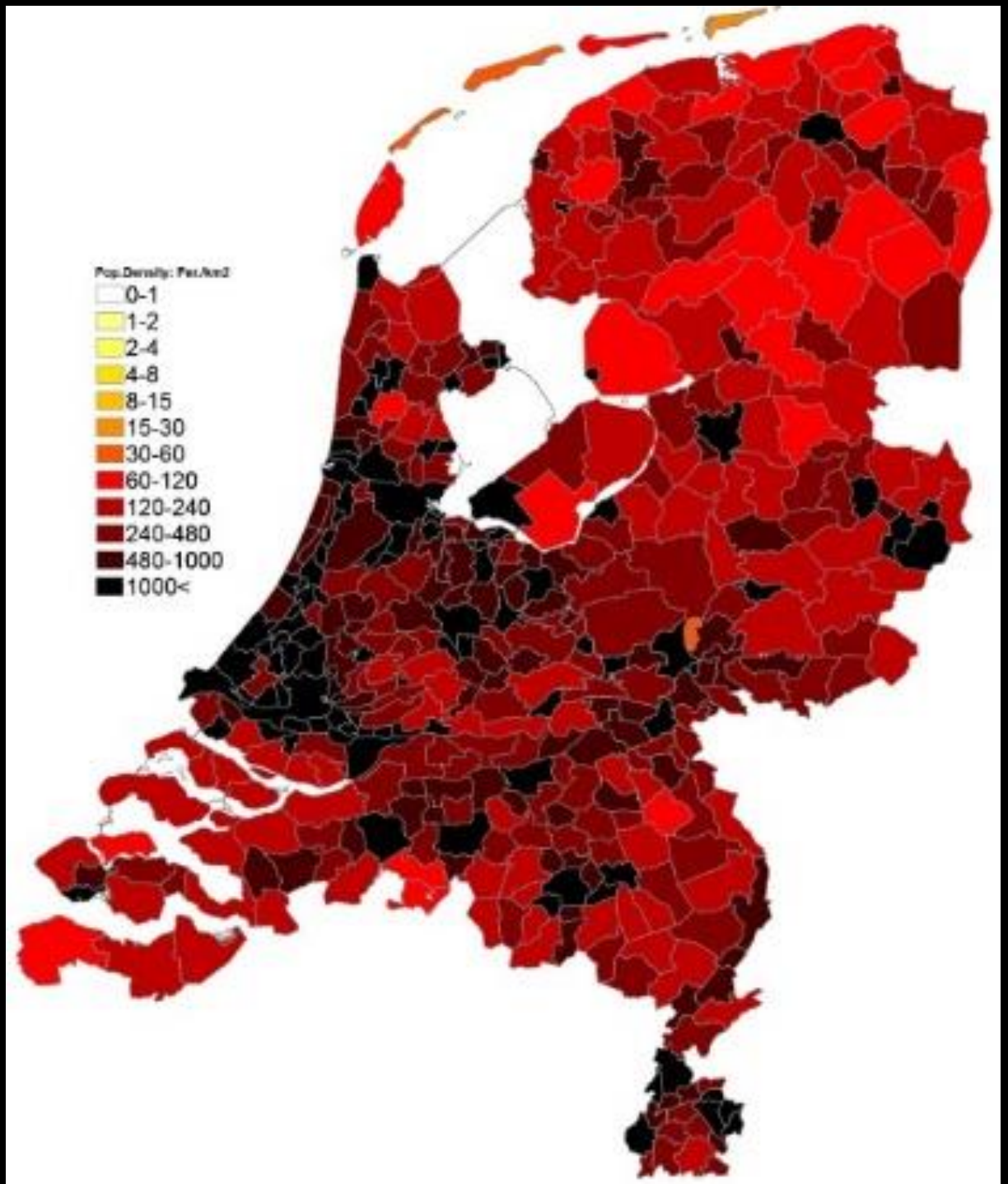
Population Density: a country's total population relative to land size. Assumes an even distribution of population to the land.



WORLD POPULATION DENSITY

Inhabitants

Per square kilometer	Per square mile
100 or more	250 or more
50–99	125–249
25–49	60–124
10–24	25–59
1–10	2–24
under 1	under 2


Pop.Density: Per./km2
0-1
1-2
2-4
4-8
8-15
15-30
30-60
60-120
120-240
240-480
480-1000
1000<

Arithmetic Population Density

- The population of a country or region expressed as an average per unit area.
- Derived by dividing the population of an area by the number of miles/kilometers that make up that unit.
- For Example – Average population density in US is 82 per square mile

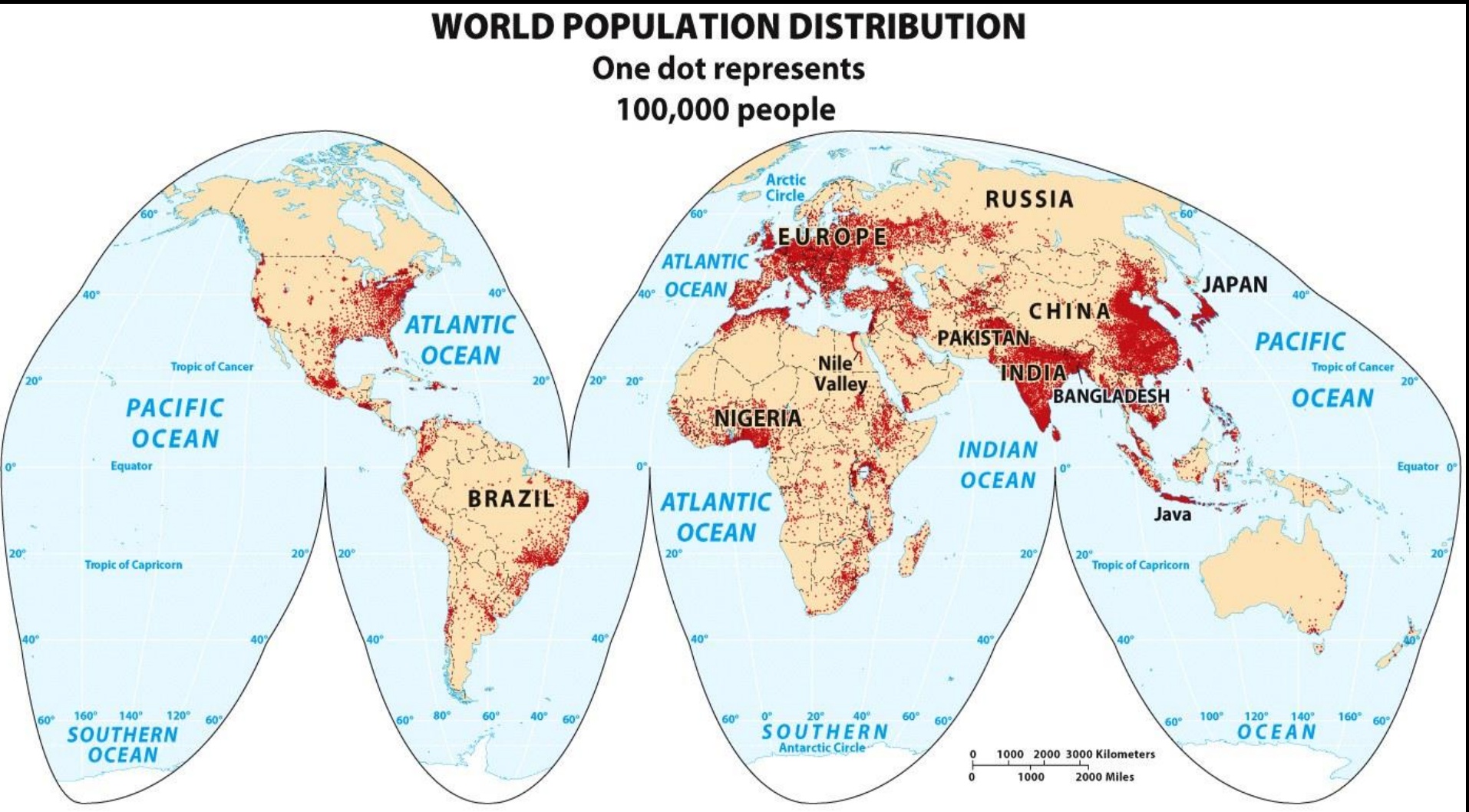
Physiologic Population Density

- The number of people per unit area of agriculturally productive land.
- Also known as agricultural density
- Derived by dividing number of people by the amount of arable land in the country or region.

Concept Caching:
Rice Terraces- Bail, Indonesia

- To have a clear understanding of population you must look at both density and distribution.

World Population Distribution



Physical Factors Influencing Population Distribution

1. Midlatitudes
2. Low-lying Areas
3. Fresh Water
4. Other Resources

Midlatitudes

Most people live in the midlatitudes – the regions between 30° N and 60° N, and between 30° S and 60° S.

Midlats have moderate climates and better soils than other areas.

Low-lying Areas

Most people live in low lying areas rather than mountainous areas.

Low lying areas have better soils and often close to oceans, which provide transportation, provide a source of food and moderate the climate.

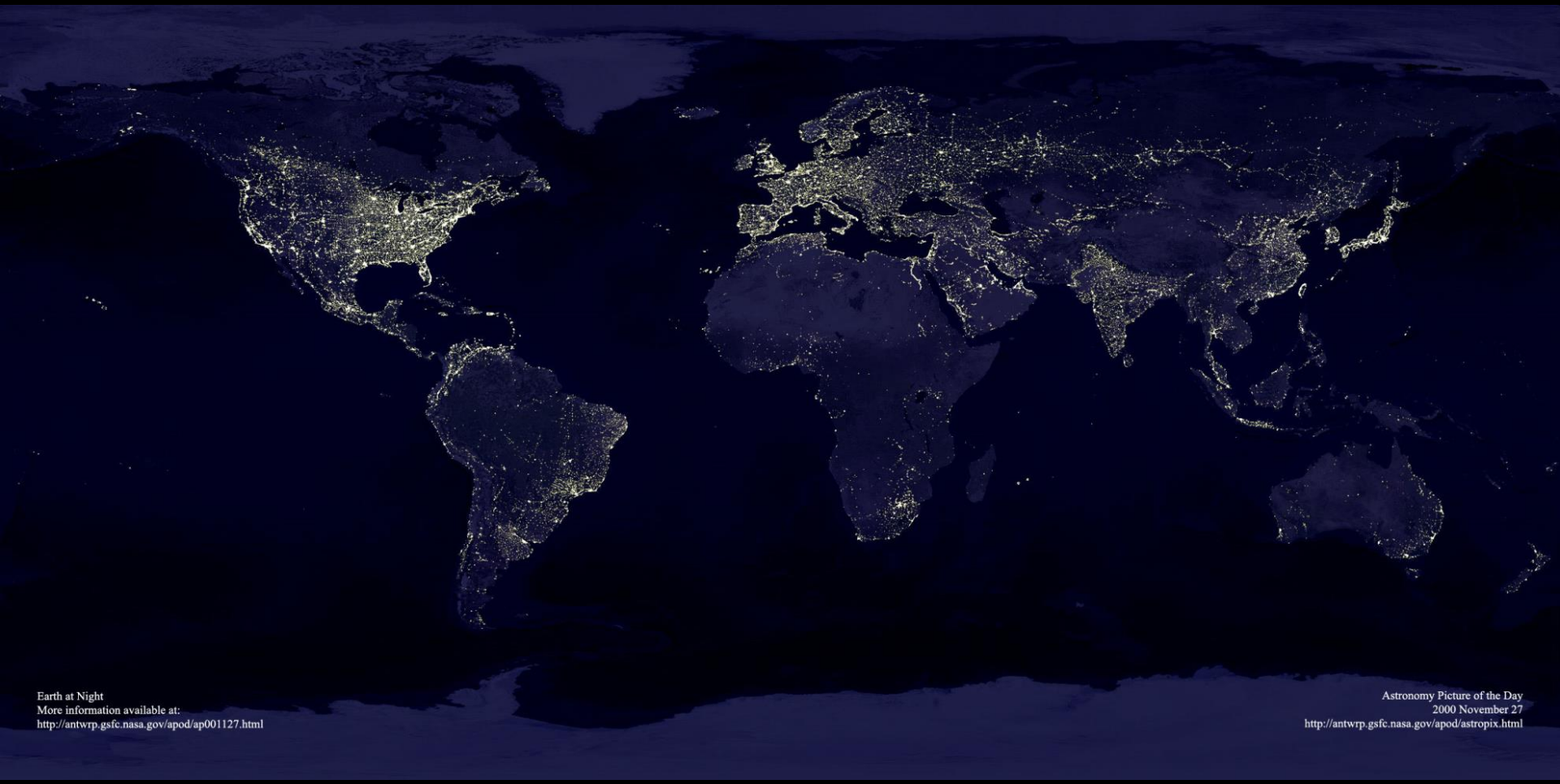
Fresh Water

Most people live near rivers or lakes, which provide fresh water to drink, irrigation for crops, transportation and food.

Other Resources

Natural resources, such as forest products and minerals, can also influence where people live.


There are more people living inside
this circle than outside of it.



2.2 Consequences of Population Distribution

Carrying Capacity

The maximum population size that the environment can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment.

Ultimate Guide – Carrying Capacity

1. Describe and explain the chart – what is it, what is it showing.

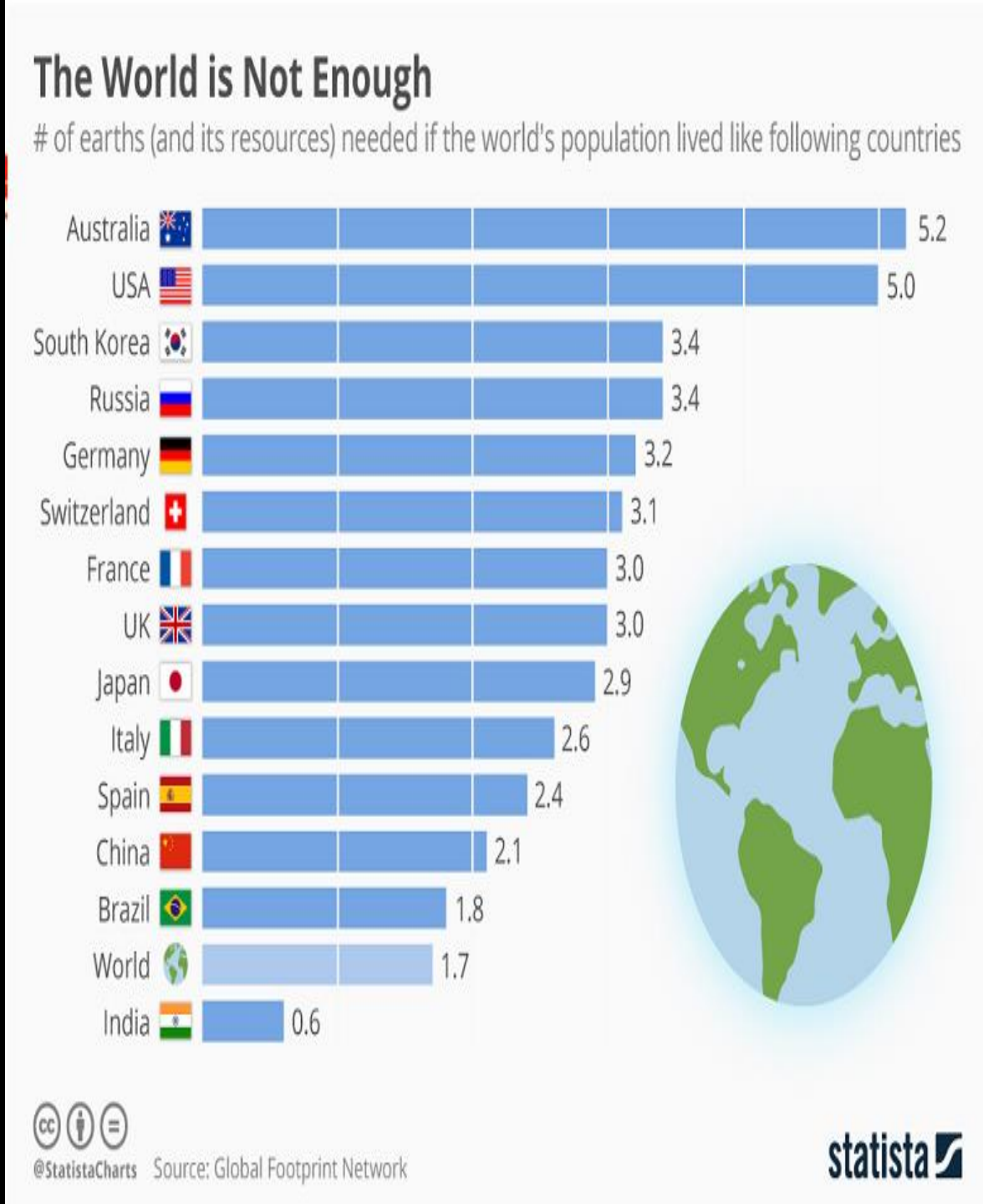
2. Identify and describe patterns apparent in the chart..

3. Research Australia and explain why they are the country with the highest ranking.

4. Research India and explain why they are the country with the lowest ranking.

   Focus your research on energy use, consumption, eco-footprint, carbon footprint, etc.

5. Describe and explain the impacts of this phenomenon - environmental, social, political and economic.



SIDE 1

RESCORE MARK ✓ TOTAL ONLY/BOTH SIDES

	T	F
1	Ⓐ	Ⓑ Ⓒ Ⓓ
2	Ⓐ	Ⓑ Ⓒ Ⓓ
3	Ⓐ	Ⓑ Ⓒ Ⓓ
4	Ⓐ	Ⓑ Ⓒ Ⓓ
5	Ⓐ	Ⓑ Ⓒ Ⓓ
6	Ⓐ	Ⓑ Ⓒ Ⓓ
7	Ⓐ	Ⓑ Ⓒ Ⓓ
8	Ⓐ	Ⓑ Ⓒ Ⓓ
9	Ⓐ	Ⓑ Ⓒ Ⓓ
10	Ⓐ	Ⓑ Ⓒ Ⓓ
11	Ⓐ	Ⓑ Ⓒ Ⓓ
12	Ⓐ	Ⓑ Ⓒ Ⓓ
13	Ⓐ	Ⓑ Ⓒ Ⓓ
14	Ⓐ	Ⓑ Ⓒ Ⓓ
15	Ⓐ	Ⓑ Ⓒ Ⓓ
16	Ⓐ	Ⓑ Ⓒ Ⓓ
17	Ⓐ	Ⓑ Ⓒ Ⓓ
18	Ⓐ	Ⓑ Ⓒ Ⓓ
19	Ⓐ	Ⓑ Ⓒ Ⓓ
20	Ⓐ	Ⓑ Ⓒ Ⓓ
21	Ⓐ	Ⓑ Ⓒ Ⓓ
22	Ⓐ	Ⓑ Ⓒ Ⓓ
23	Ⓐ	Ⓑ Ⓒ Ⓓ
24	Ⓐ	Ⓑ Ⓒ Ⓓ
25	Ⓐ	Ⓑ Ⓒ Ⓓ

	T	F
26	Ⓐ	Ⓑ Ⓒ Ⓓ
27	Ⓐ	Ⓑ Ⓒ Ⓓ
28	Ⓐ	Ⓑ Ⓒ Ⓓ
29	Ⓐ	Ⓑ Ⓒ Ⓓ
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31	Ⓐ	Ⓑ Ⓒ Ⓓ
32	Ⓐ	Ⓑ Ⓒ Ⓓ
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35	Ⓐ	Ⓑ Ⓒ Ⓓ
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37	Ⓐ	Ⓑ Ⓒ Ⓓ
38	Ⓐ	Ⓑ Ⓒ Ⓓ
39	Ⓐ	Ⓑ Ⓒ Ⓓ
40	Ⓐ	Ⓑ Ⓒ Ⓓ
41	Ⓐ	Ⓑ Ⓒ Ⓓ
42	Ⓐ	Ⓑ Ⓒ Ⓓ
43	Ⓐ	Ⓑ Ⓒ Ⓓ
44	Ⓐ	Ⓑ Ⓒ Ⓓ
45	Ⓐ	Ⓑ Ⓒ Ⓓ
46	Ⓐ	Ⓑ Ⓒ Ⓓ
47	Ⓐ	Ⓑ Ⓒ Ⓓ
48	Ⓐ	Ⓑ Ⓒ Ⓓ
49	Ⓐ	Ⓑ Ⓒ Ⓓ
50	Ⓐ	Ⓑ Ⓒ Ⓓ

KEY ITEM COUNT

0	0	0
1	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

1 FEED THIS DIRECTION

STUDENT ID (UPON REQUEST)

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

APPERSON EDUCATION PRODUCTS 800.827.9219
#26890-TR 08/02 (REF # 75843) 74810 09/09

MARKING INSTRUCTIONS

Use a No. 2 pencil only

Ⓐ ● Ⓒ Ⓓ
Fill circle completely

Ⓐ Ⓑ Ⓒ Ⓓ
Erase cleanly

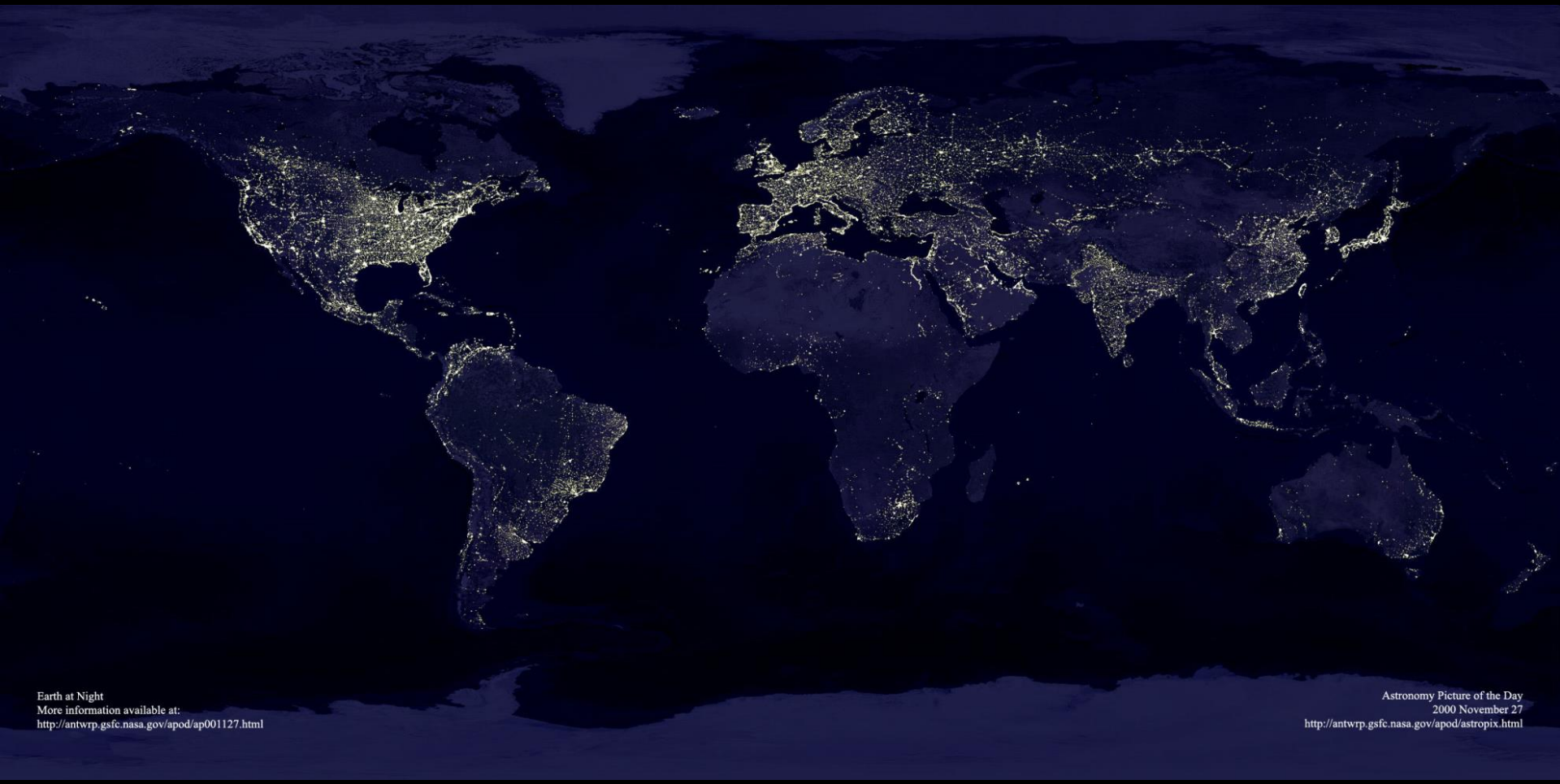
SCORE		# CORRECT
		% CORRECT
RESCORE		# CORRECT
		% CORRECT
ROSTER NUMBER		SCORE
		RESCORE

NAME _____

SUBJECT _____

PERIOD _____ DATE _____

TEST ANSWER SHEET M



2.3 Population Composition

Population Composition: The structure of a population in terms of age, gender, and other properties such as marital status and education.

- Age and gender are key indicators of population composition.

Major Demographic Factors Influencing Population Composition

- Ethnicity
- Age
- Gender

Ethnicity: Frequently members of an ethnic group cluster in particular regions.

Often true of immigrants and religious groups.

Age: many regions of a country will have younger or older average populations

In the United States

Utah has the youngest average age at 29.9

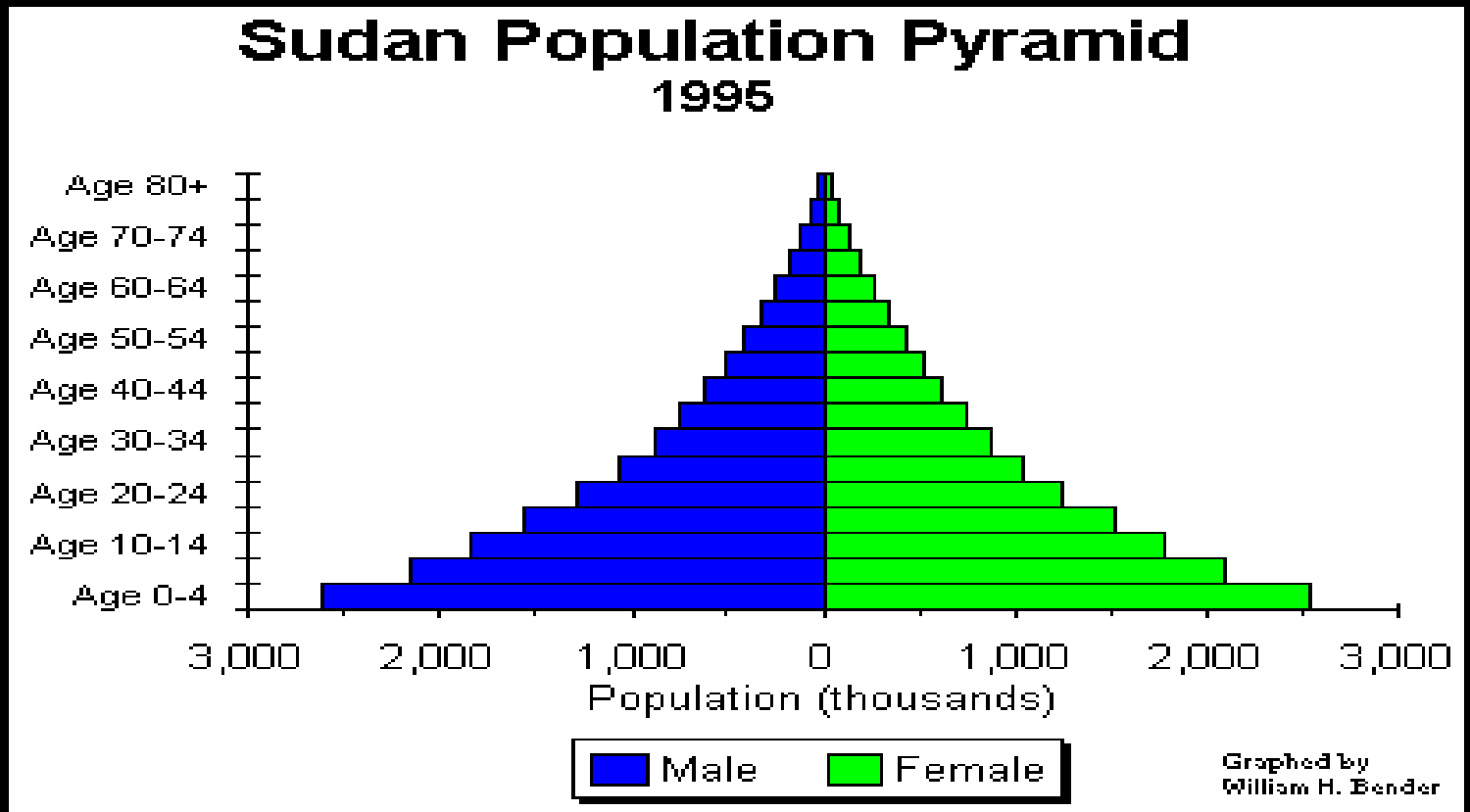
Maine has the oldest average age at 43.5

Gender: Gender imbalances can occur because of war, migration and government policies.

Communities near mining and military bases tend to have a higher percentage of males.

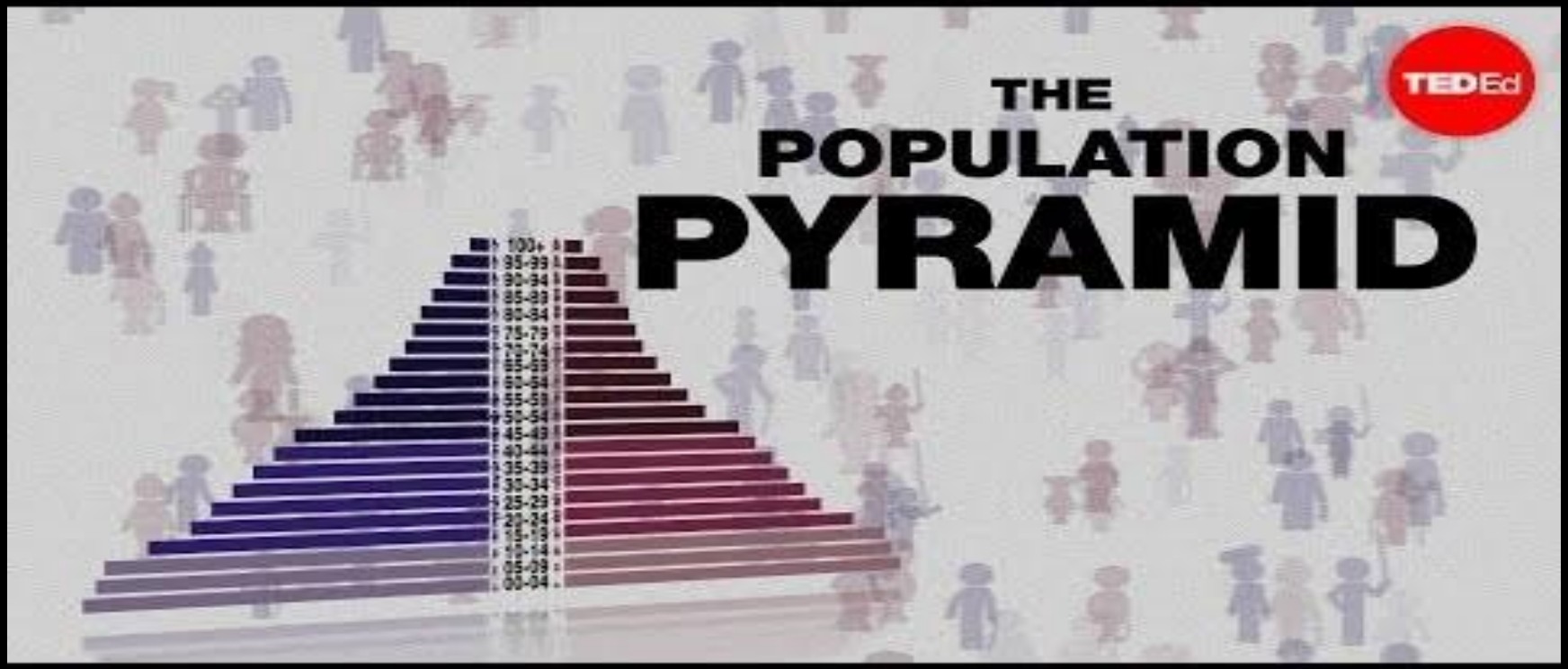
Population Pyramids: A visual representation of age and gender structures.

Also known as an Age –Sex Composition Graph



Cohort: A group of people banded together or treated as a group. Group shares a characteristic.

Common grouping / cohort in demography is age groups..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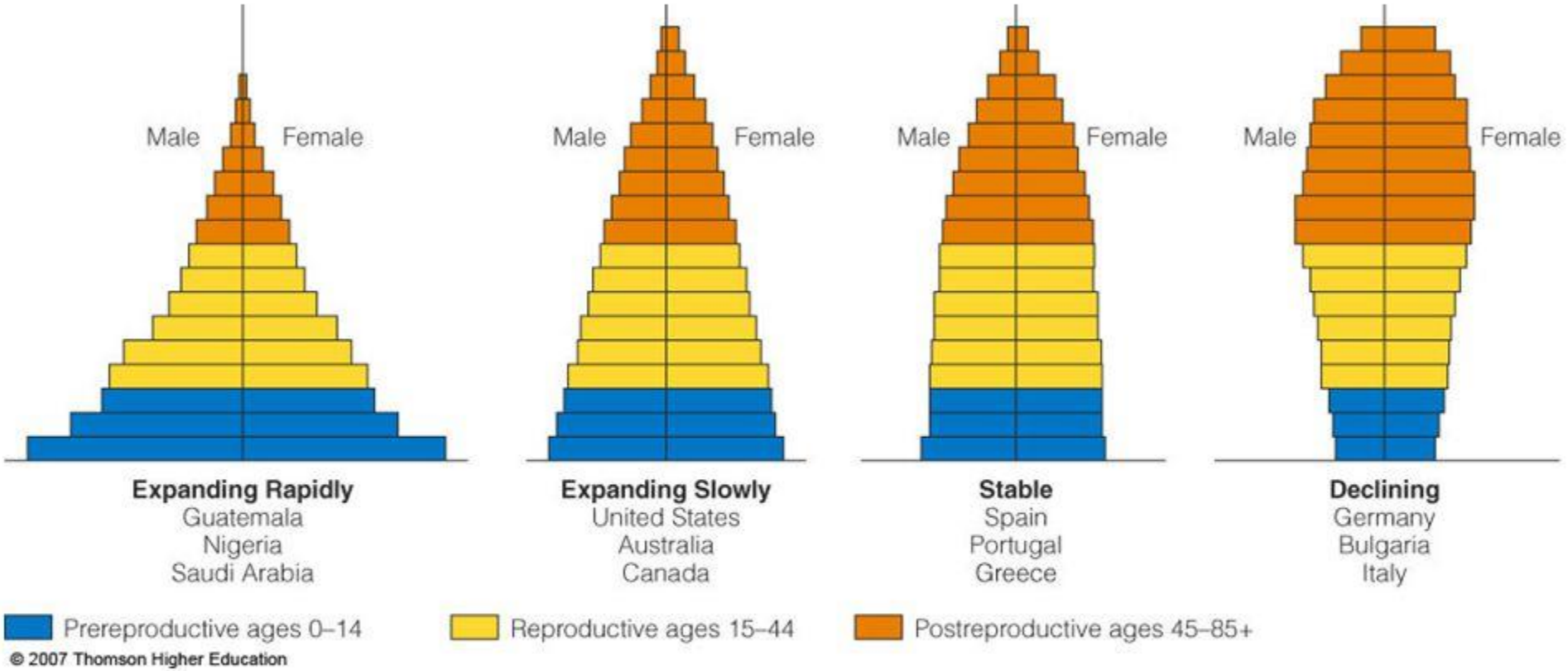
POPULATION
PYRAMID

POPULATION PYRAMIDS

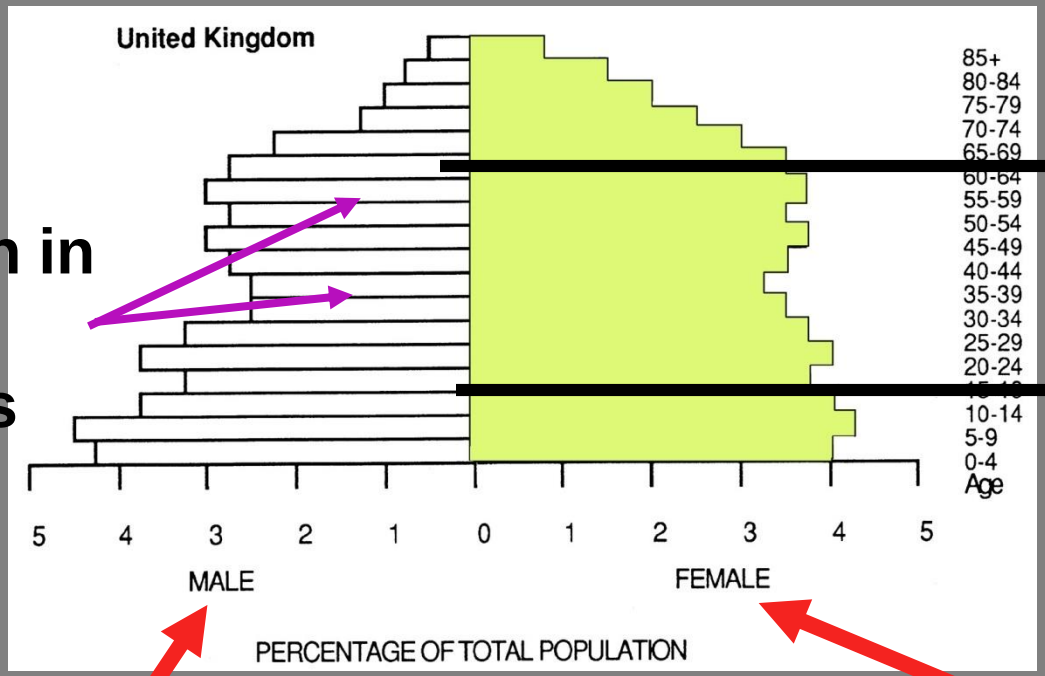


- Population pyramids show age structures of different countries.

Figure 9-9

POPULATION STRUCTURE

The population pyramid displays the age and sex structure of a country or given area



Population in Five Year Age bands

OLD DEPENDANTS

ECONOMICALLY ACTIVE

YOUNG DEPENDANTS

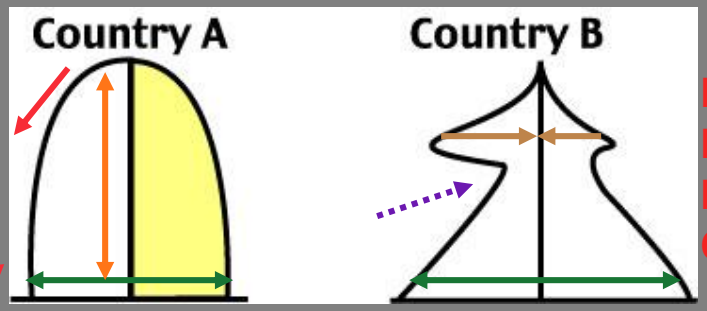
MALES
To the left

Usually, but not always, in % to make for easier comparisons between countries

FEMALES
To the right

What Population Pyramids Show Us

Economically More Developed Country



Economically Less Developed Country

KEY

slope of pyramid indicate the death rate

width of the base is related to birth rate/fertility rate

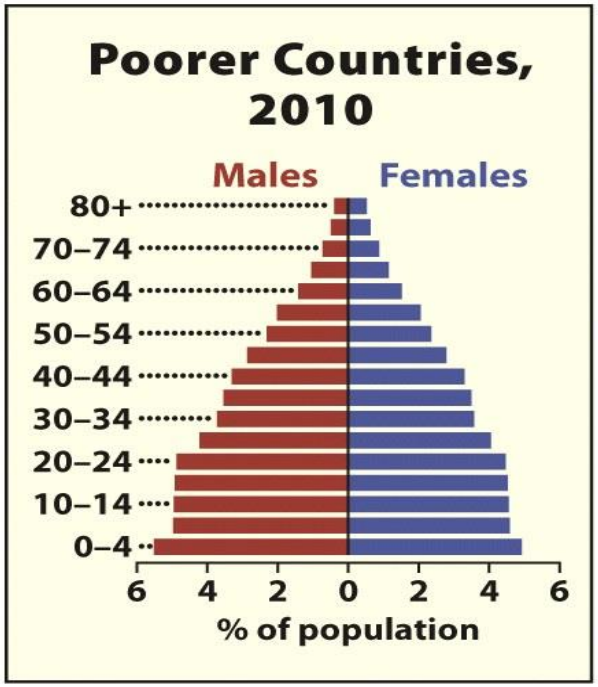
proportions of men and women can suggest male or female migrations

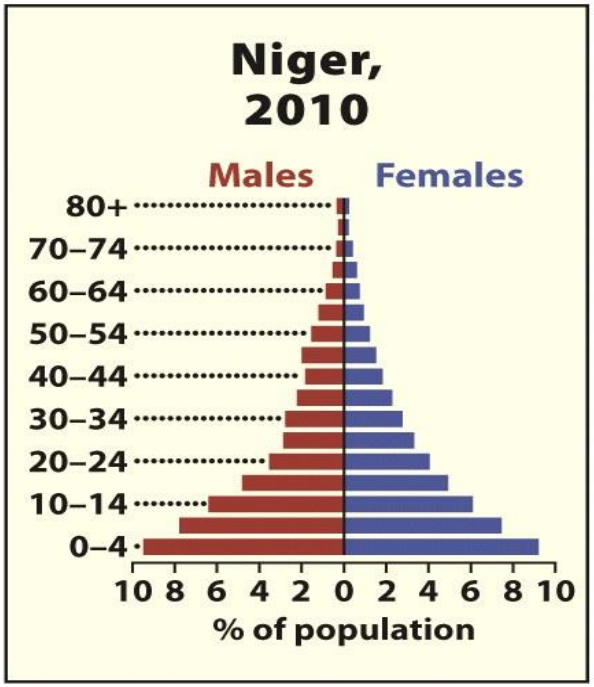
height of graph can indicate life expectancy (ignore the very thin end of the wedge as occurs on graph B as these people are a definite minority)

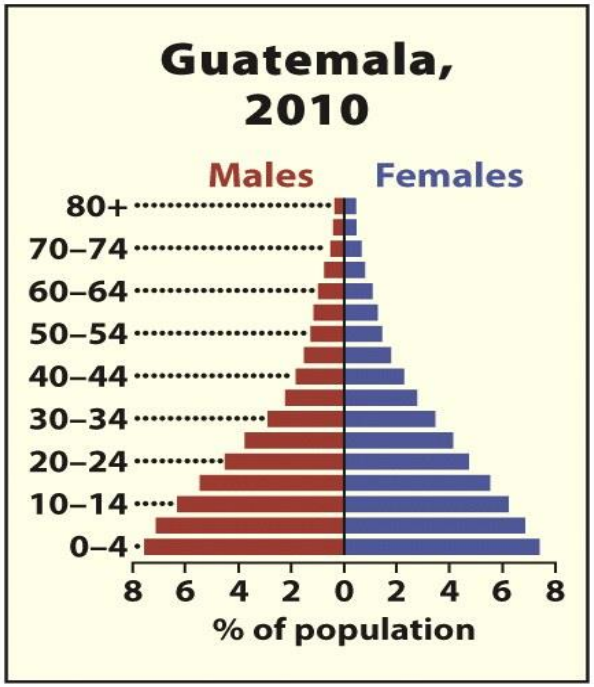
"kinks" indicate dramatic reductions in birth rate or increases in death rate in the past

area of graph indicates total population - compare areas of different population age groups or different sex on one graph

The overall shape of the population pyramid can indicate whether it is an Economically More Developed Country or Economically Less Developed Country

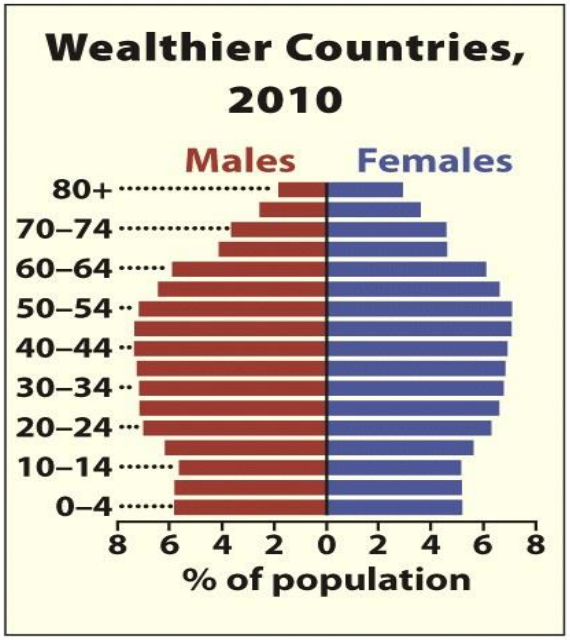


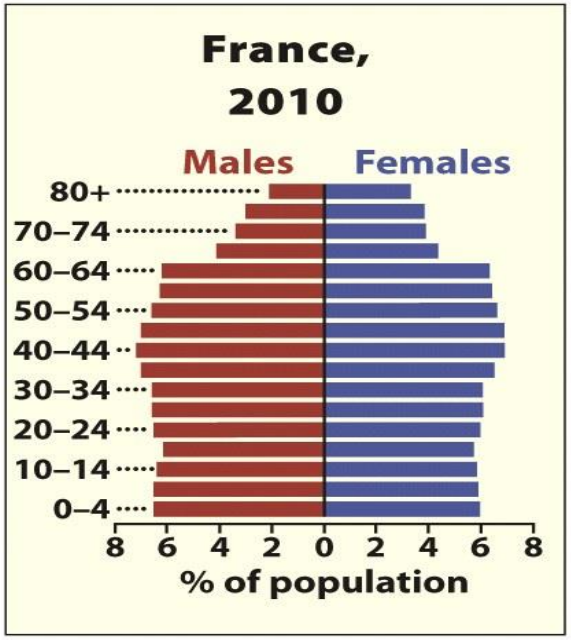


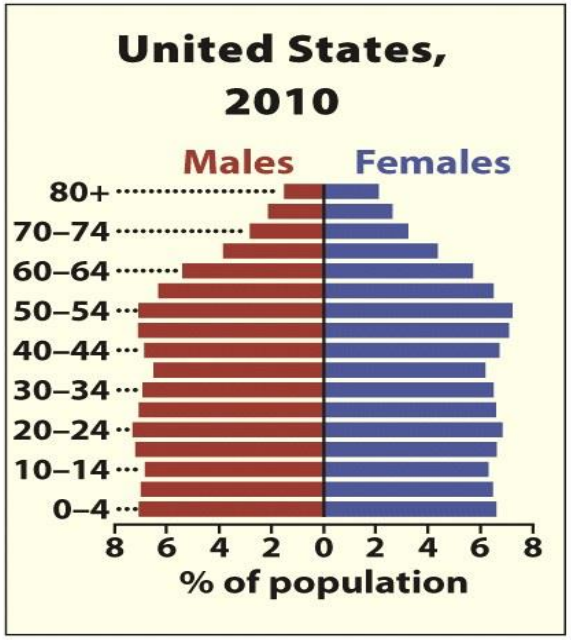


Data from: UN, World Population Prospects

- The wider the base of the pyramid, the higher the percentage of young people exists.
- Shape is typical of developing countries.
- Generally an indication that the population will expand in the near future.







Data from: UN, World Population Prospects

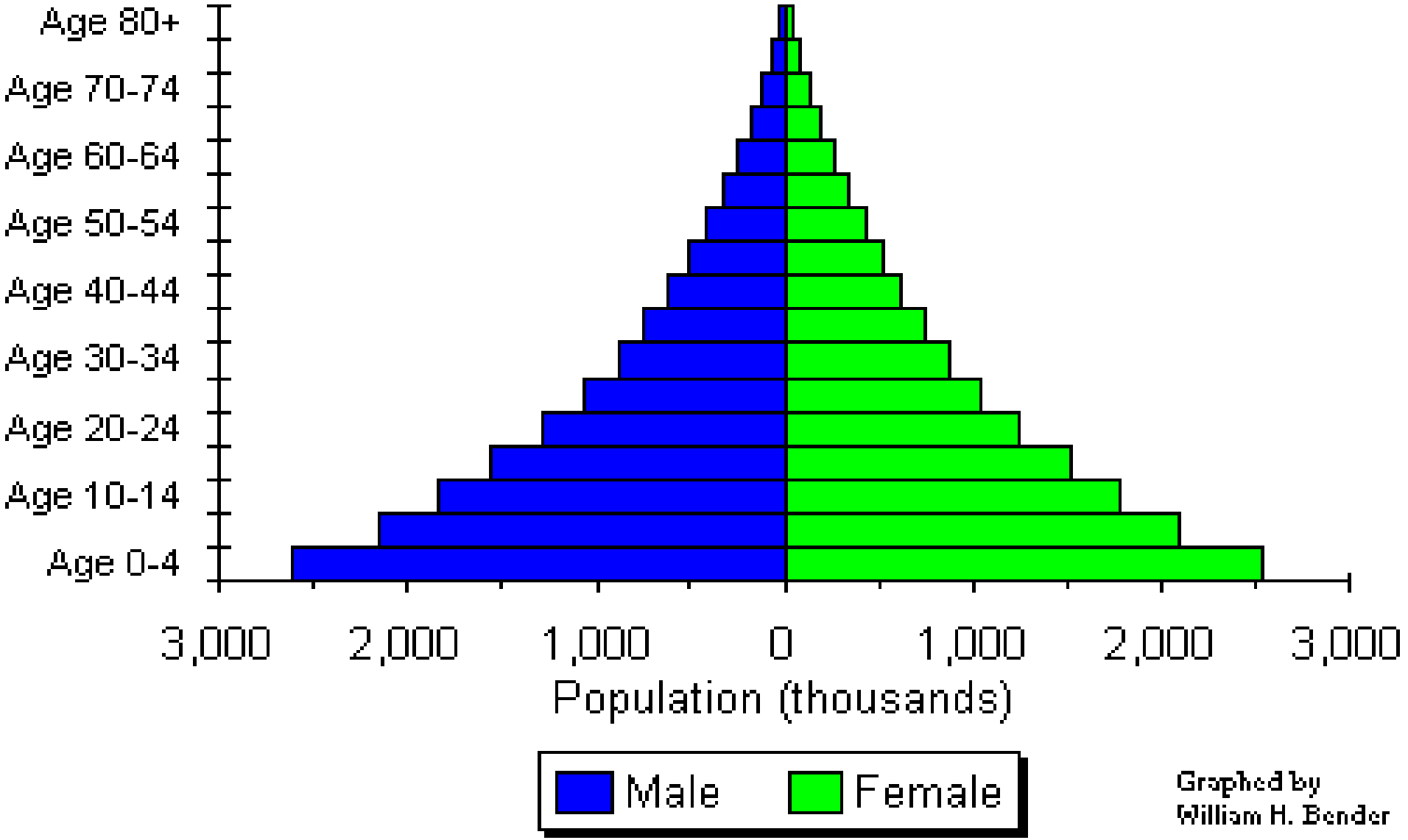
- The more top heavy the pyramid the higher the percentage of elderly people in the population.

Ultimate Guide – Population Pyramids

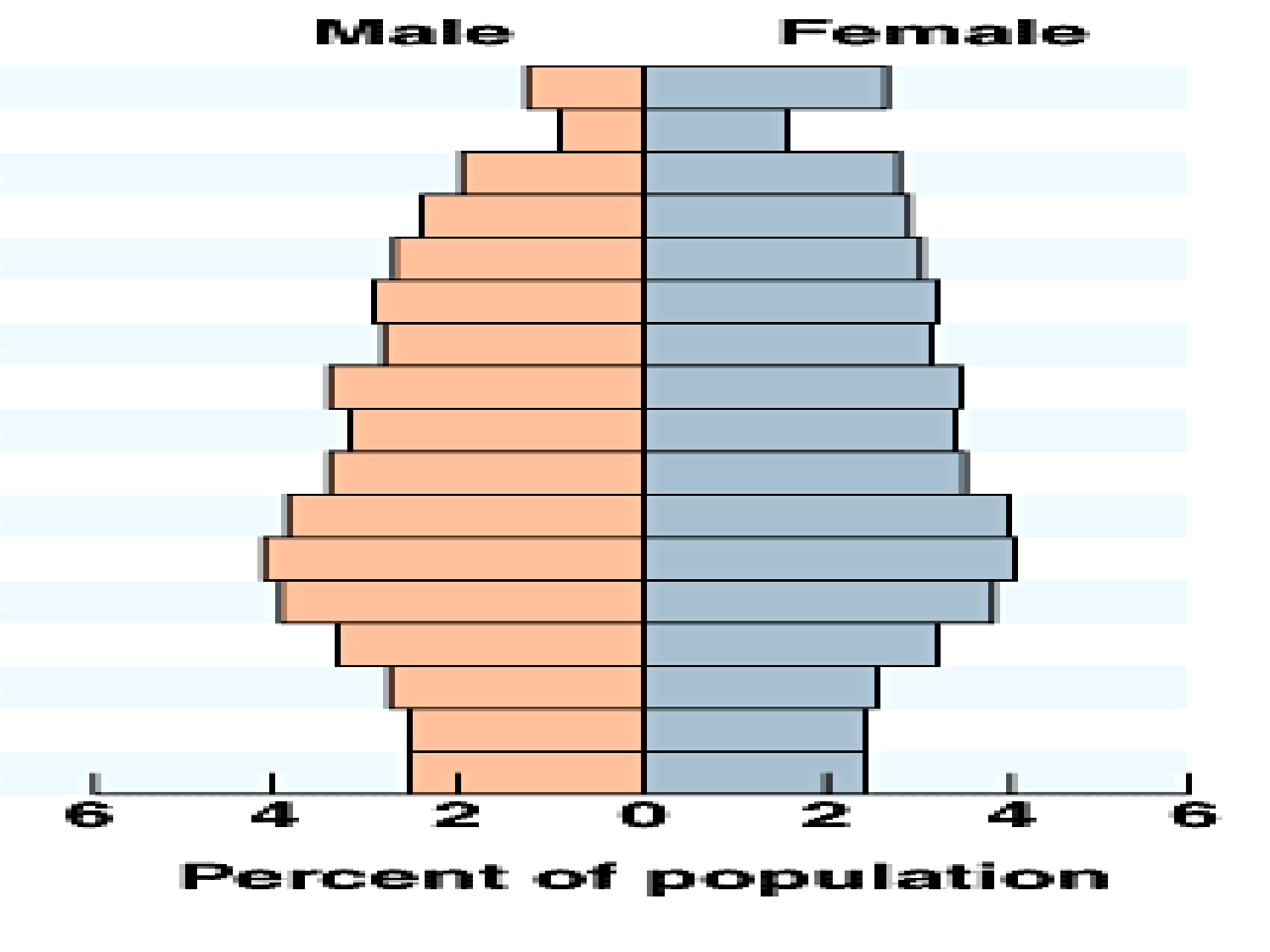
- Complete a 4 level analysis for each of the population pyramids.
- Each analysis should be 1.5 pages.

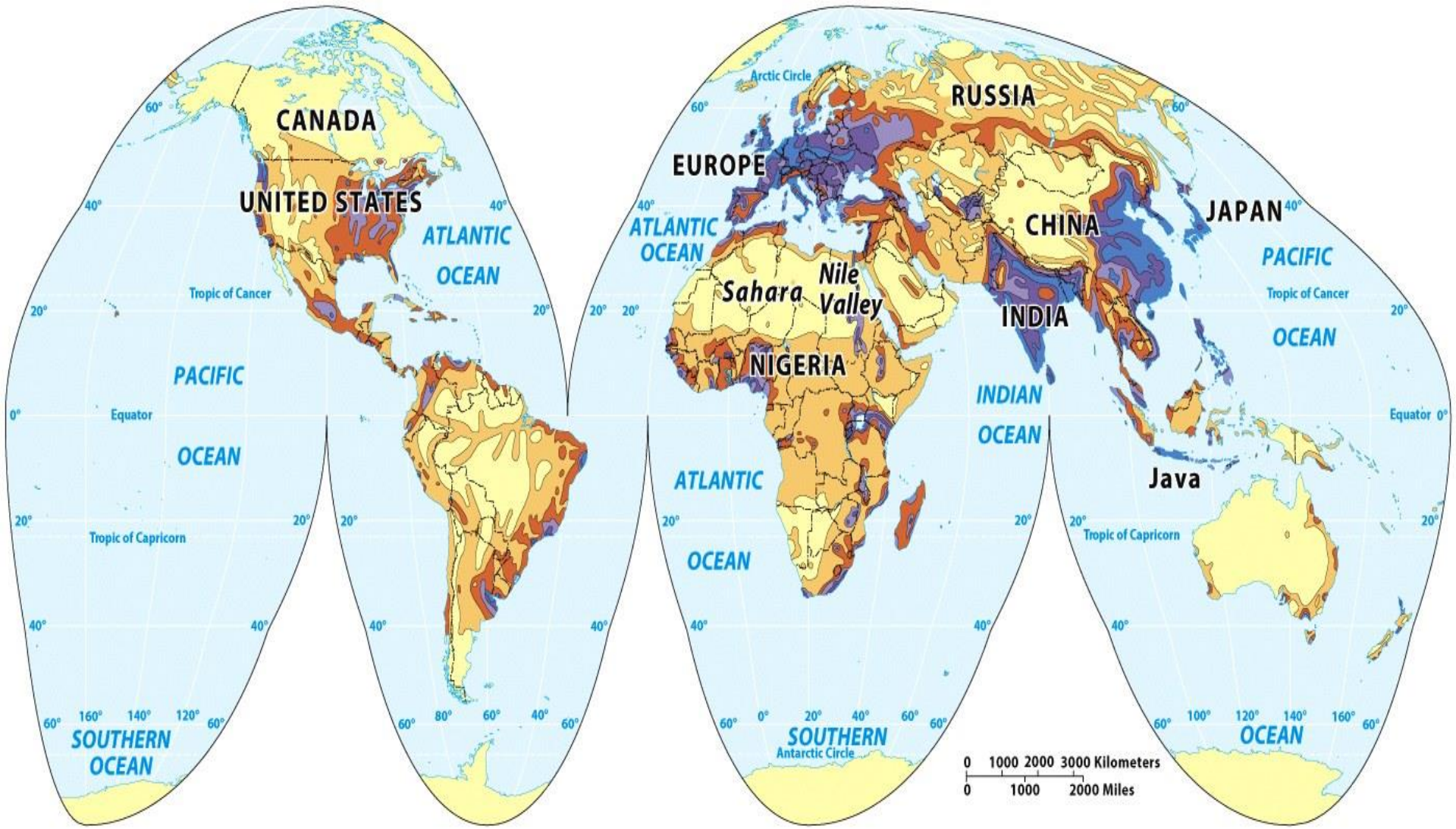
Sudan Population Pyramid

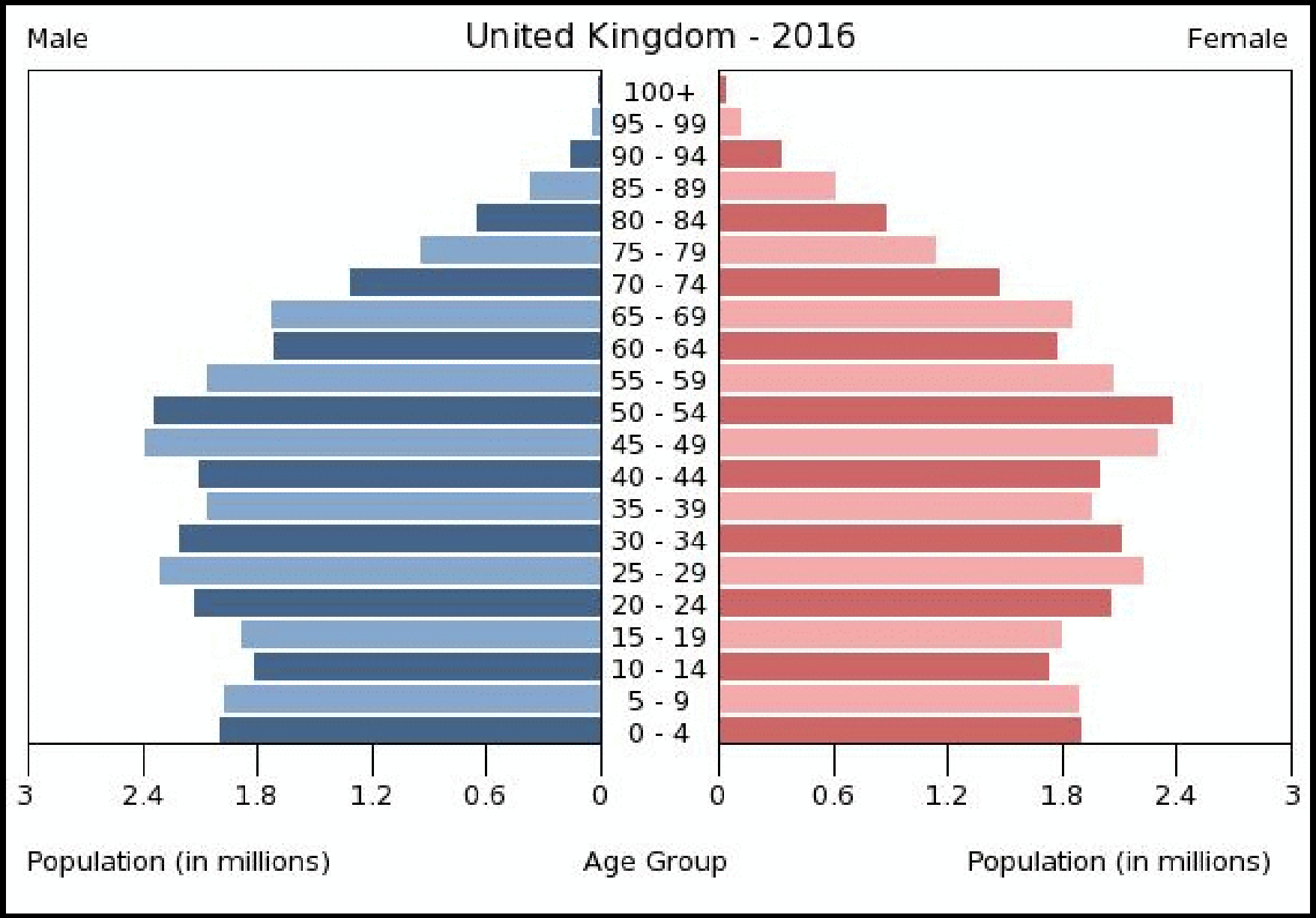
1995

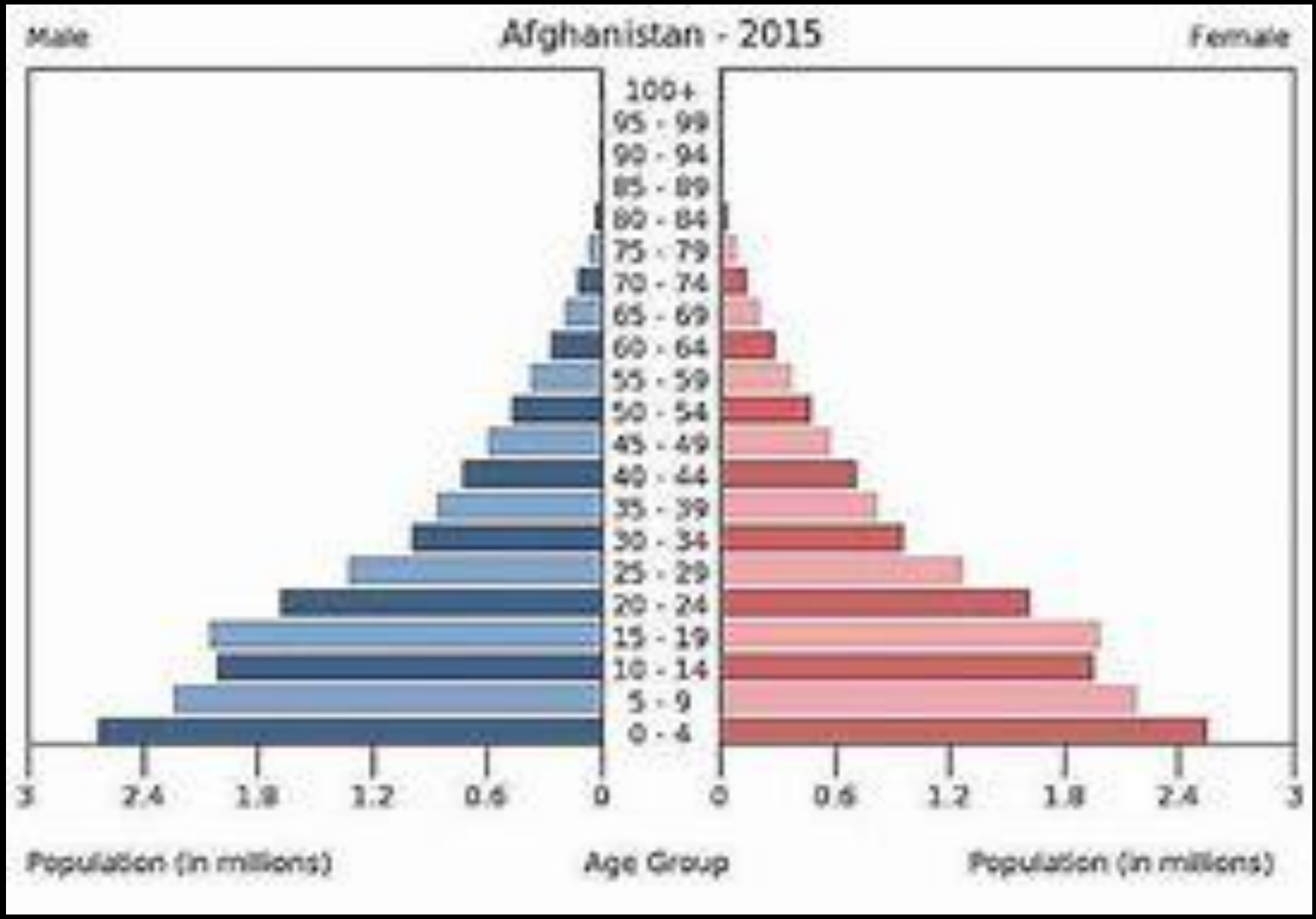


Graphed by
William H. Bender


Male
Female
6
4
2
0
2
4
6
Percent of population


CANADA
UNITED STATES
RUSSIA
EUROPE
CHINA
JAPAN
INDIA
Sahara
Nile Valley
NIGERIA
Java
ATLANTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
SOUTHERN OCEAN
Arctic Circle
Antarctic Circle
Tropic of Cancer
Tropic of Capricorn
Equator
0 1000 2000 3000 Kilometers
0 1000 2000 Miles


Male
United Kingdom - 2016
Female
100+
95 - 99
90 - 94
85 - 89
80 - 84
75 - 79
70 - 74
65 - 69
60 - 64
55 - 59
50 - 54
45 - 49
40 - 44
35 - 39
30 - 34
25 - 29
20 - 24
15 - 19
10 - 14
5 - 9
0 - 4
3
2.4
1.8
1.2
0.6
0
0
0.6
1.2
1.8
2.4
3
Population (in millions)
Age Group
Population (in millions)


Male
Afghanistan - 2015
Female
100+
95 - 99
90 - 94
85 - 89
80 - 84
75 - 79
70 - 74
65 - 69
60 - 64
55 - 59
50 - 54
45 - 49
40 - 44
35 - 39
30 - 34
25 - 29
20 - 24
15 - 19
10 - 14
5 - 9
0 - 4
3
2.4
1.8
1.2
0.6
0
0
0.6
1.2
1.8
2.4
3
Population (in millions)
Age Group
Population (in millions)

Birth Deficit: Slowdown in births – indicated on the population pyramid by bars significantly shorter than those immediately above or below them.

Often attributed to war, when men and women are separated and even if together may decide to delay having children until after the conflict.

Baby Boom: A spike in the number of children being born.

People born in the US between 1946 and 1964. This post war era allowed for better education, employment, peace and prosperity led to higher rates of marriage and fertility.

Baby Bust: A drop in the number of children being born.

In the US during the 1960s and 1970s fertility rates dropped as many female baby boomers sought higher levels of education and jobs, marrying later in life.

Echo: An increase in births after a baby bust. This occurs as the children of a baby boom reach child bearing years.

Dependency Ratio: The number of people who are too young or too old to work compared to the number of people in their productive years.

Tells how many people each worker supports.

The larger population of dependents, the greater financial burden on those who are working to support those who cannot.

Calculating Dependency Ratio

- Dividing the population 0-14 years and 65 years and older by the population that is 15-64.

Country	Population by Age Group	Calculation	Dependence Ratio
United States	Under 15: 18.8% 15 to 64: 65.9% Over 64: 15.3%	$\frac{18.8 + 15.3}{65.9} = 0.52$	1 : 0.52
Nigeria	Under 15: 49.3% 15 to 64: 48.1% Over 64: 2.6%	$\frac{49.3 + 2.6}{48.1} = 1.08$	1 : 1.08

Ultimate Guide: Dependency Ratio

Population Data from Estonia by Age Group

	0-14	15-64	65+	Total
1950	243,175	674,347	105,384	1,022,906
1960	276,150	803,101	126,950	1,206,201
1970	298,293	894,204	157,840	1,350,337
1980	317,838	969,450	184,592	1,471,880
1990	350,134	1,038,860	181,605	1,570,599
2000	250,340	942,700	208,210	1,401,250
2010	201,630	899,210	232,450	1,333,290
2017	213,609	847,552	254,474	1,315,635

Source: Statistics Estonia

$$\text{Dependency ratio} = \frac{\text{Age group (0-14)+(65+)}}{\text{Age group (15-64)}} \times 100$$

$$\text{Young-age Dependency Ratio} = \frac{\text{Age group (0-14)}}{\text{Age group (15-64)}} \times 100$$

$$\text{Old-age Dependency Ratio} = \frac{\text{Age group (65+)}}{\text{Age group (15-64)}} \times 100$$

- Calculate the overall dependency ratio for each year of data.
- Identify the year with the highest dependency ration
- Using the overall dependency ratio, EXPLAIN the pattern.
  - may require additional research
- 1 page

Ultimate Guide: Dependency Ratio

Population Data from Estonia by Age Group

	0-14	15-64	65+	Total
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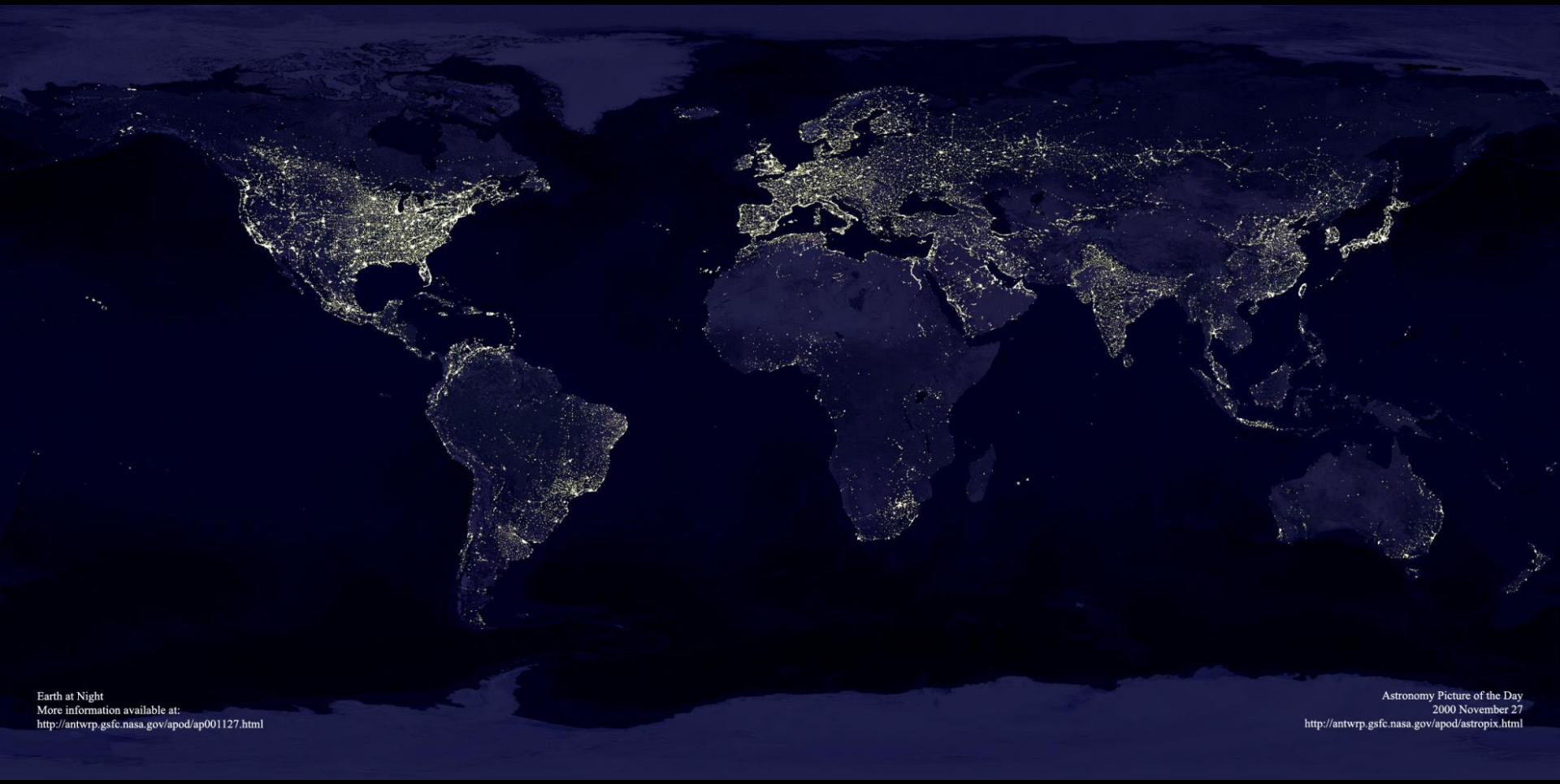
- Identify the year with the highest dependency ration
- Using the overall dependency ratio, EXPLAIN the pattern.
  - may require additional research
- 1 page

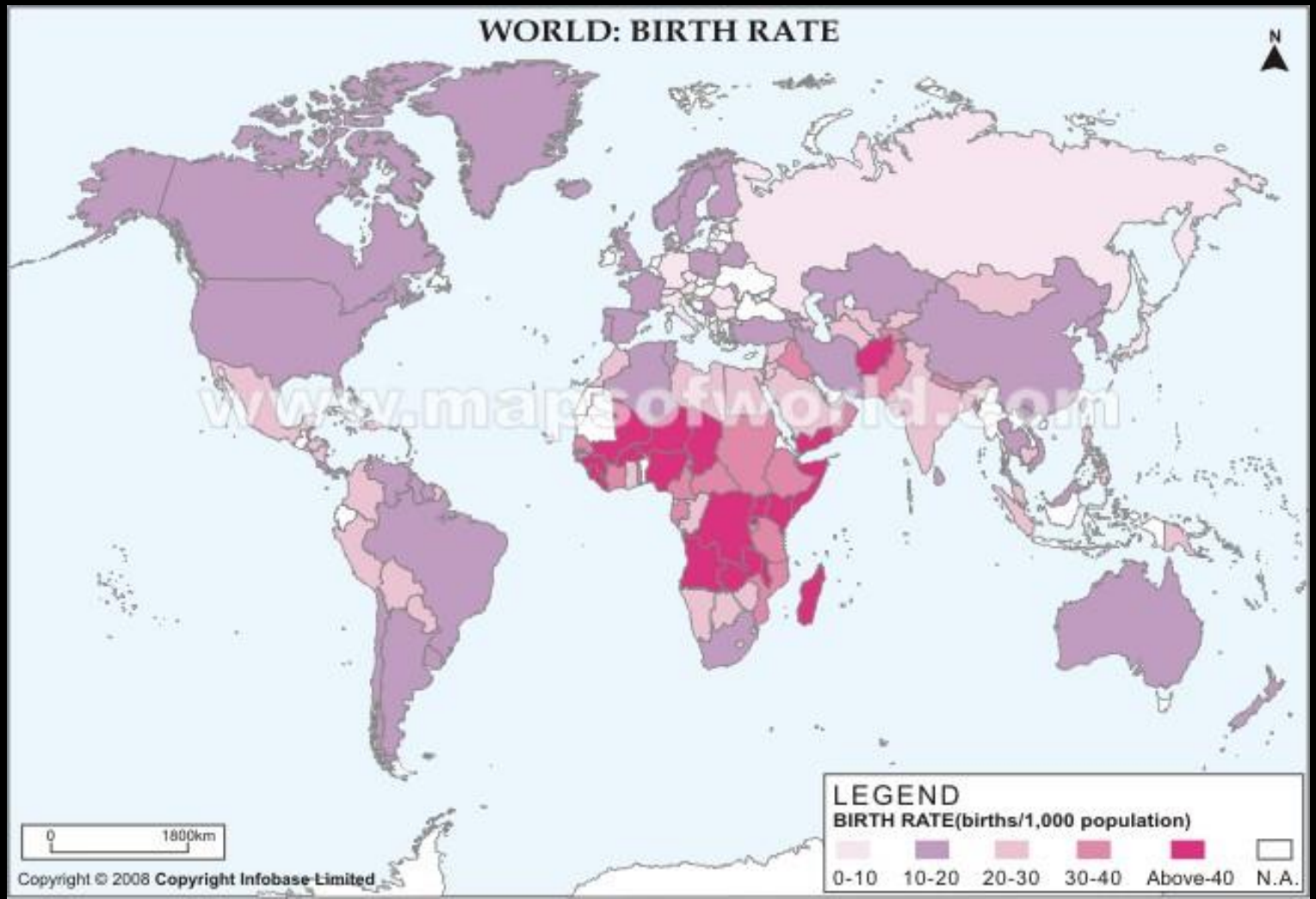


2.4 Population Dynamics

Fecundity: The ability of a woman to conceive.

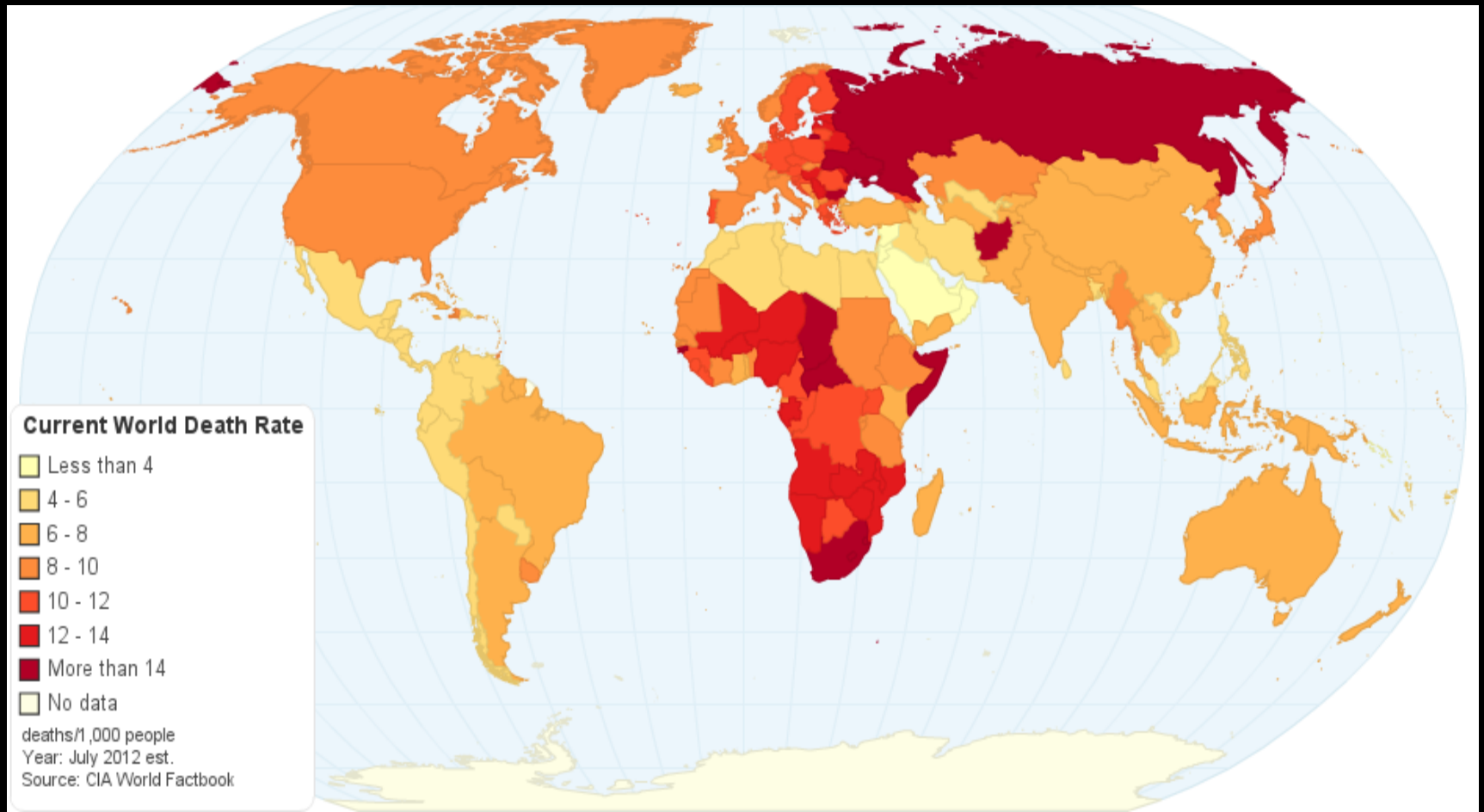
- The fecund years are generally 15-45.
- Range is expanding in many regions.

Crude Birth Rate (CBR): Number of births in a year per 1000



Total Fertility Rate (TFR): Average number of children born to woman of childbearing age

Crude Death Rate (CDR): Number of deaths in a year per 1000



Infant Mortality Rate (IMR):

Number of infant deaths per 1,000 live births in a year. Infant is defined as first year.

IMR is often used as an indicator of a countries overall quality of life. A high IMR is usually associated with high levels of poverty, malnourishment, poor sanitation, lack of medical care and few opportunities for education

Rate of Natural Increase: The growth rate of a population. Excludes immigration and emigration.

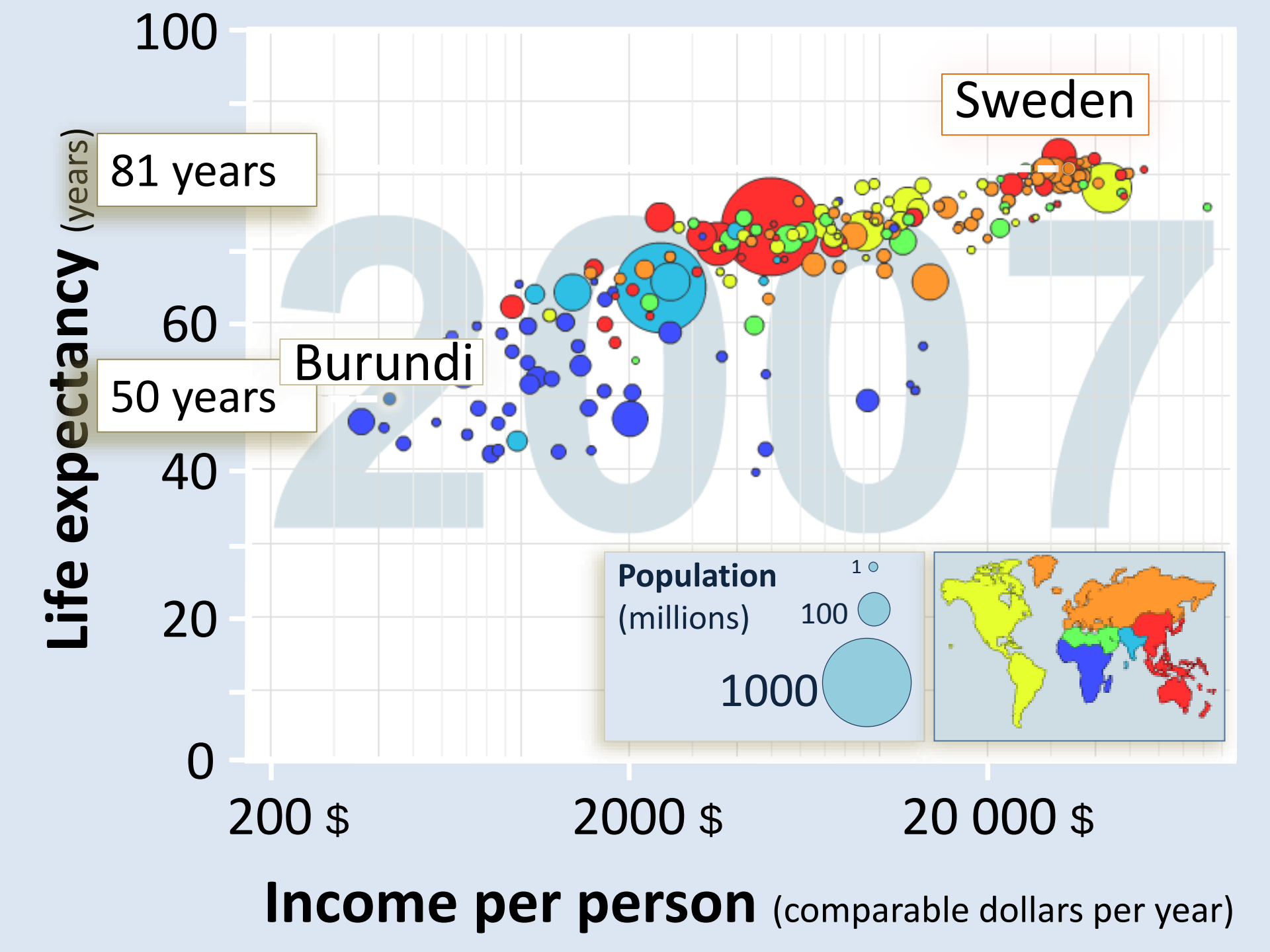
Births (CBR) – Deaths (CDR) = Natural Increase (NI)

Life Expectancy: Average number of years to be lived by a person.

Life expectancy

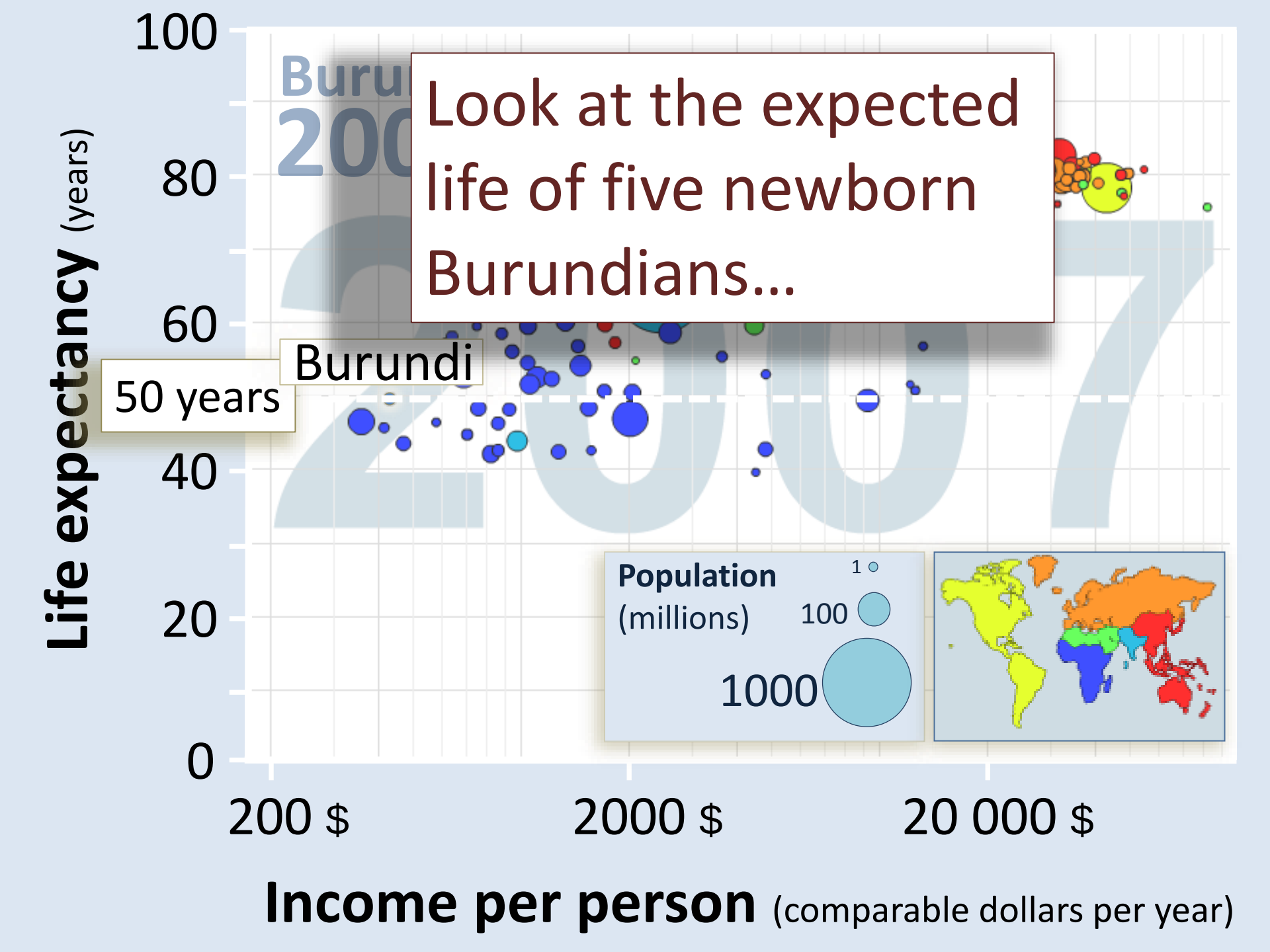
… is the average lifespan a newborn can expect

… is short when child deaths are common


100
60
40
20
0
Life expectancy (years)
81 years
50 years
Sweden
Burundi
2007
Population
(millions)
1
100
1000
200 $
2000 $
20 000 $
Income per person (comparable dollars per year)


Burundi
Can you get old in Burundi?


Burundi


Look at the expected life of five newborn Burundians…
Burundi
50 years
Life expectancy (years)
100
80
60
40
20
0
200 $
2000 $
20 000 $
Income per person (comparable dollars per year)
Population (millions)
1
100
1000

Burundi
2007

How long will they live...

...if conditions remain as in **Burundi in 2007** during their whole lifetime?

Age (years)

100
80
60
40
20
0

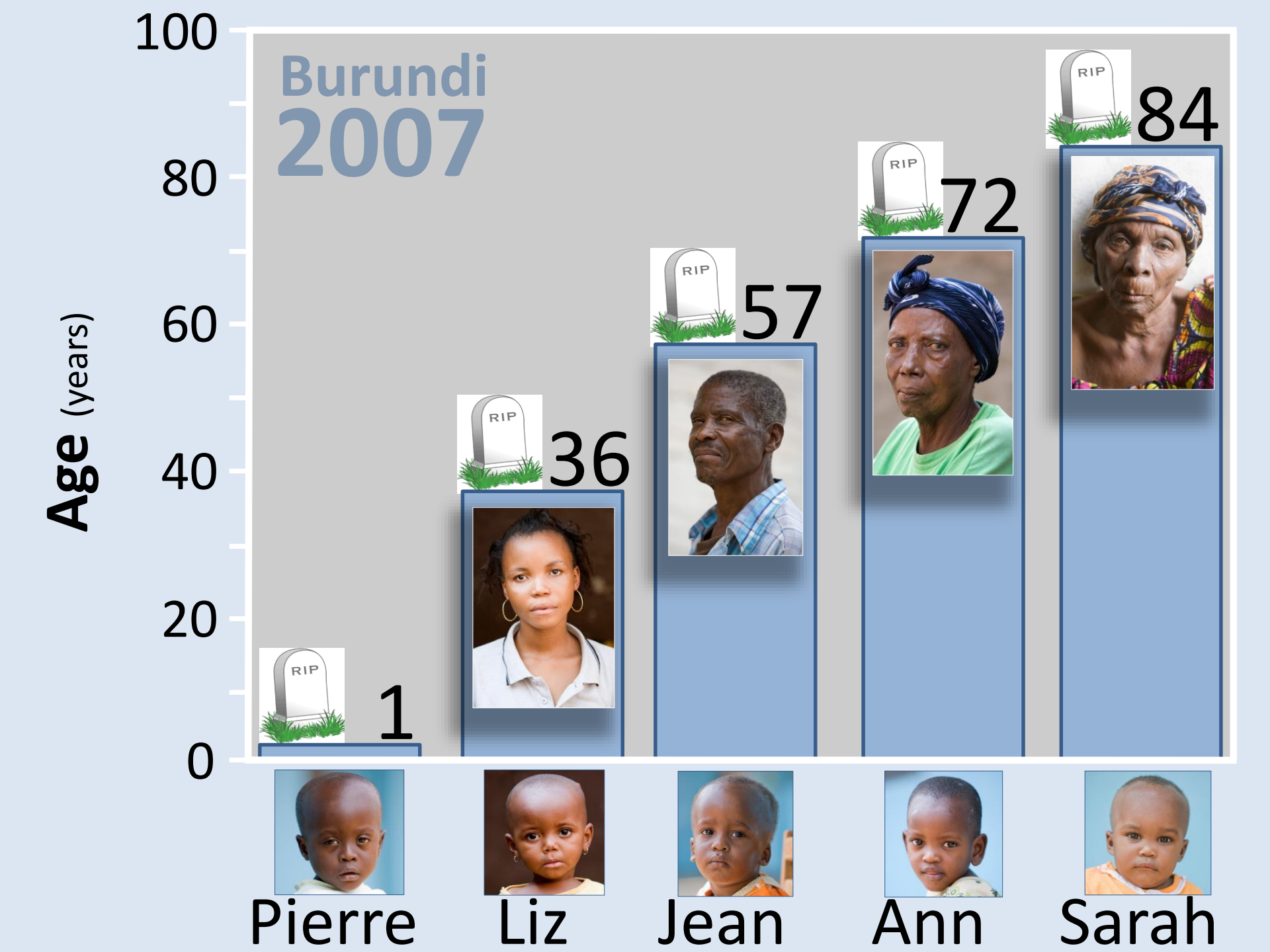

Pierre

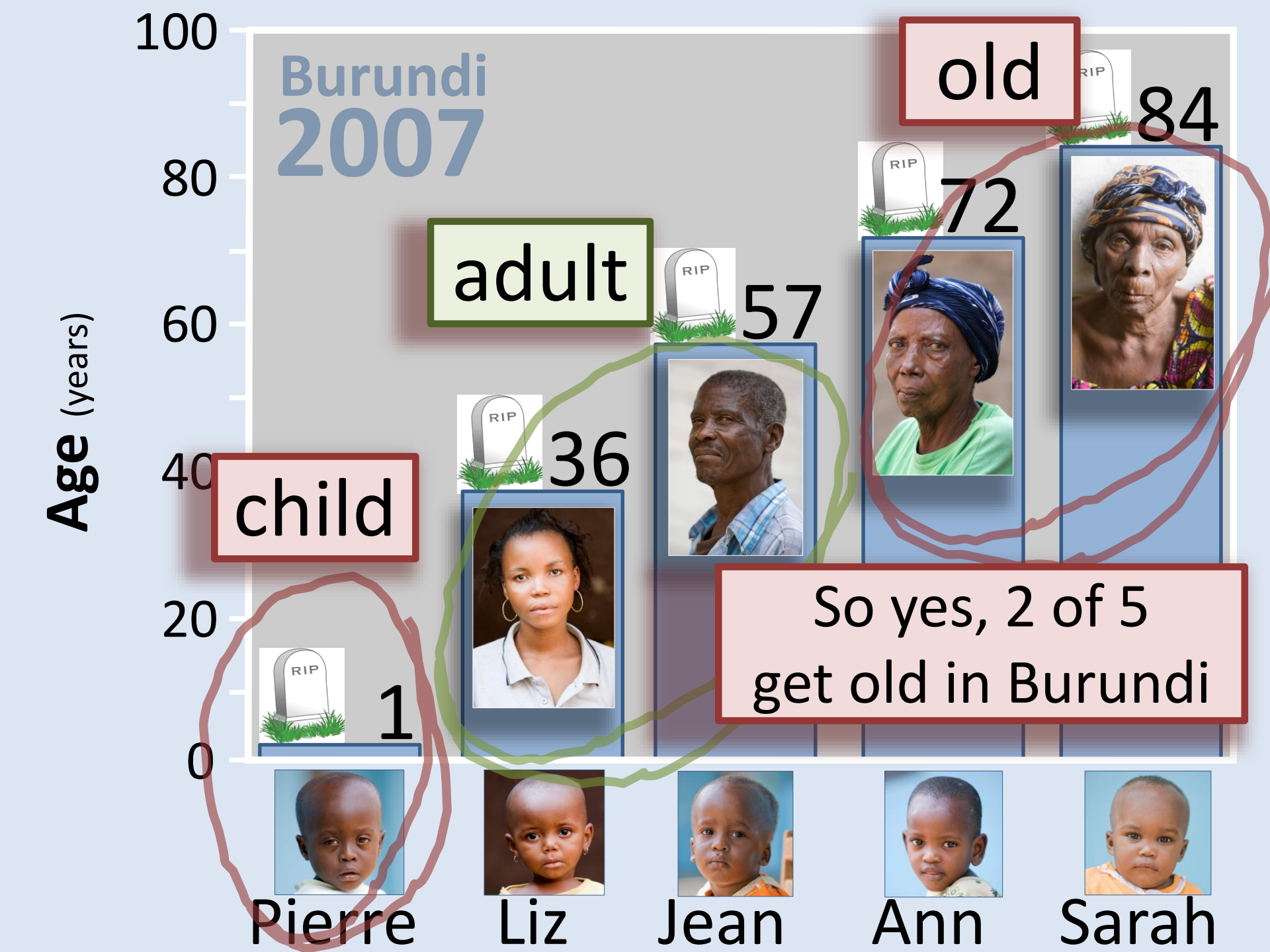

Liz


Jean


Ann

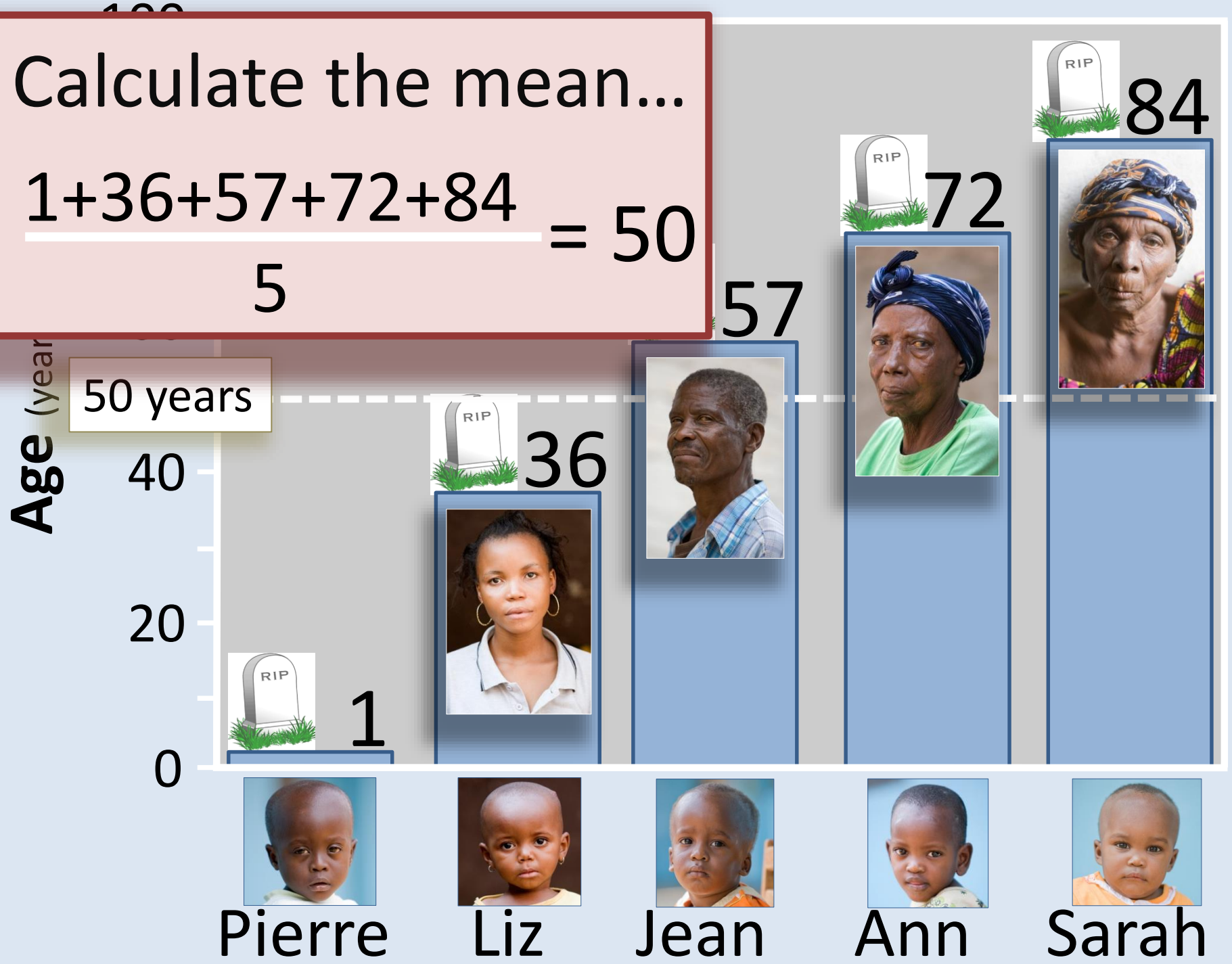

Sarah

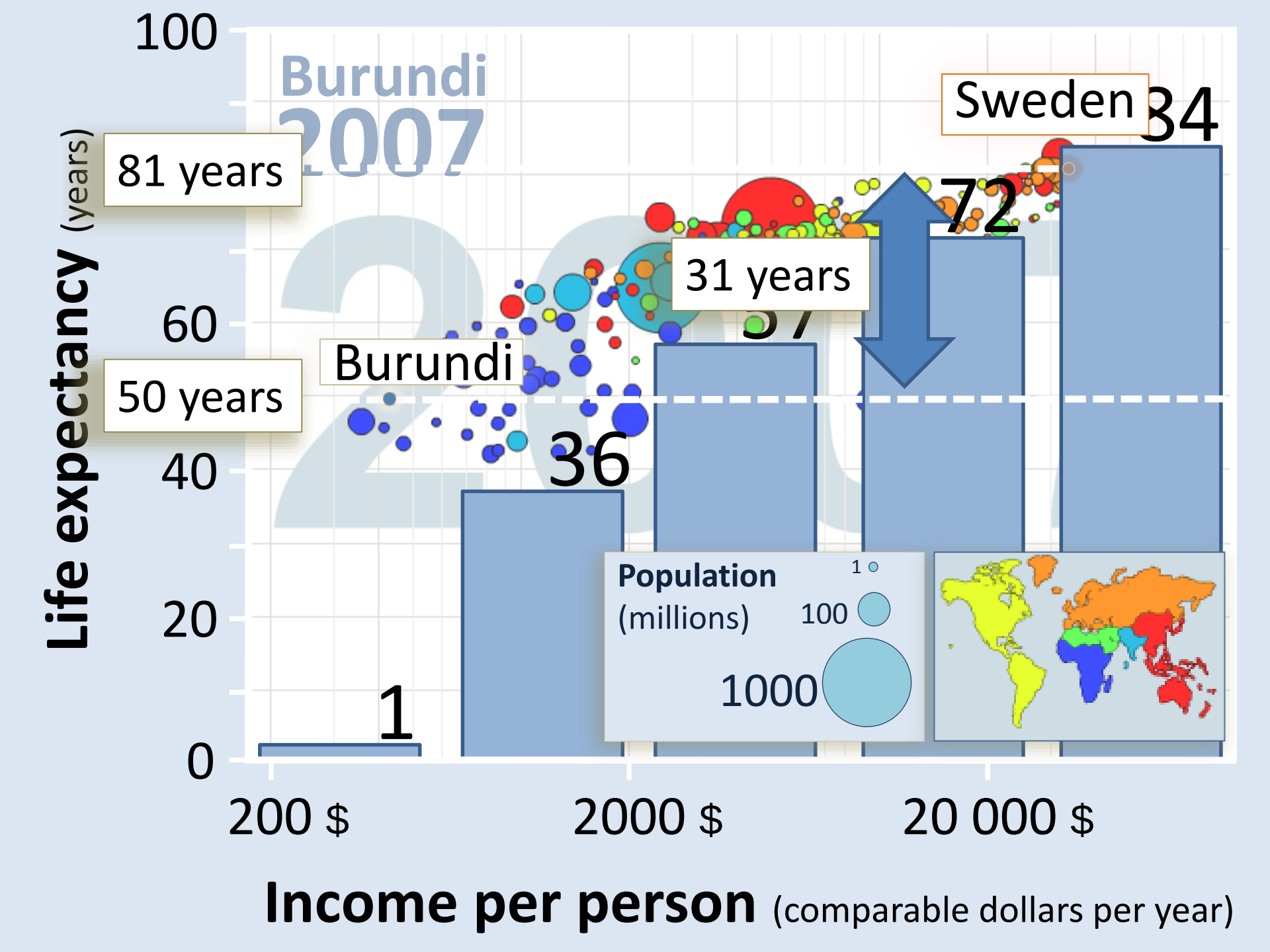

Burundi
2007
Age (years)
100
80
60
40
20
0
RIP
1
RIP
36
RIP
57
RIP
72
RIP
84
Pierre
Liz
Jean
Ann
Sarah


Burundi
2007
old
adult
child
Age (years)
100
80
60
40
20
0
RIP
84
72
57
36
1
So yes, 2 of 5
get old in Burundi
Pierre
Liz
Jean
Ann
Sarah

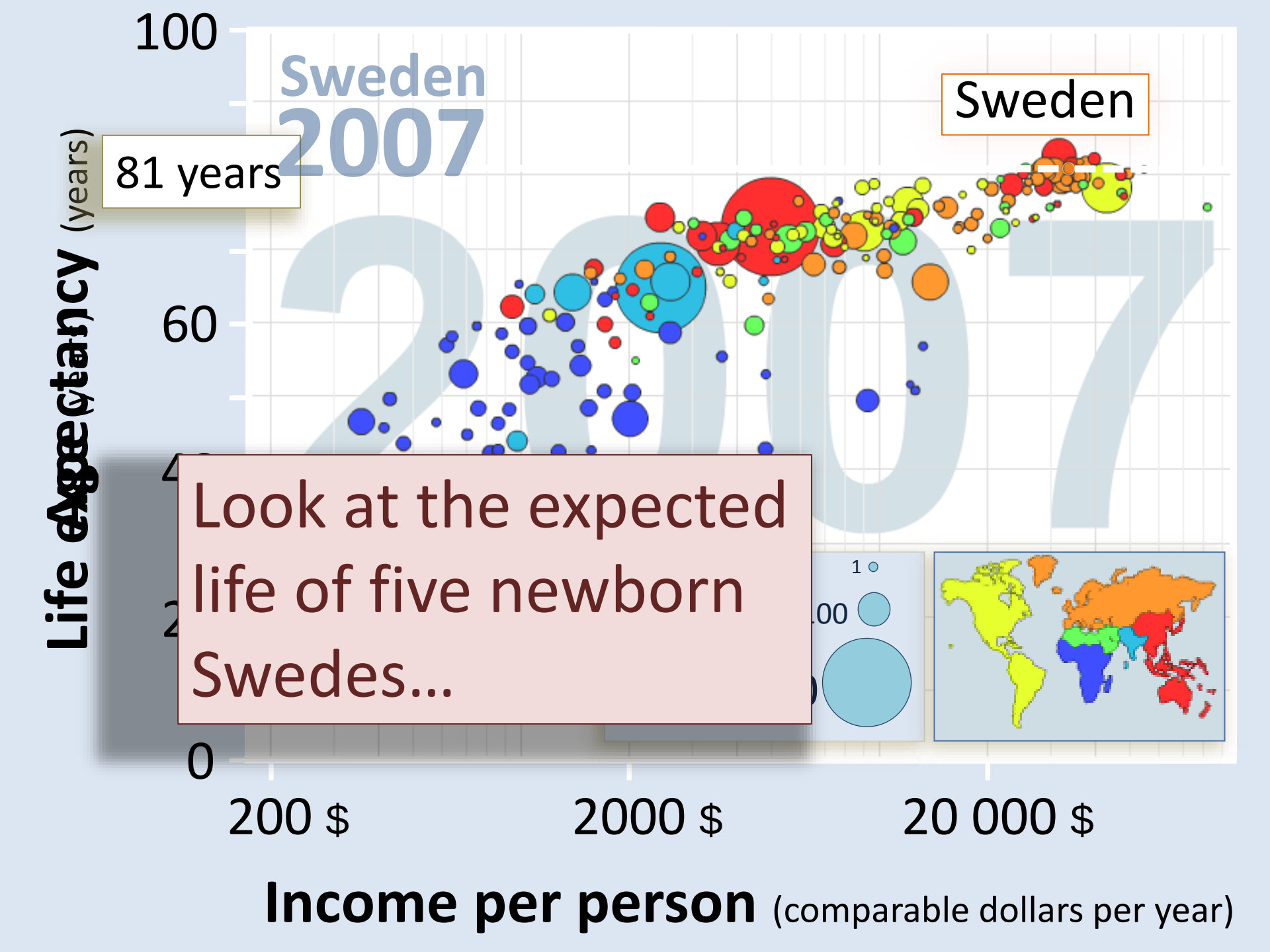
Calculate the mean…

$$\frac{1+36+57+72+84}{5} = 50$$




100
60
40
20
0
Life expectancy (years)
Burundi
2007
81 years
50 years
Burundi
Sweden
84
72
31 years
36
1
Population
(millions)
1
100
1000
200 $
2000 $
20 000 $
Income per person (comparable dollars per year)


Sweden
Do all Swedes live 31 years longer than the Burundians?


100
60
0
Sweden
2007
81 years
Sweden
Life expectancy (years)
Look at the expected life of five newborn Swedes…
200 $
2000 $
20 000 $
Income per person (comparable dollars per year)

Sweden
2007

How long will they live...

...if conditions remain as in **Sweden in 2007** during their whole lifetime?

Age (years)

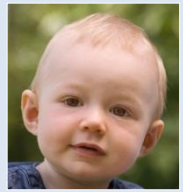
100
80
60
40
20
0

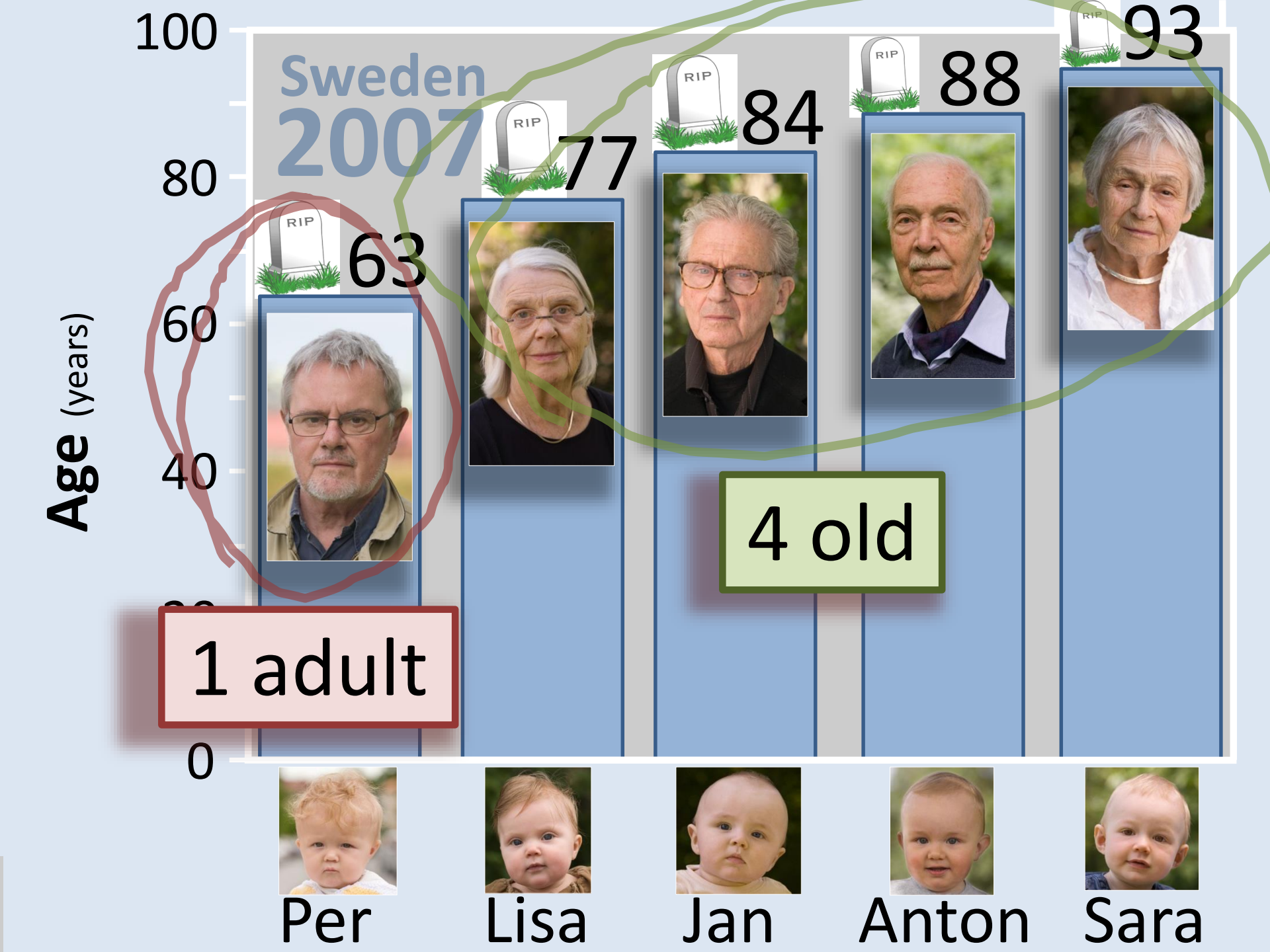

Per

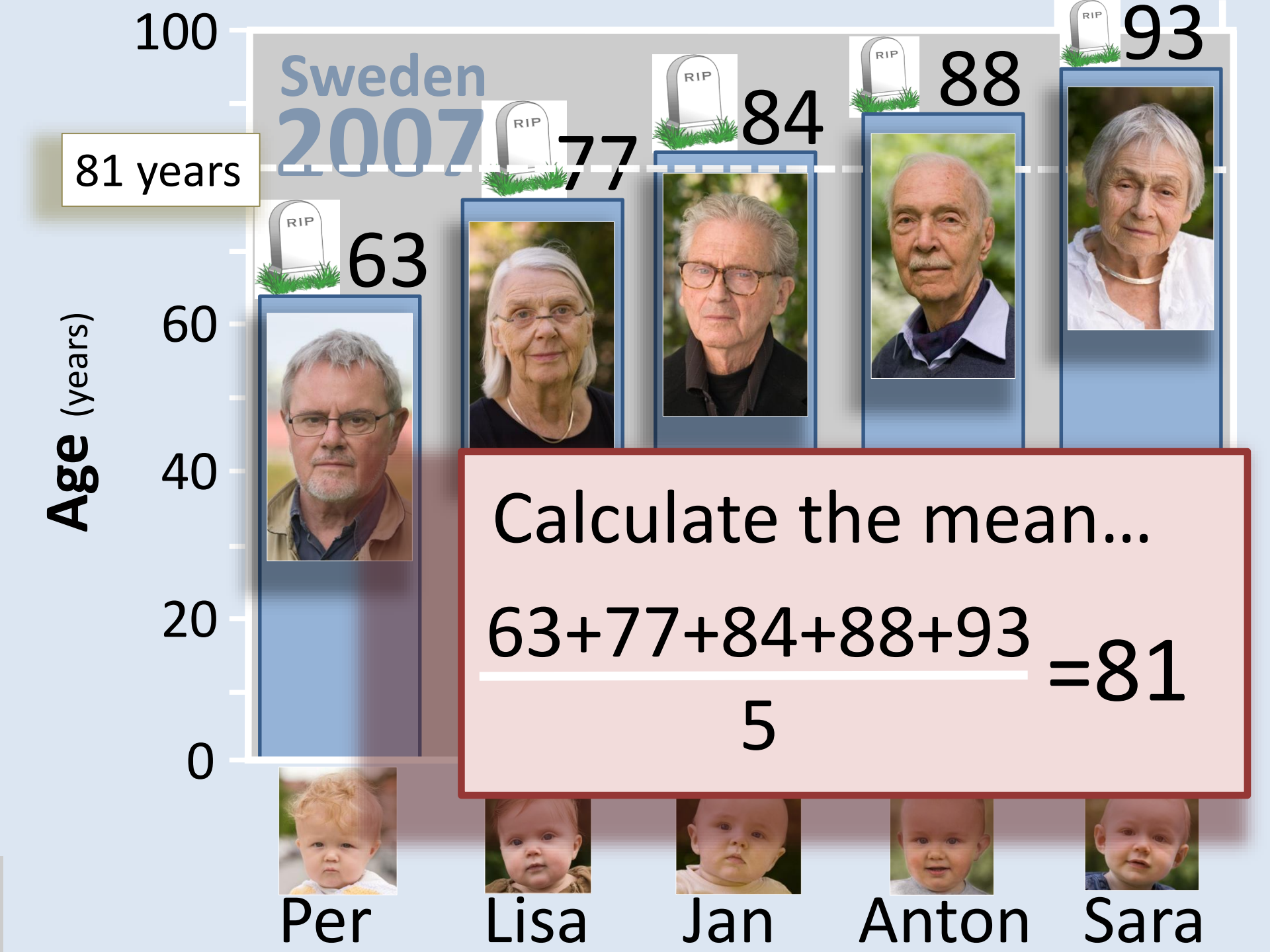

Lisa

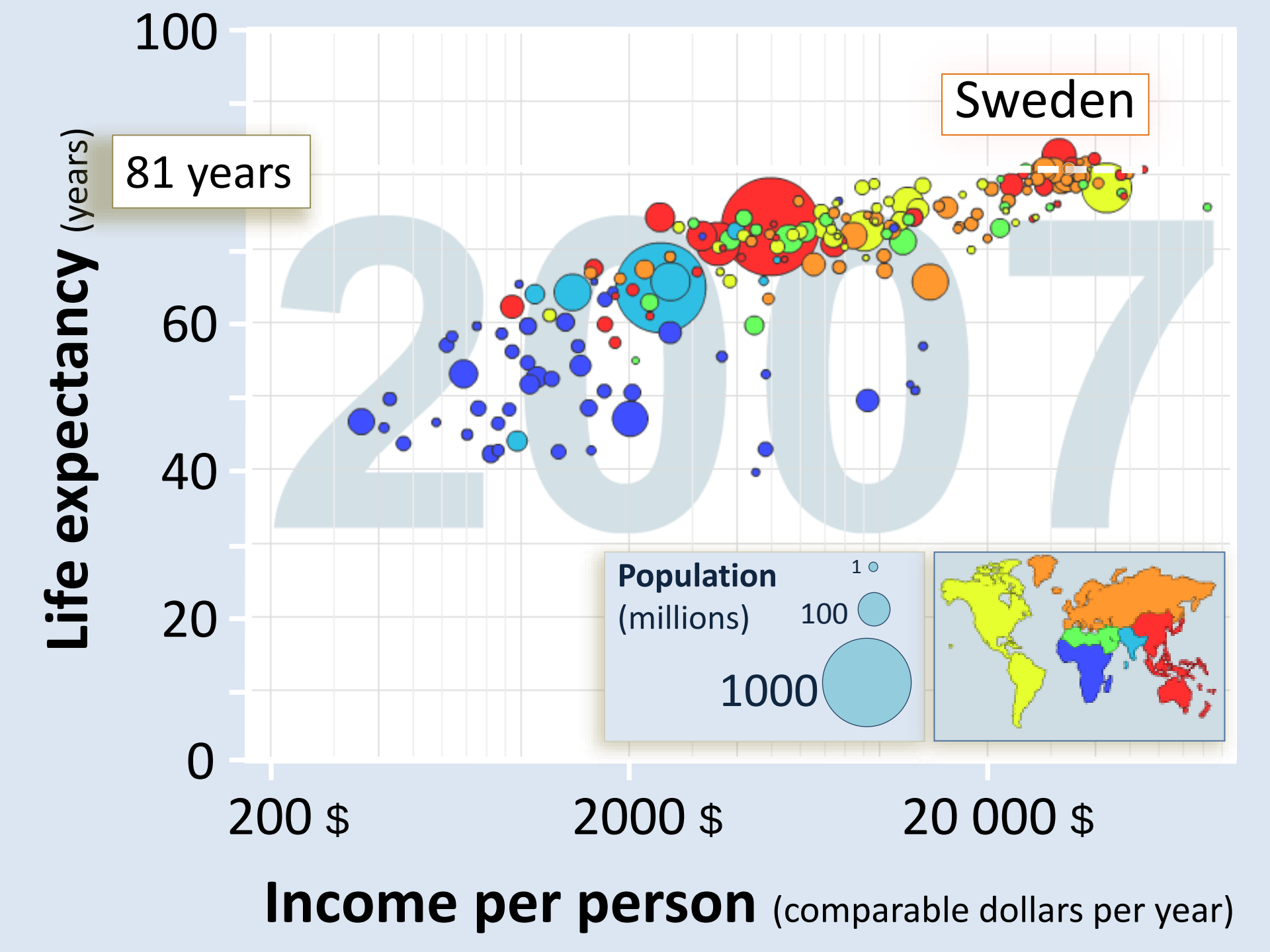

Jan


Anton


Sara

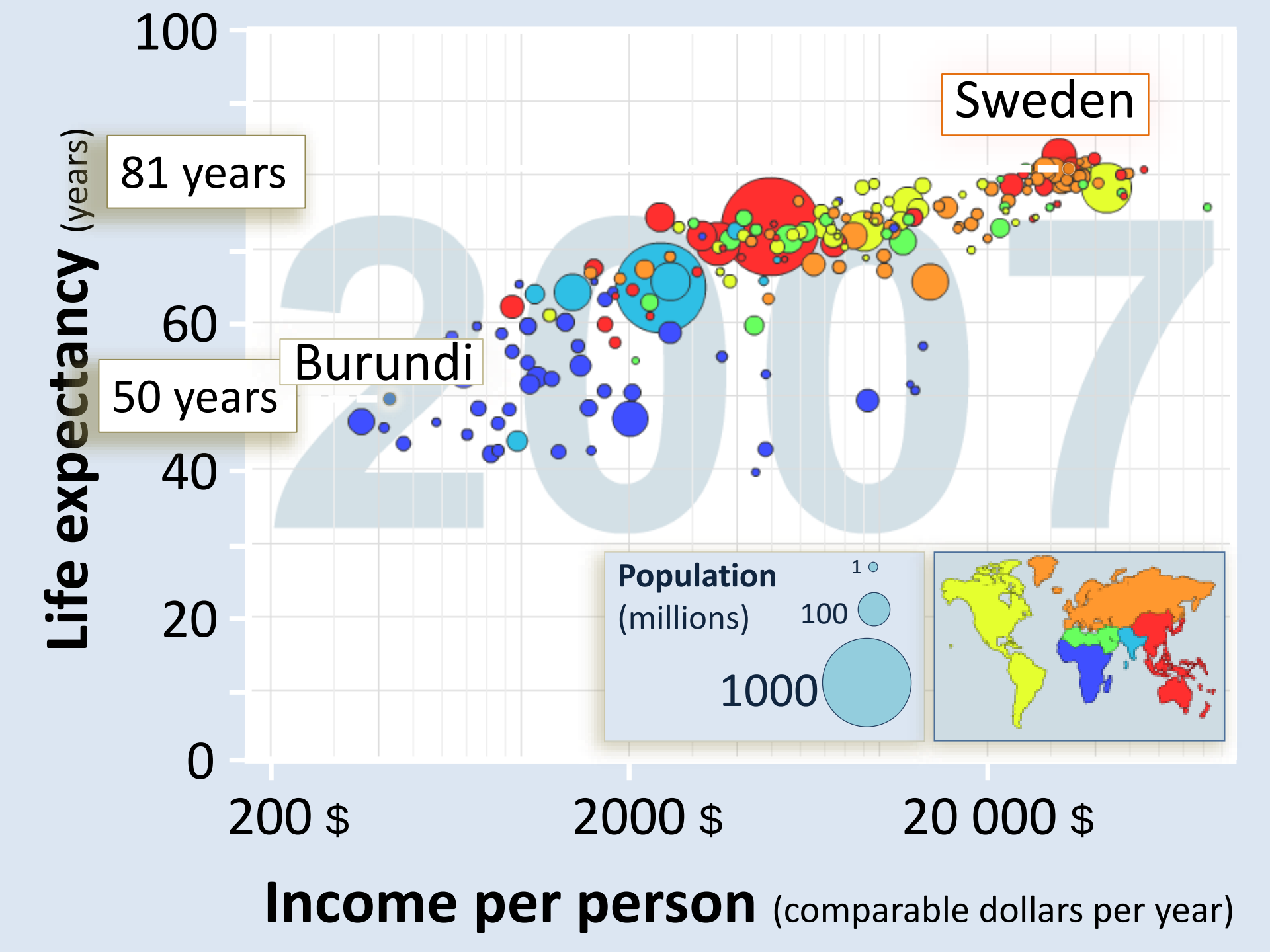

Sweden
2007
Age (years)
100
80
60
40
0
RIP
63
77
84
88
93
1 adult
4 old
Per
Lisa
Jan
Anton
Sara

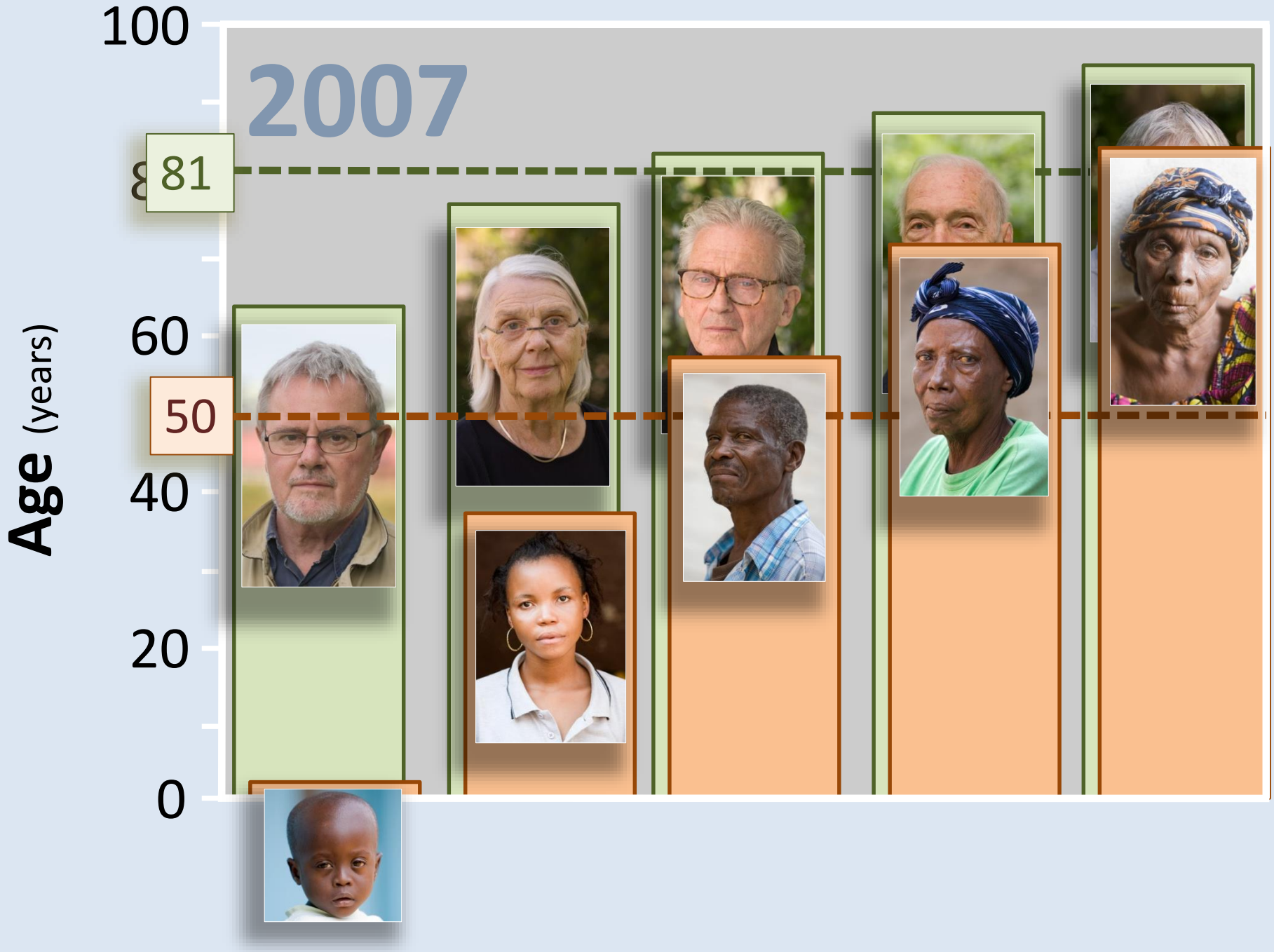

Sweden
2007
81 years
Age (years)
100
60
40
20
0
63
77
84
88
93
Calculate the mean…
63+77+84+88+93
5
=81
Per
Lisa
Jan
Anton
Sara


100
60
40
20
0
Life expectancy (years)
81 years
Sweden
2007
Population
(millions)
1
100
1000
200 $
2000 $
20 000 $
Income per person (comparable dollars per year)


Sweden


Burundi

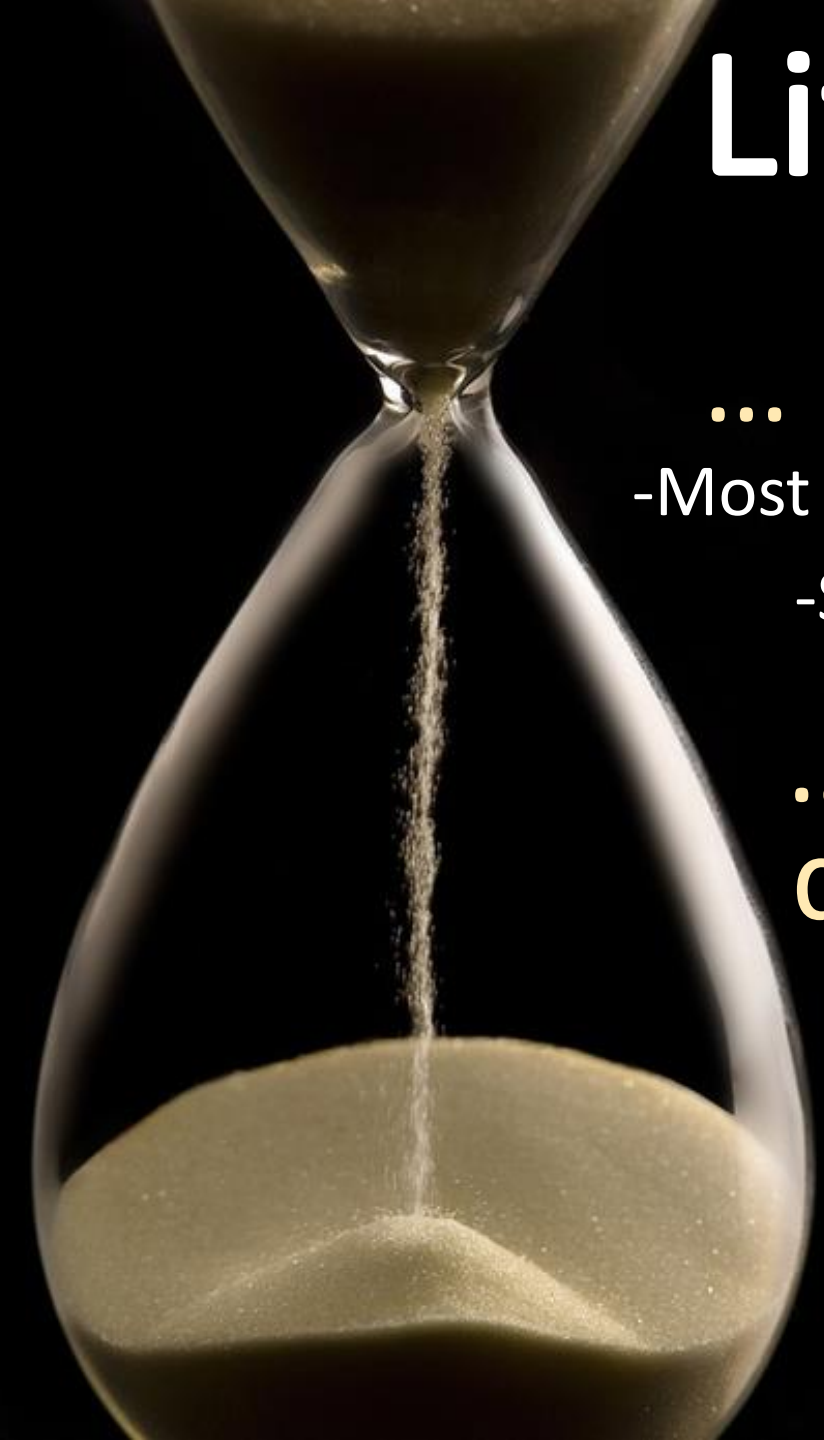

100
60
40
20
0
Life expectancy (years)
81 years
50 years
Sweden
Burundi
2007
Population
(millions)
1
100
1000
200 $
2000 $
20 000 $
Income per person (comparable dollars per year)


100
2007
81
60
50
40
20
0
Age (years)

"To live long" in Sweden is almost the same as "to live long" in Burundi

But from

So, no, all Burundians do not live 31 years shorter than Swedes



Life expectancy

… is an average

-Most Burundians get older than 50

-Some die in childhood

… is low when child-deaths are common

-It is low in Burundi
not because all die a bit earlier

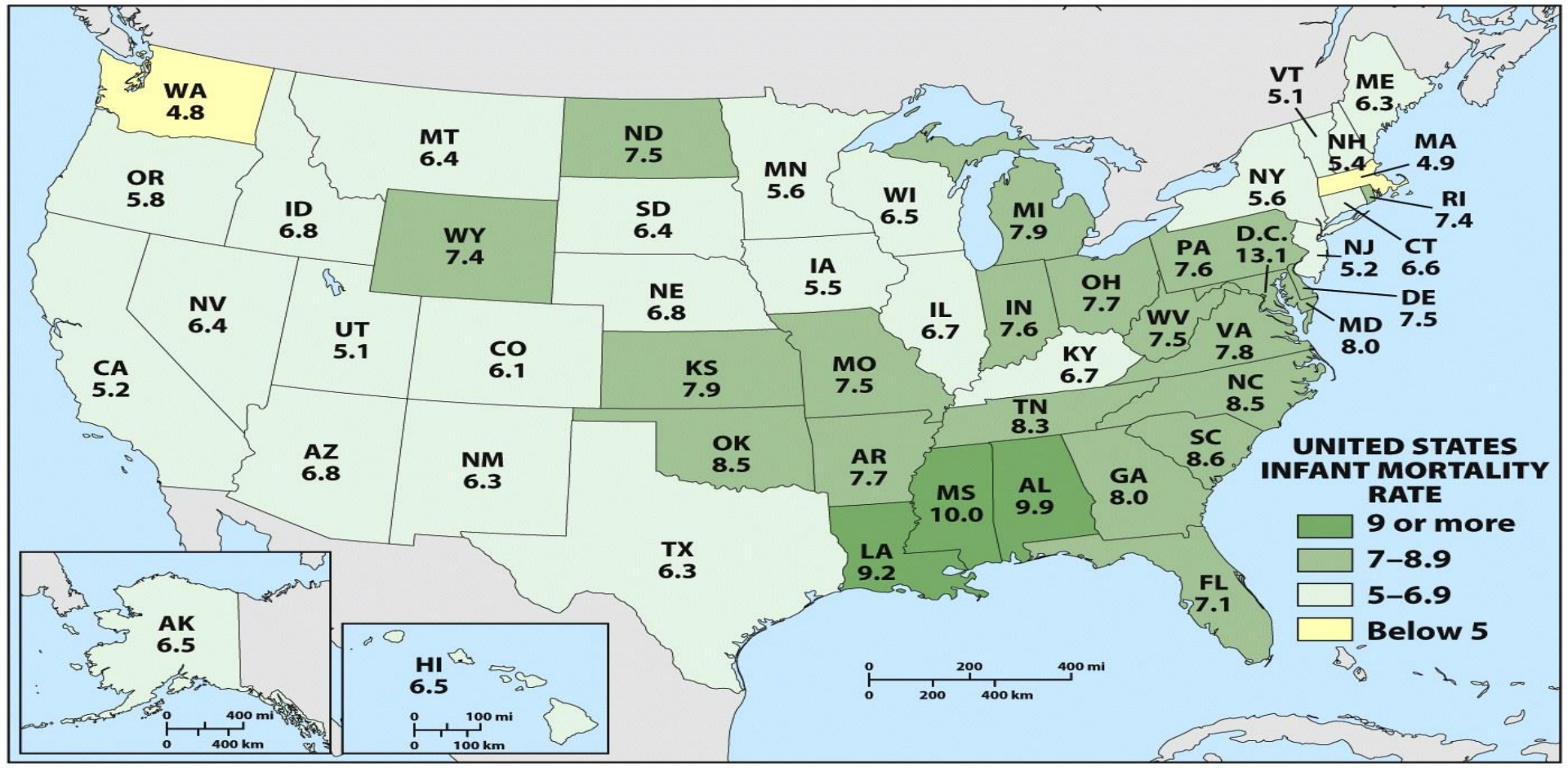
-But because
some die much younger

Rate of Natural Increase: Rate of natural increase (or decrease) is measured by subtracting the crude death rate from the crude birth rate and dividing by 10.

RNI = (CBR – CDR) ÷ 10

RNI tends to be less than 1 for developed countries and greater than one for developing countries.

Does not factor migration.

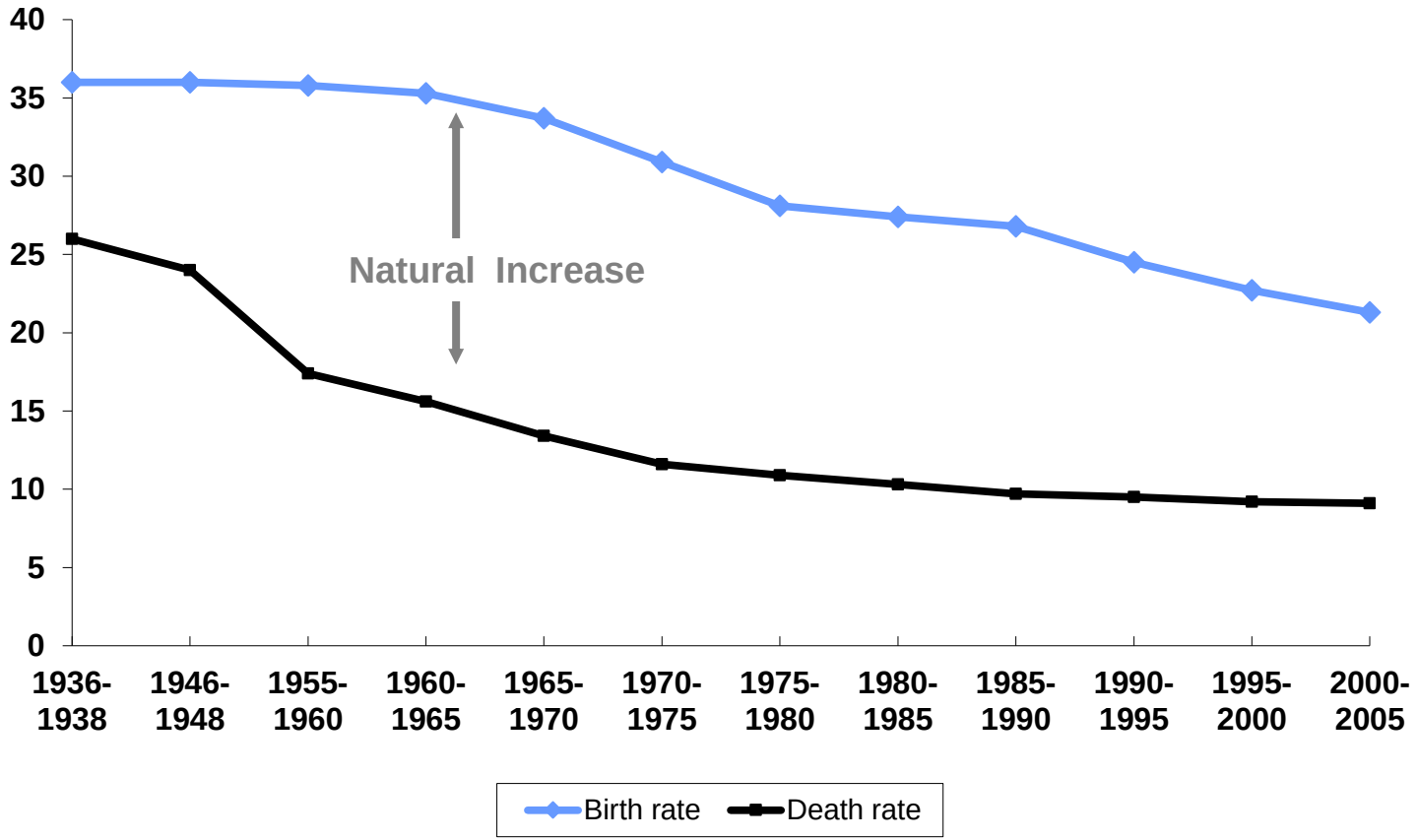


Mini Ultimate Guide – 1. Choose a state with a high IMR (9 or more), identify and explain two factors that contribute to the high IMR 2. Choose a state with a low IMR (below 5) – Identify and explain two factors that contribute to the low IMR.

4 Paragraphs – one explaining each identified factor.

Birth and Death Rates, Worldwide

Rates of birth, death, and natural increase per 1,000 population



Source: United Nations, *World Population Prospects: The 2002 Revision (*medium scenario*)*, 2003.

Demographic Balancing Equation:
Factors in migration to determine countries total population change.

Total Population = Births – Deaths + Immigrants - Emigrants

Stationary Population Level (SPL)

- The level at which a national population ceases to grow
- TFR = 2.1

Population Doubling Time: The amount of time it takes for a population to double.

Doubling time can be estimated using the Rule of 70.

- Assuming the growth rate remains steady, the approximate doubling time will be 70 divided by the growth rate per year.

Demographic Momentum: The tendency for a population to continue growing after a fertility decline.

Mini Ultimate Guide – Demographic Momentum

- This is a research UG. Do not need research notes.
- Define and EXPLAIN demographic momentum
- Include one real world example. Include actual population numbers from a country experiencing demographic momentum.
- Create a visual that clearly demonstrates how a country that is lowering it's fertility rates, continues to have an increase in it's overall population
- 1 page, Plus Visual

RNI AND POPULATION CHANGE

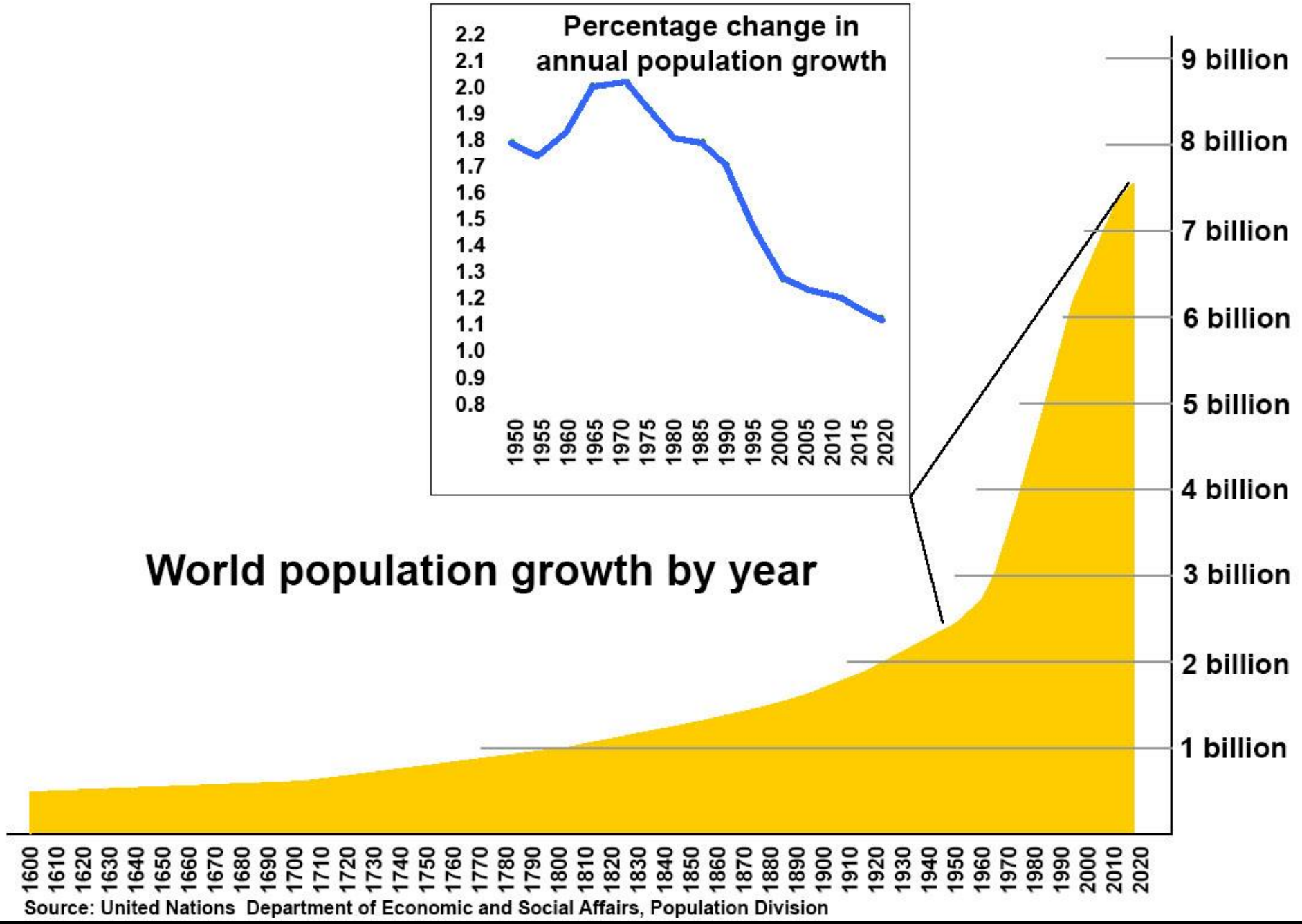
Go to Kellogg's Website (WLHS staff directory) – APHG Unit 3 – 2017 Population Data Sheet

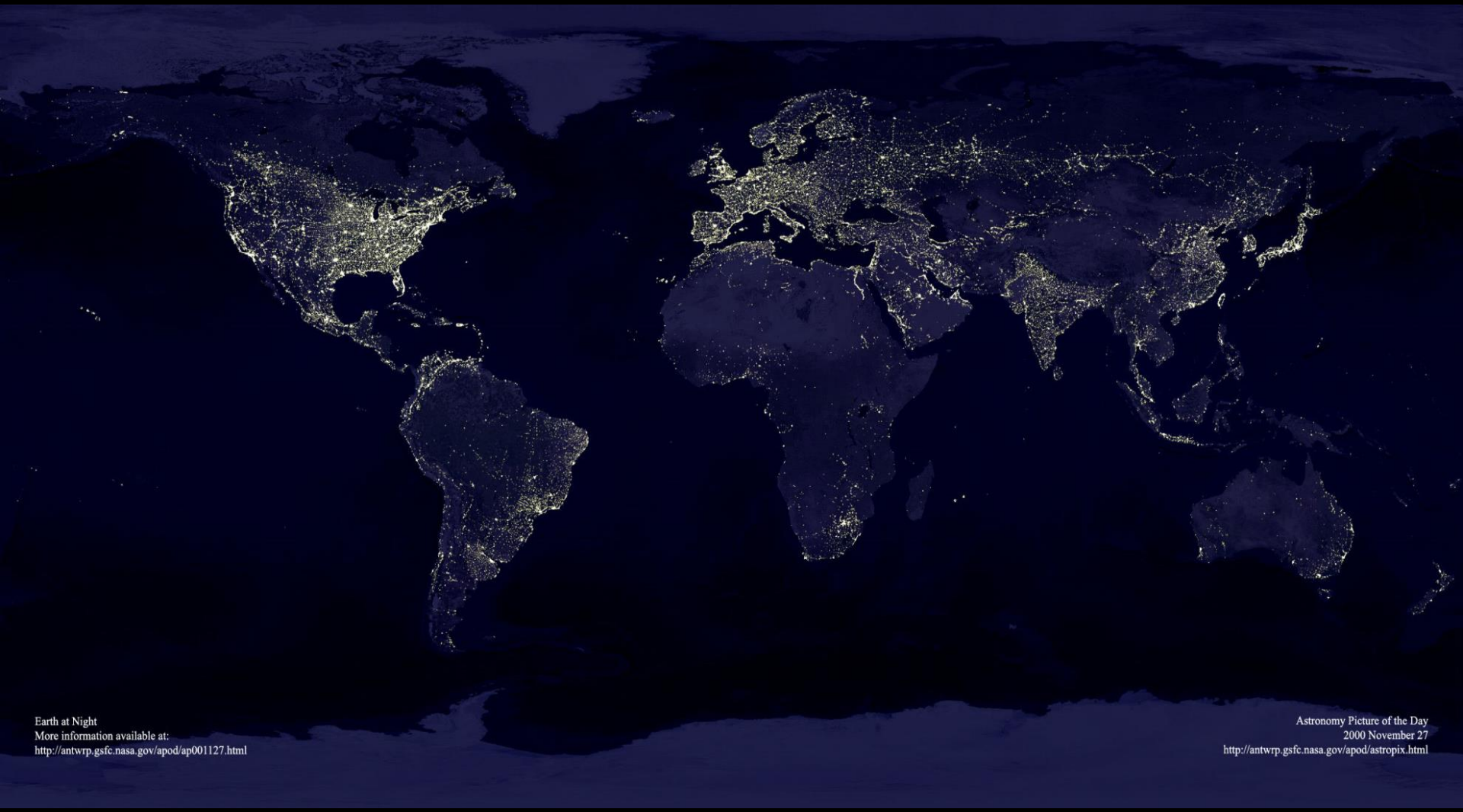
COUNTRY	BIRTHS per 1,000	DEATHS per 1,000	RNI	Net Migration	Population Change
Sudan					
Peru					
Germany					
Iran					
United States					
Japan					

Choose one country. Write one paragraph explaining the economic impact of their demographic data.

- The US population is growing at a rate of .72%. At that rate how long will it take for the population to double?

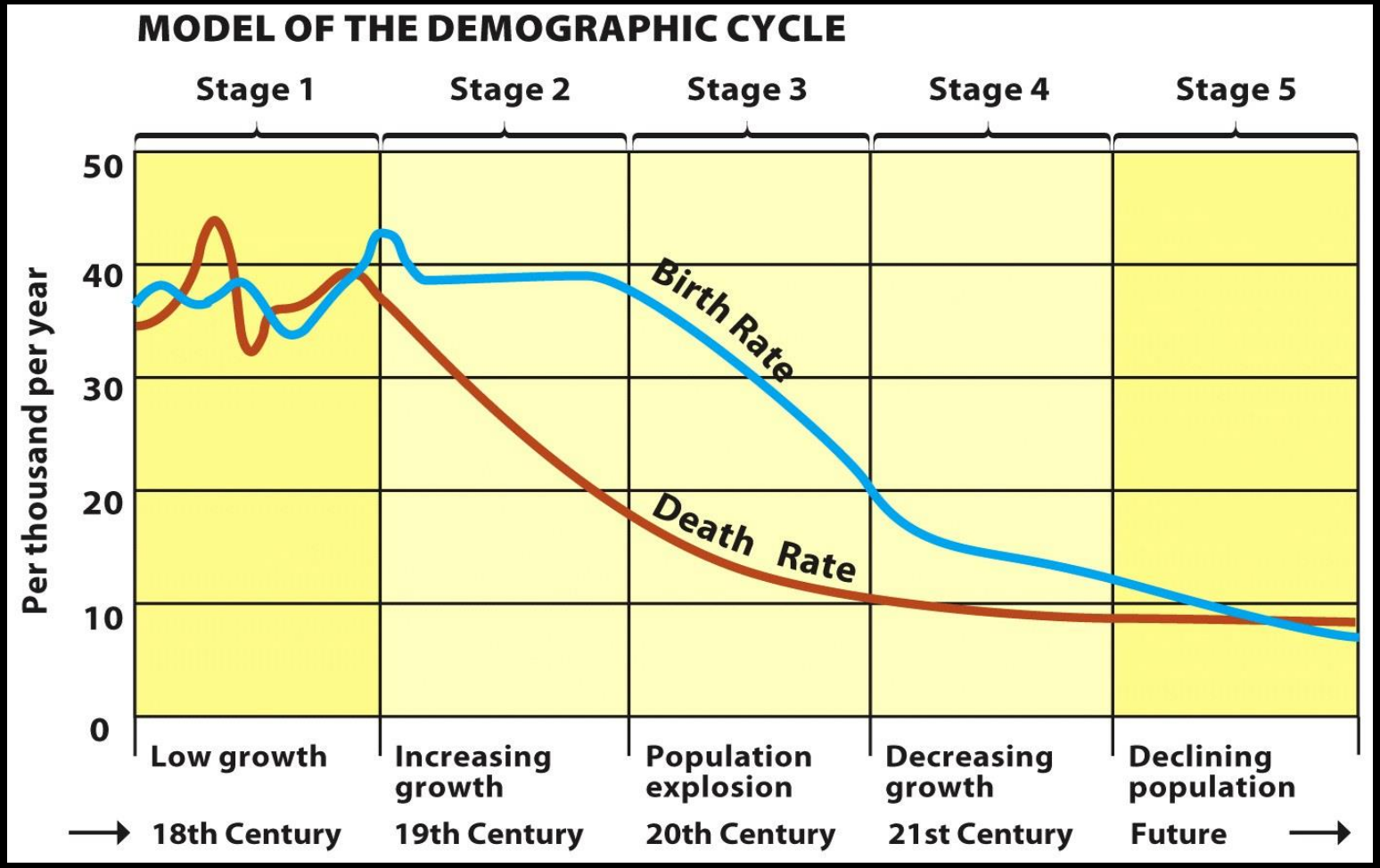
- The world's population is growing at a rate of 1.08%. At that rate how long will it take for the population to double?

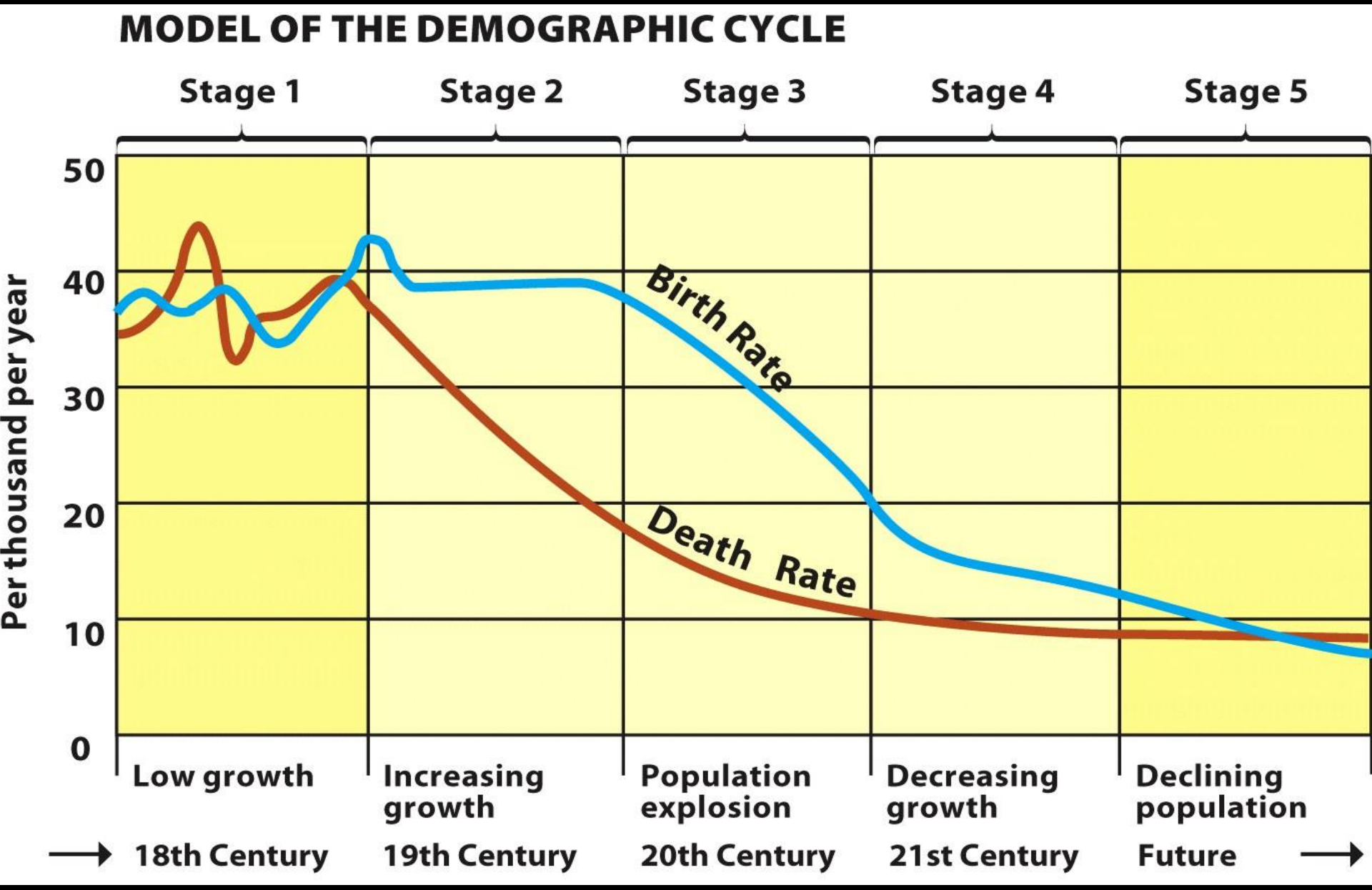

Percentage change in annual population growth
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020
World population growth by year
9 billion
8 billion
7 billion
6 billion
5 billion
4 billion
3 billion
2 billion
1 billion
1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020
Source: United Nations Department of Economic and Social Affairs, Population Division



2.5 The Demographic Transition Model

The Demographic Transition Model




MODEL OF THE DEMOGRAPHIC CYCLE
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
Per thousand per year
50
40
30
20
10
0
Birth Rate
Death Rate
Low growth
Increasing growth
Population explosion
Decreasing growth
Declining population
18th Century
19th Century
20th Century
21st Century
Future

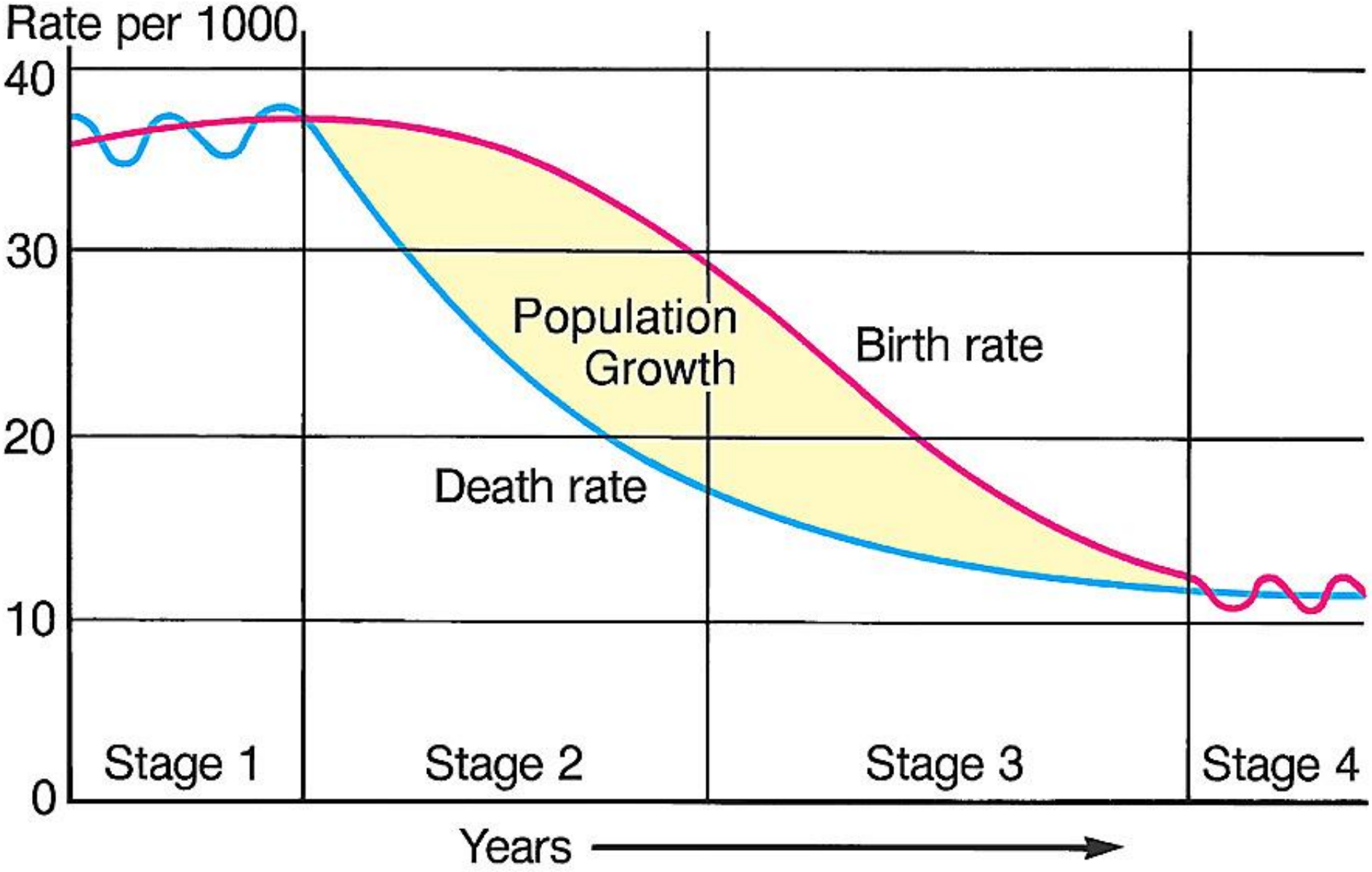
Demographic Transition Model: A geographic model that explains and predicts changes in population growth.

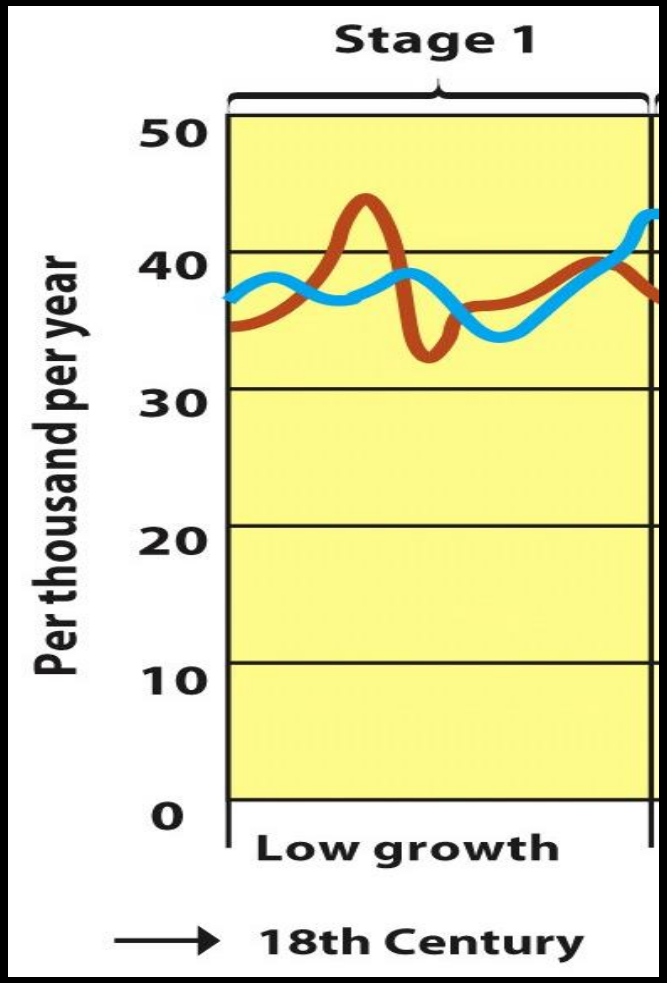
Classic model has 4 stages.

Modern version has added a 5th stage

- The DTM predicts changes in CBR, CDR and RNI as a country transitions through economic stages of development.

- Based on assumption that economics drive population changes and that all countries will pass through four stages of demographic transition.

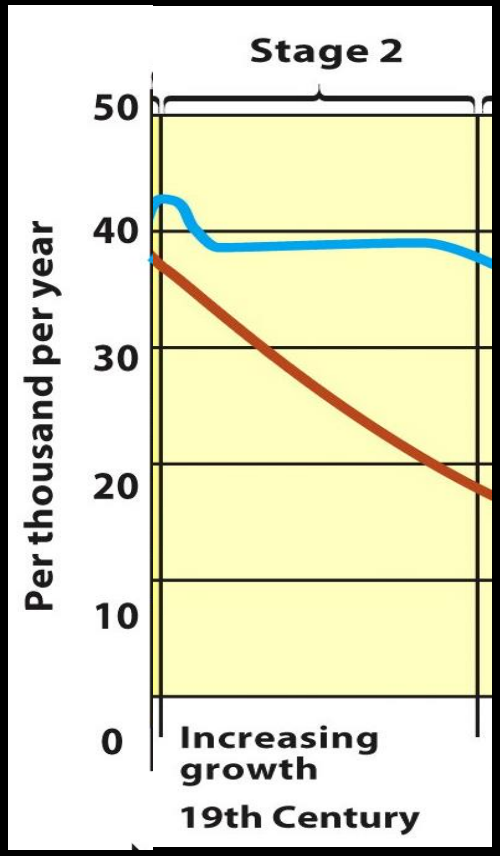

Rate per 1000
40
30
20
10
0
Population Growth
Birth rate
Death rate
Stage 1
Stage 2
Stage 3
Stage 4
Years


Stage 1
50
40
30
20
10
0
Per thousand per year
Low growth
18th Century

DTM STAGE 1
Low Growth Stage or Pre-Industrial Stage

- What happens in Stage 1
  - CBR and CDR are extremely high – Fluctuating between 35 and 40.
  - High CBR and high CDR result in a low RNI.
  - Population is stationary.
  - Known as equilibrium stage – no growth, no decline in population.

- Why it happens in Stage 1
  - CBR and CDR fluctuate because of disease, famine and war.
  - Lack modern health care, sanitation, technology
  - Most people in stage 1 are subsistence farmers
  - Because Infant and child mortality rates are high many subsistence farmers have large families.
    - children = labor
    - The more children you have the more land you can farm, the more food you can produce
- No countries are currently stage 1.

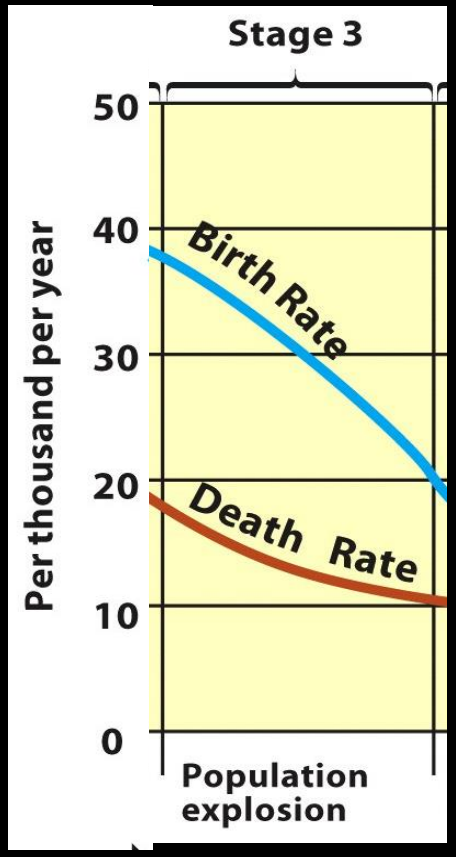

Stage 2
50
40
30
20
10
0
Per thousand per year
Increasing growth
19th Century

DTM STAGE 2

High Growth Stage or Early Industrial Stage

- What happens in Stage 2?
  - CBR remains relatively high (over 30) but CDR declines (to about 20)
  - RNI increases and population expansion is high.

- Why it happens in Stage 2:
  - CBR remains high - cultural traditions encouraging large families change slowly.
  - Improvements in Agricultural technology
    - Higher yields from second agricultural revolution
  - Improvements in Medical technology
    - Better medical understanding (causes of diseases; how they spread)
  - Improvements in Public sanitation
    - Improved water supply (safe drinking water)
    - Better sewage treatment, food handling, and general personal hygiene
  - Most less developed nations are in Stage 2


Stage 3
50
40
30
20
10
0
Per thousand per year
Birth Rate
Death Rate
Population explosion

DTM STAGE 3
Moderate Growth or Later Industrial

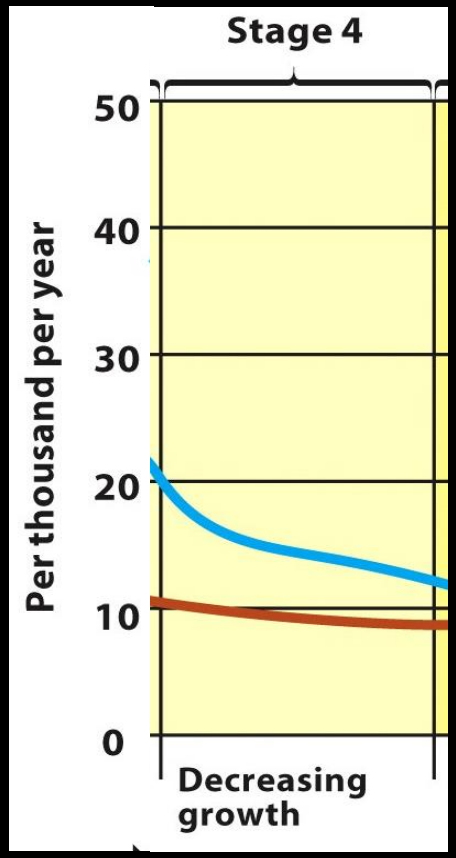
- **What happens in stage 3**
  - **Birth rates decline sharply** (to about 15)
  - Death rates decline a bit more (to about 10 or less)
  - RNI eventually decreases – near end of stage.

Why it happens in Stage 3:

- Societies become more urban, less rural
  - Declining childhood death in rural areas (fewer kids needed)
  - Increasing urbanization changes traditional values about having children
  - City living raises cost of having dependents

Even More Why it Happens in Stage 3:

- Women more influential in childbearing decisions
  - Increasing female literacy changes value placed on motherhood as sole measure of women's status
  - Women enter work force: life extends beyond family, changes attitude toward childbearing
  - Improved contraceptive technology, availability of birth control
- Most Latin American and Asian countries remain in Stage 3.

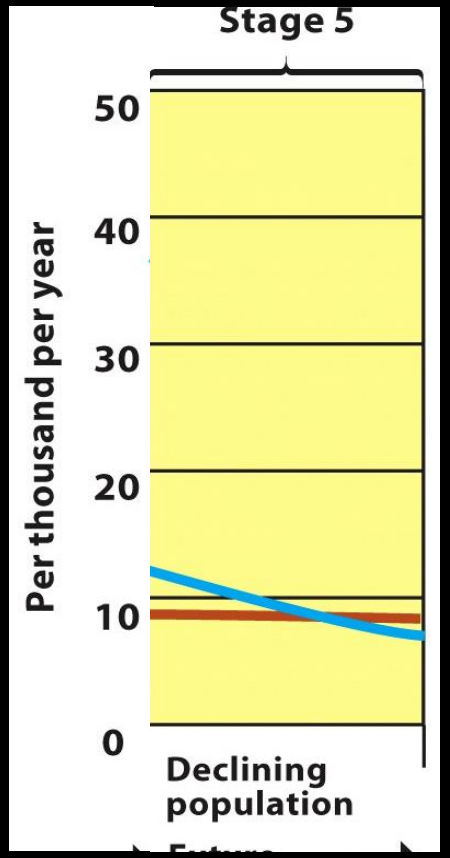

Stage 4
50
40
30
20
10
0
Per thousand per year
Decreasing growth

DTM STAGE 4
Low Growth or Post-Industrial

- What happens in Stage 4?
  - Birth rates and death rates both low (about 10)
  - CBR falls and meets the CDR at equally low levels – reaches equilibrium.
  - RNI stabilizes and there is close to zero population growth

- Why it happens in Stage 4:
  - Improvements in agriculture, sanitation and medical care continue and become accessible to more people.
  - Migration to urban areas continues and the costs associated with children continue to rise.
  - Women are more educated and are in workforce.

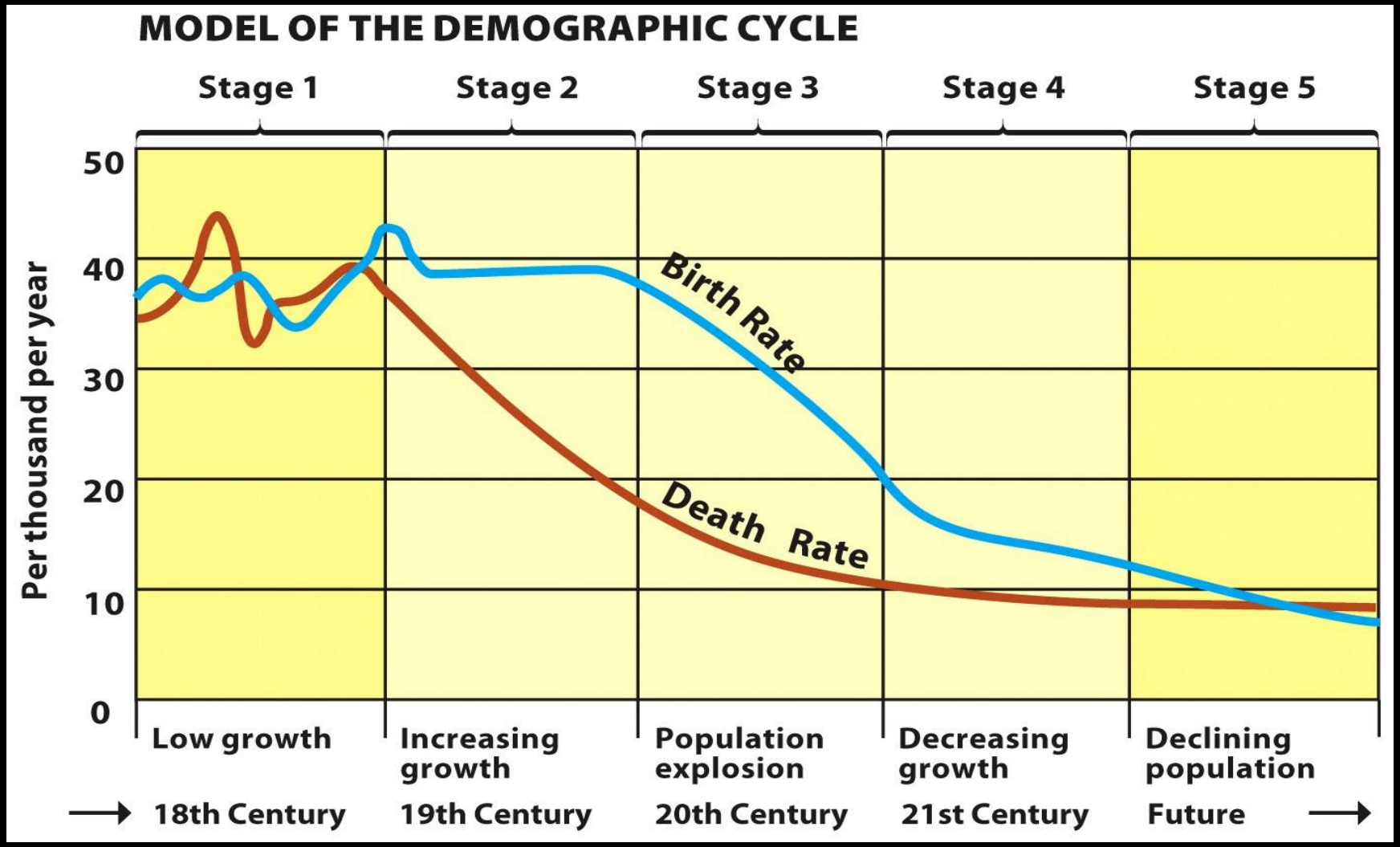
- Most North American and European countries are Stage 4


Stage 5
50
40
30
20
10
0
Per thousand per year
Declining population

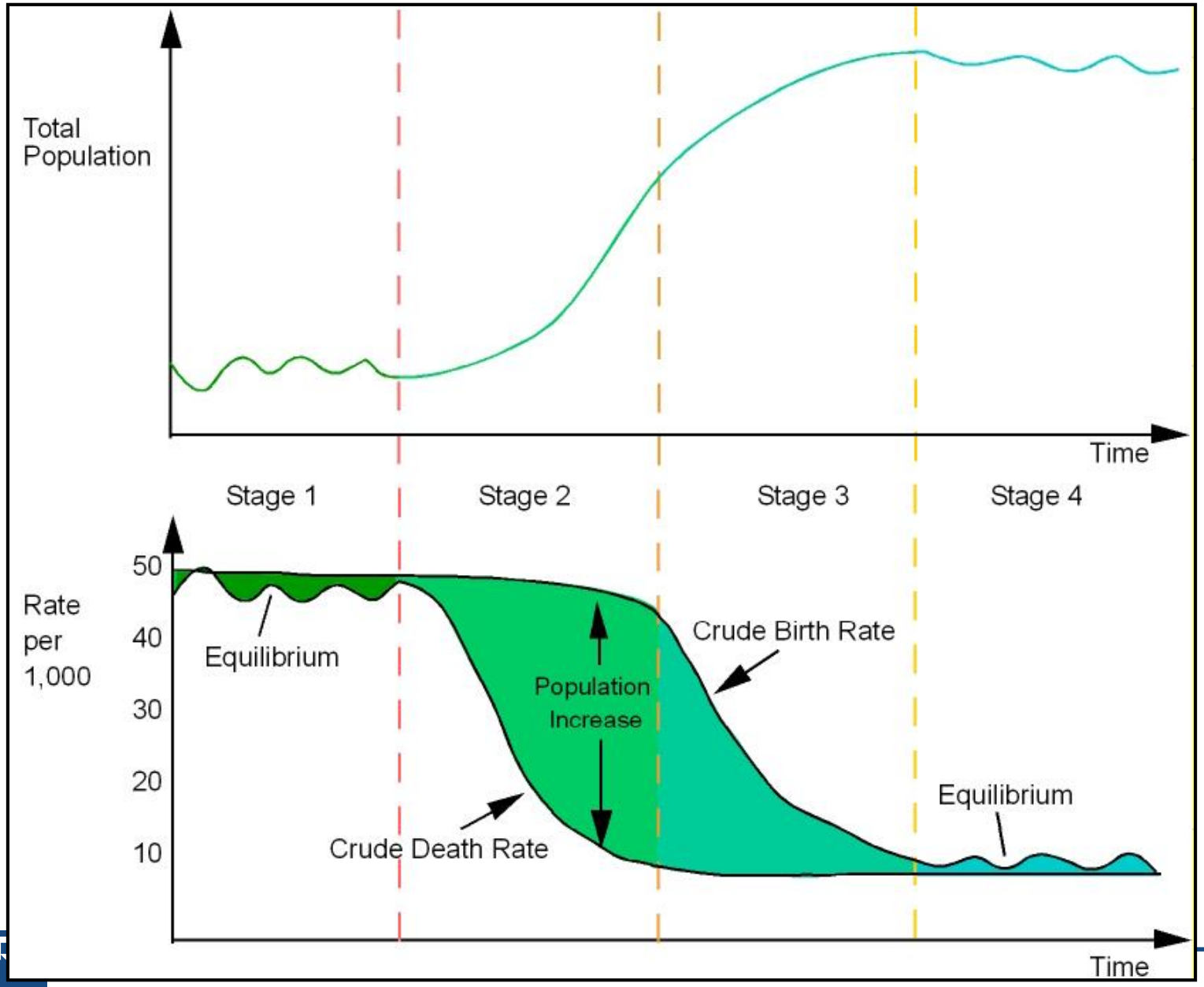
DTM STAGE 5
Declining Growth

- What happens in Stage 5?
  - CBR drops below CDR causing a negative RNI.
  - Results in a "graying " population – large numbers of elderly.
- Why it happens:
  - Trends in Stage 4 continue.

- Many Western European countries and Japan are entering stage 5.


MODEL OF THE DEMOGRAPHIC CYCLE
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
Per thousand per year
50
40
30
20
10
0
Birth Rate
Death Rate
Low growth
Increasing growth
Population explosion
Decreasing growth
Declining population
18th Century
19th Century
20th Century
21st Century
Future

Demographic Transition Model



Population Pyramids related to the Demographic Transition Model

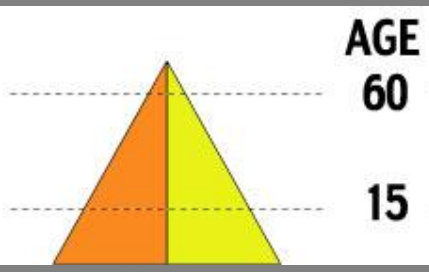
Stage 1

IMPLICATIONS

Both birth rates and Death rates are High, so population growth rates are slow but population Is usually restored Due to high birth Rate. Short life Expectancy

EXAMPLES: none today - Afghanistan, Ivory Coast (30 years ago)There are no Stage 1 countries today

Stage 2

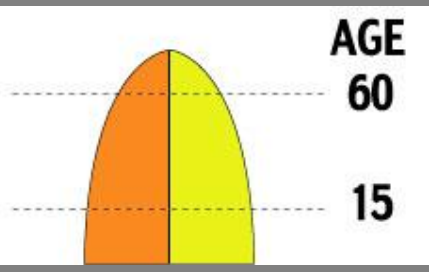


IMPLICATIONS

Population starts to grow at an exponential rate due to fall in Crude Death Rate. More living In middle age. Life expectancy rises Infant mortality rate falls.

EXAMPLES: DR Congo, Yemen, Afghanistan (today)

Stage 3

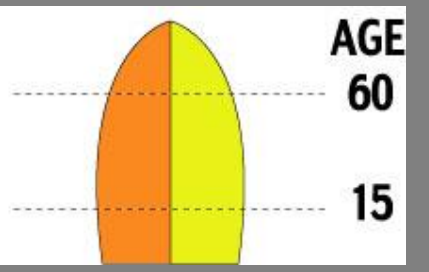


IMPLICATIONS

Population continues to grow but at slower rate. Low C Death Rate.
Dramatically declining Crude Birth Rate.

EXAMPLES: India, Brazil (late 3) – Most of world is in 3

Stage 4



IMPLICATIONS

Low Crude Birth Rate and Crude Death Rate Higher dependency ratio and longer life expectancy Crude Death Rate does Rise slightly because of The ageing population

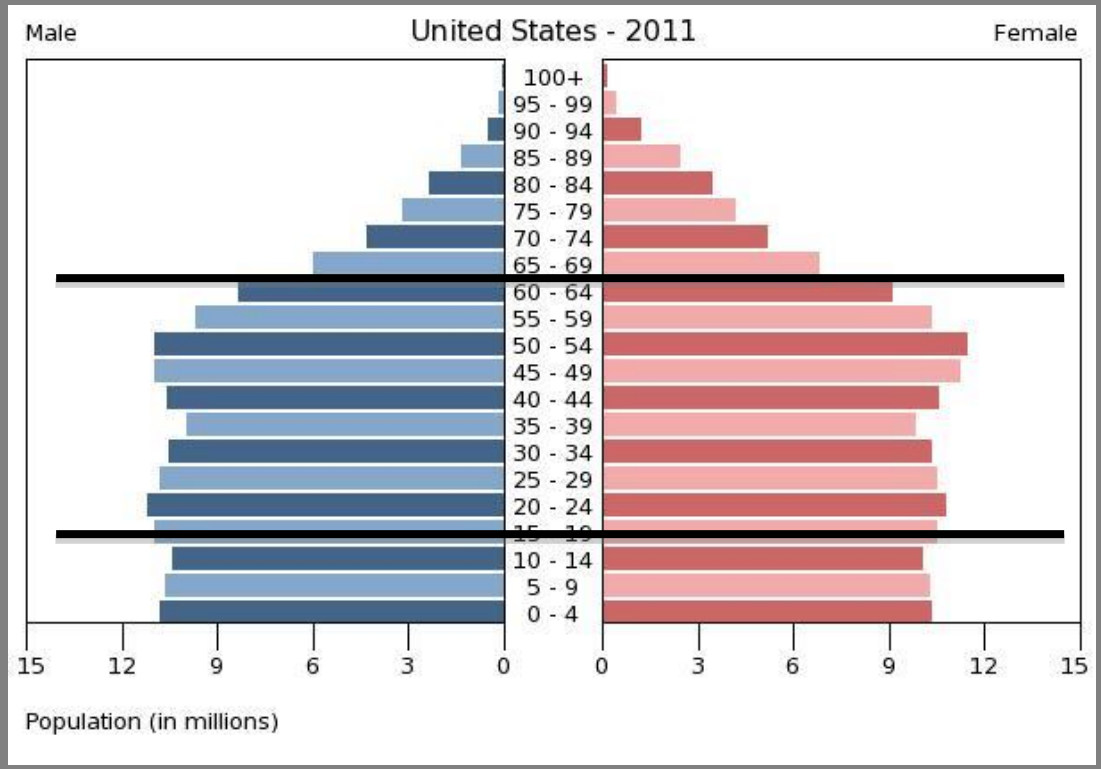
EXAMPLES: China, United States, Canada, Australia

- Stage 5

What Stage of DTM is US?

2011 Data

- *TFR 2.1*
- *BR 14*
- *DR 8*
- *Natural Increase: .6%*
- *Growth Rate: .9%*



- *Why is Growth Rate higher?*
- *How does this impact pyramid?*
- *Pyramid looks like a late 3 country.*
- *But does US fit description profile of Stage 4 better?*

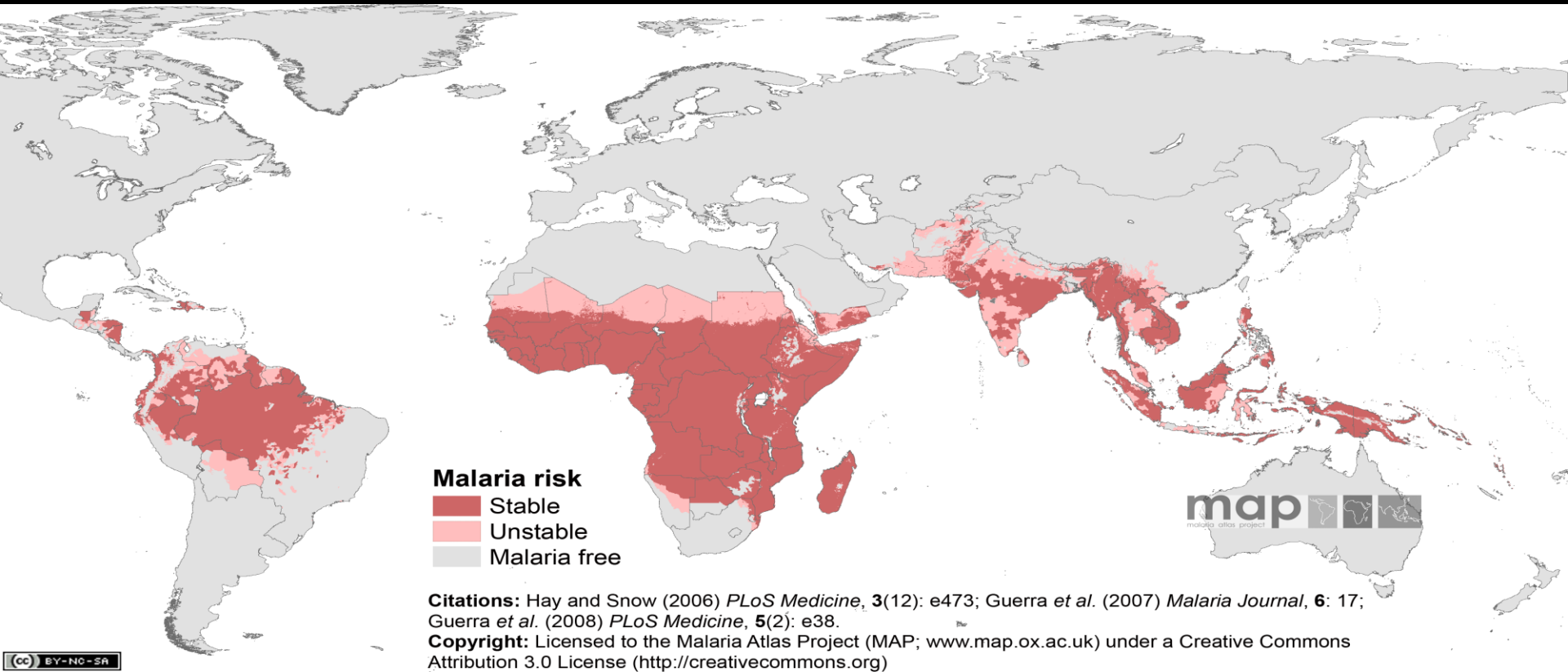
Epidemiological Transition Model

Explains changes in population due to medical innovation and improvements.

Stages are determined by the type of disease most of the population dies from.

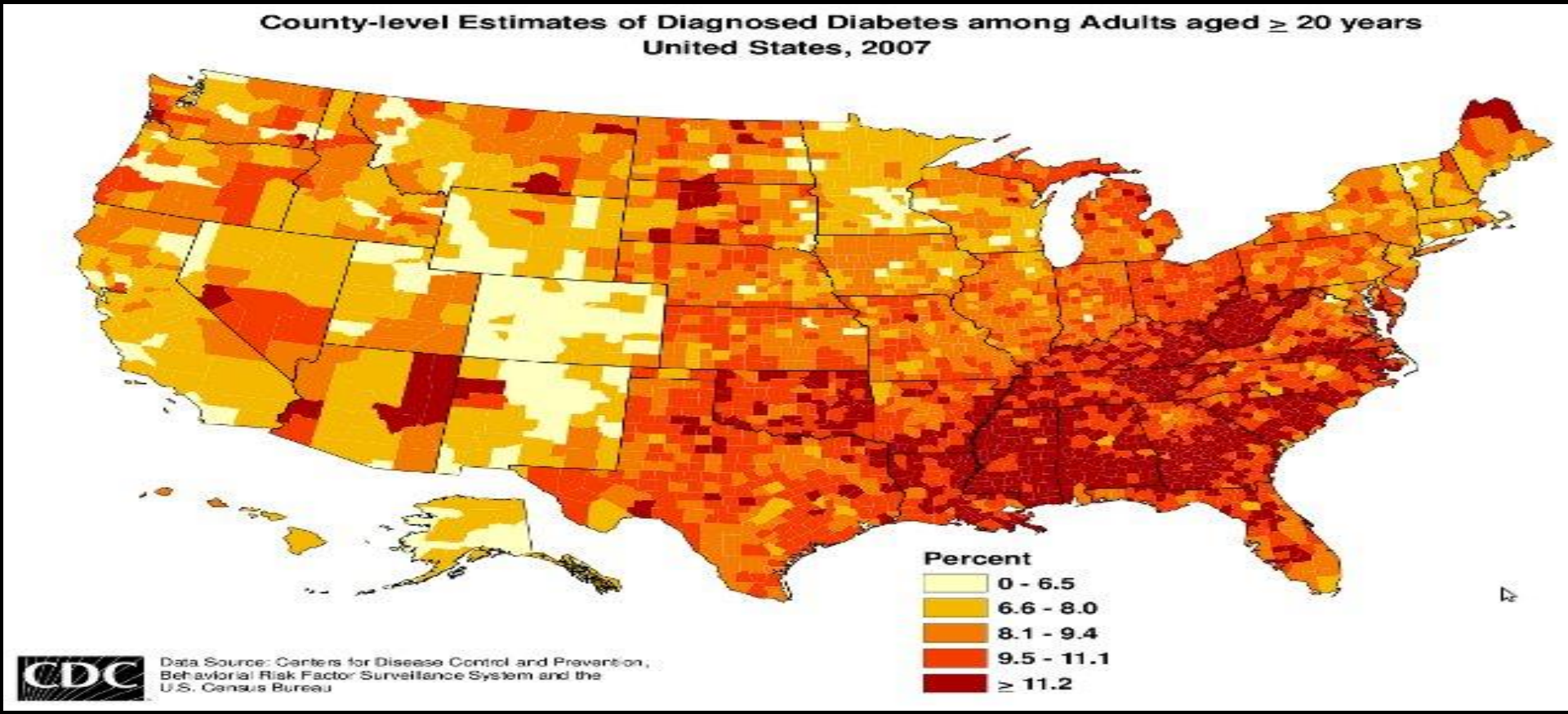
Infectious Diseases:

- Results from the invasion of parasites and their multiplication in the body
  - Malaria
  - HIV/AIDS



Chronic/Degenerative Diseases:

- Illnesses of longevity or old age
  - *Heart Disease*
  - *Cancer*



Endemic: Disease that affects a small area.

– The flu hits Portland

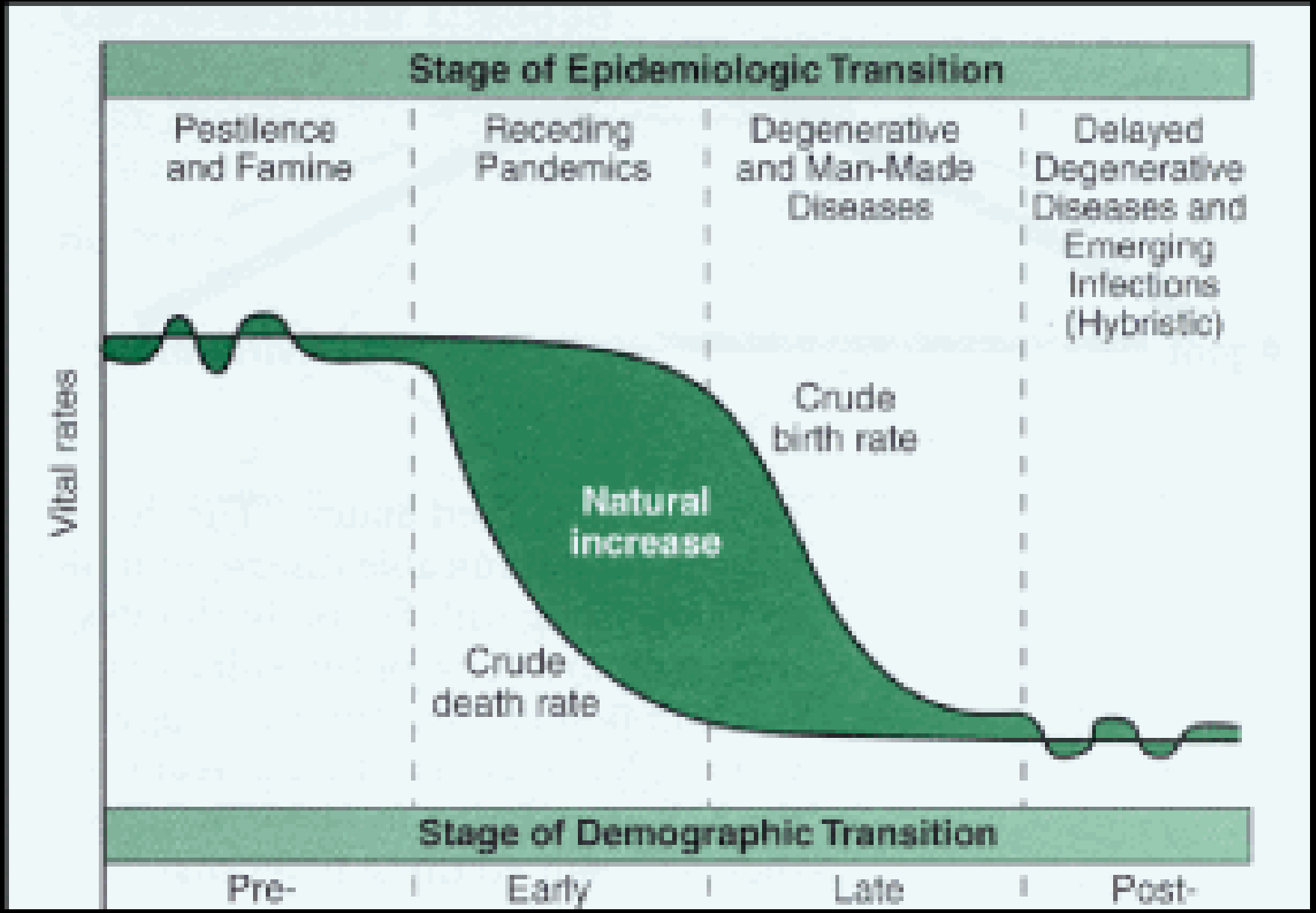
Epidemic: A disease affecting a region.

- the flu spreads throughout Oregon and Washington

Pandemic: A disease that affects very large numbers of people, often at a global level.

- The flu spreads across the entire US and Northern Europe

Figure 3 Demographic/ Epidemiologic Transition Framework



Stage 1: The Age of Pestilence and Famine

Mortality is high and fluctuating, thus precluding sustained population growth.

In this stage the average life expectancy at birth is low and variable, between 20 and 40 years.

Stage 2: The Age of Receding Pandemics

Mortality declines progressively; and the rate of decline accelerates as epidemic peaks become less frequent or disappear.

The average life expectancy at birth increases steadily from about 30 to about 50 years.

Population growth is sustained.

Stage 3: The Age of Degenerative and Man-Made Diseases

Mortality continues to decline and eventually approaches stability at a relatively low level.

The average life expectancy at birth rises gradually until it exceeds 50 years.

It is during this stage that fertility becomes the crucial factor in population growth.

Stage 4: Delayed Degenerative Diseases and Emerging Infections

Mortality and birth rates are both low

Fluctuate but relatively stable.

Country	Crude Birth Rate	Crude Death Rate	Rate of Natural Increase	Demographic Transition Stage
Mexico	20	5		
Nigeria	39	13		
Italy	8	10		
South Africa	21	9		
Germany	9	11		
Afghanistan	35	7		
Sri Lanka	16	6		
Canada	11	8		
Russia	13	13		
Brazil	13	6		

- Determine the RNI and the DTM stage for each country listed.
- Choose one country and write two paragraphs describing and explaining why they are in that particular stage of the DTM. Research and include specific data and examples from the country.

- Identify which stage of the DTM has the highest level of population growth?

- Why does that stage have the highest level of growth?

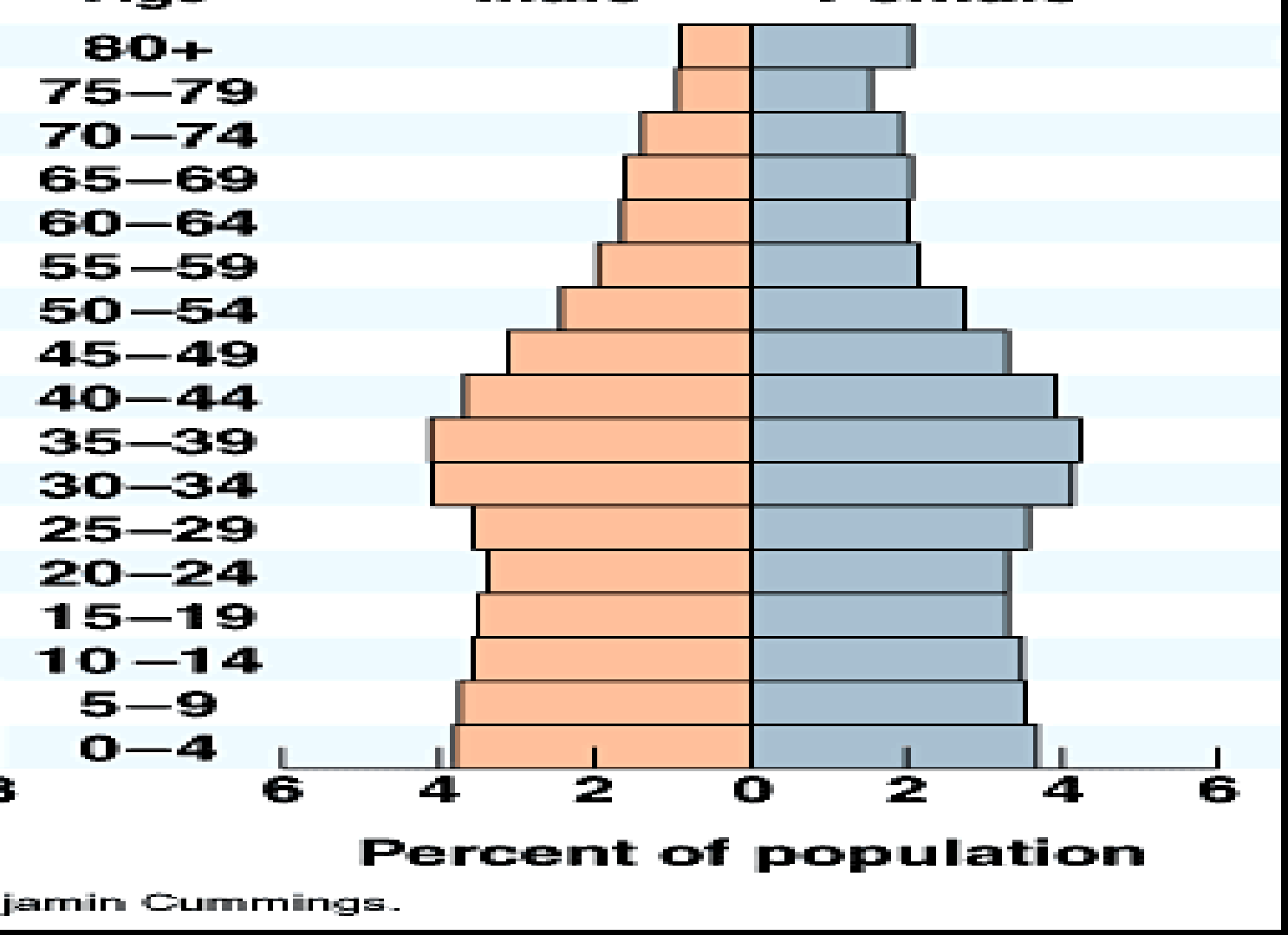
Ultimate Guide: DTM - the Good and the Bad

- Describe and explain the type of country that the DTM has accurately predicted population trends.

- Identify three countries that the DTM has not done a good job of predicting population trends.

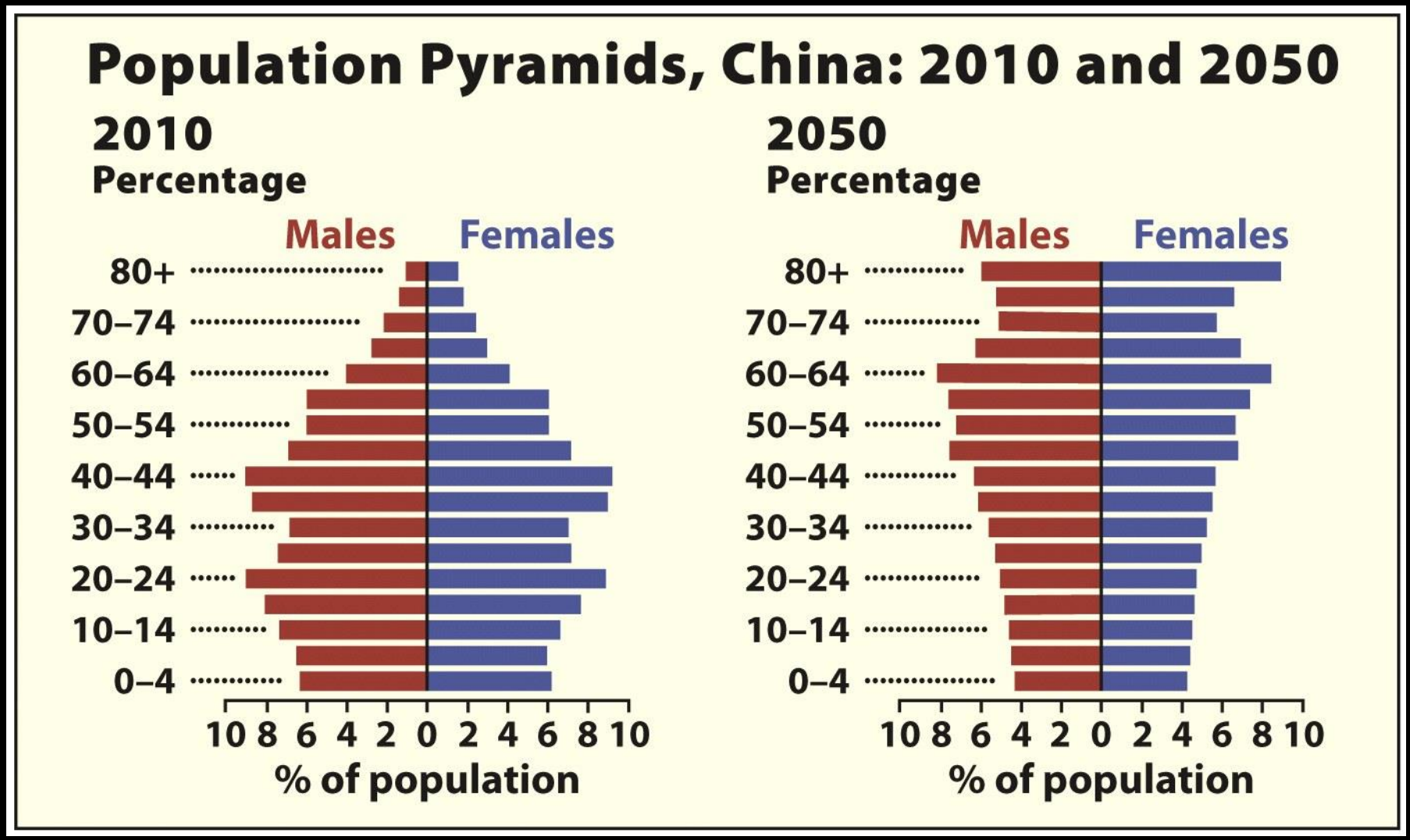
- For each country, describe and explain why the DTM has not been accurate .

- 1.5 pages in length

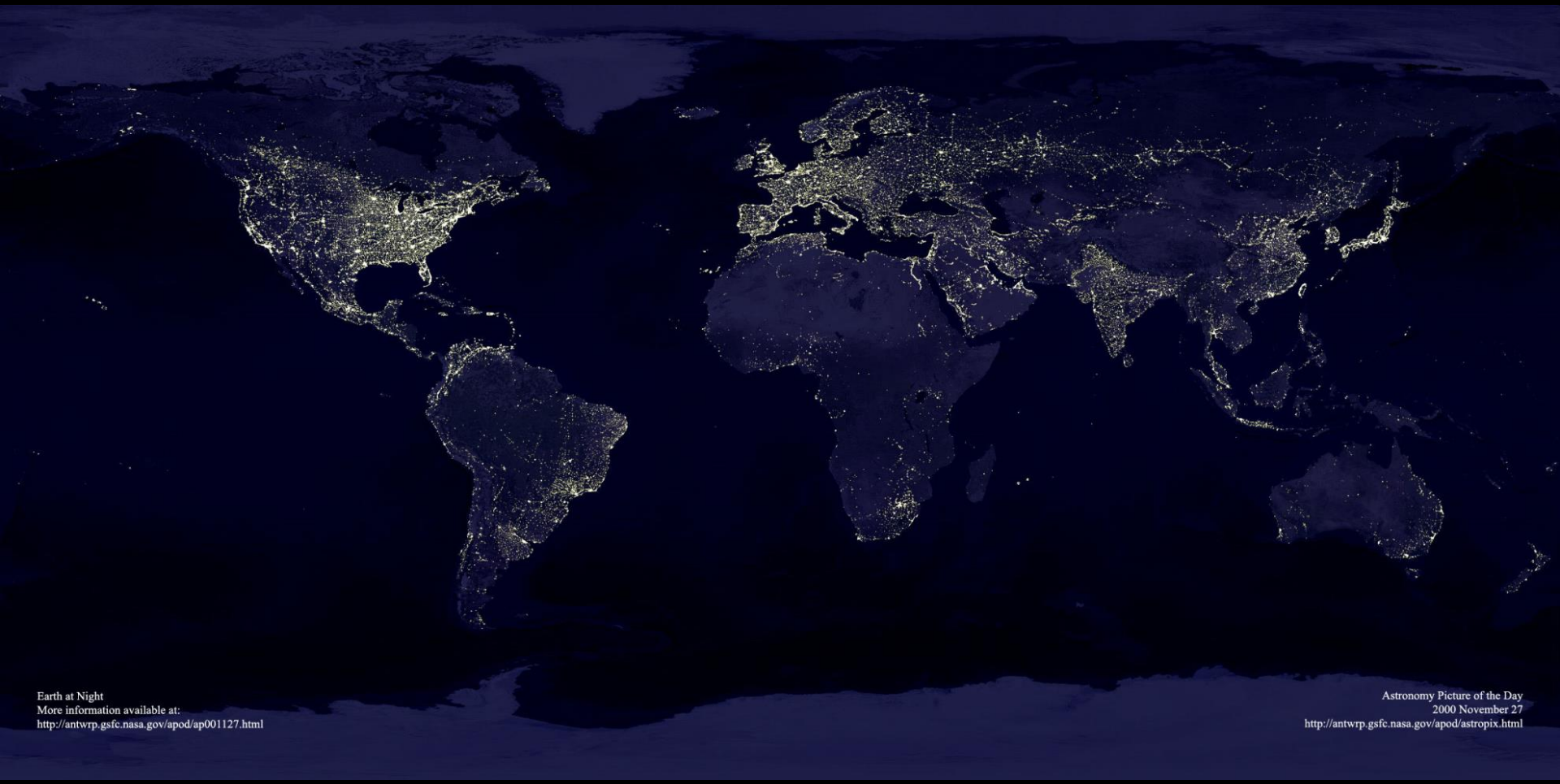


A. Will this countries population expand rapidly, expand slowly, be stable or decline? EXPLAIN.

B. Is this country a MDC (More Developed Country) or a LDC (Less Developed Country)? EXPLAIN.

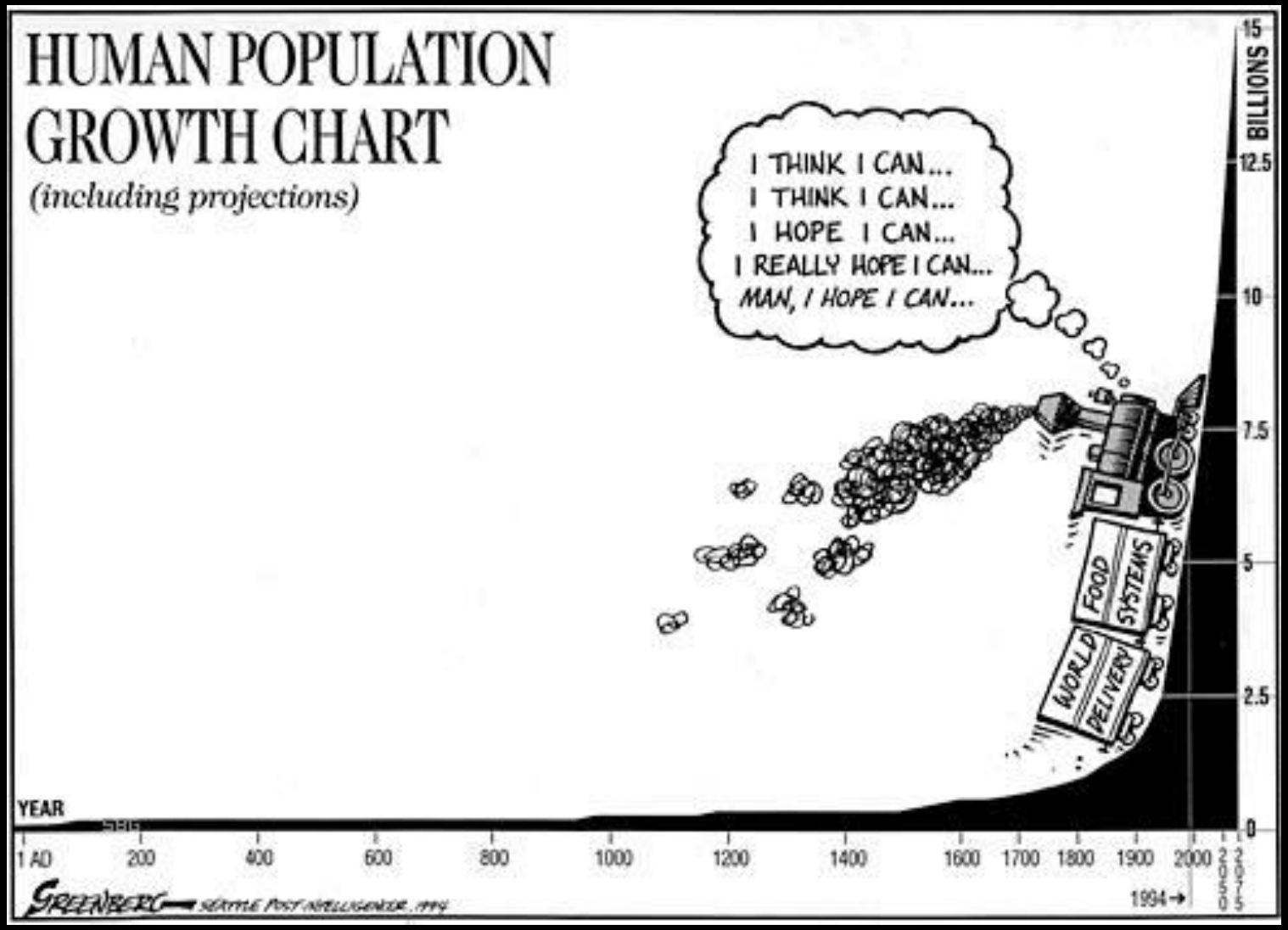


Data from: Population Reference Bureau



2.6 Malthusian Theory

Is there likely to be a population crisis?



Malthusian Catastrophe

- Thomas Malthus Predicted a population catastrophe

- Population would grow until it reached the limit of food supply, then there would be widespread poverty and famine.

Malthus recognized that:

Population, if left unchecked, will grow **geometrically**:

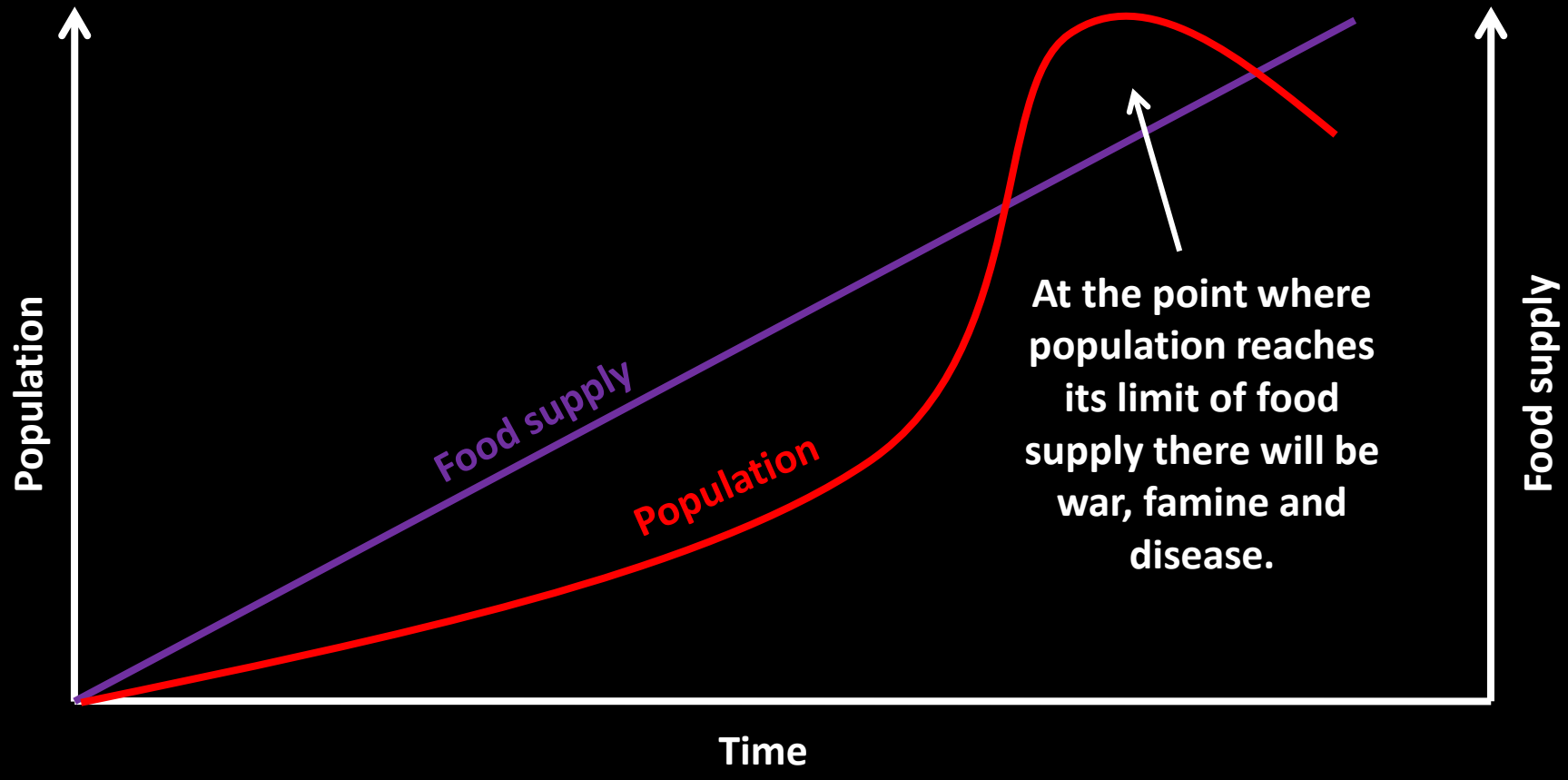
1, 2, 4, 8, 16, 32

Whereas **food supply** increases **arithmetically** as the amount of land is finite:

1, 2, 3, 4, 5, 6

And therefore he said …

… there would be a Malthusian catastrophe:

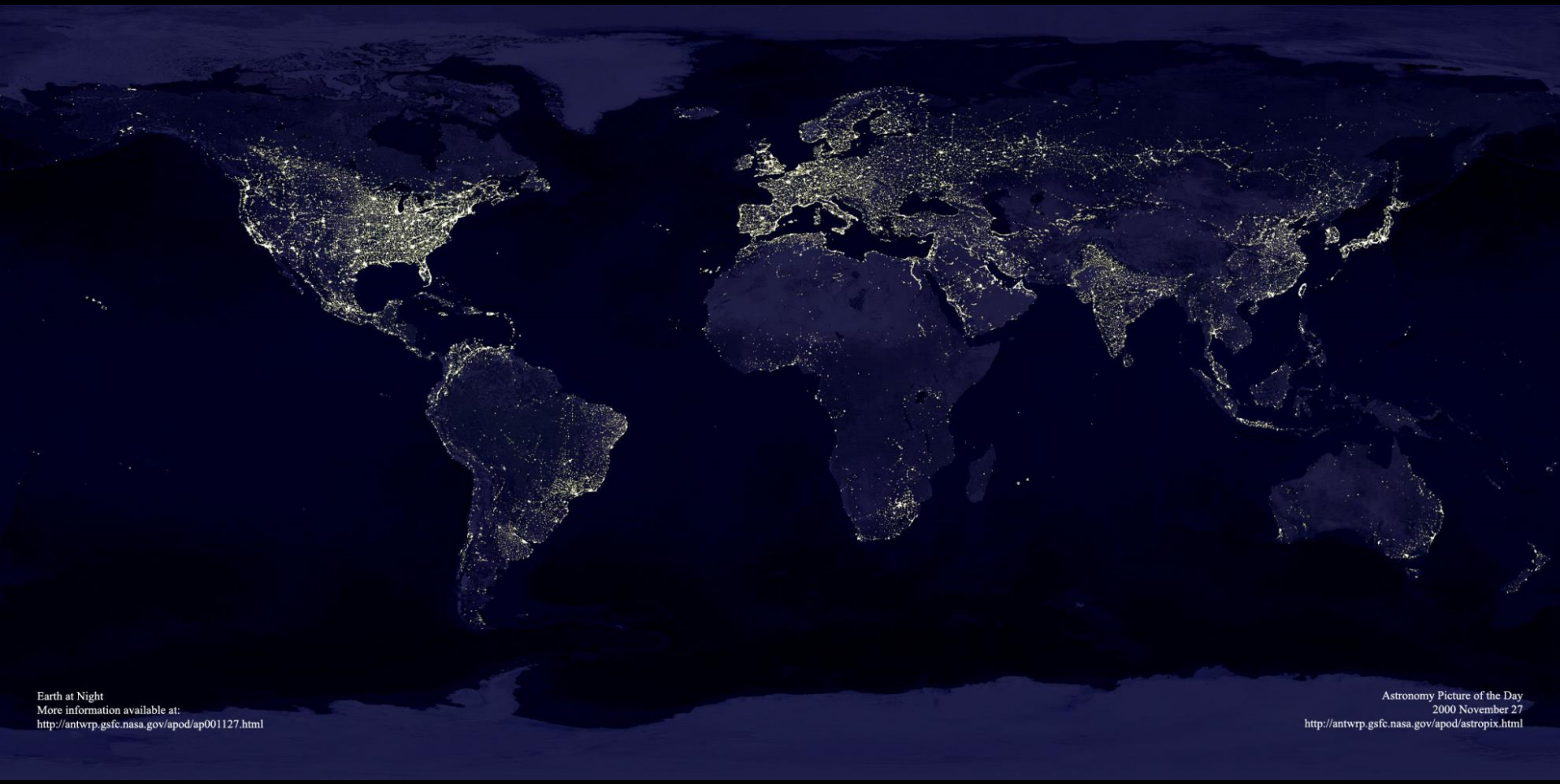


Malthusian Checks

- Malthus stated that once population reached this point, checks would come into play to readdress the balance between population and resources:

    1. positive checks – increased levels of misery (war, famine and disease)

    2. preventative checks – celibacy, later marriage etc



2.7 Population Policies

Pro-natalist Policies:

Government policies that encourage large families and raise the rate of natural increase

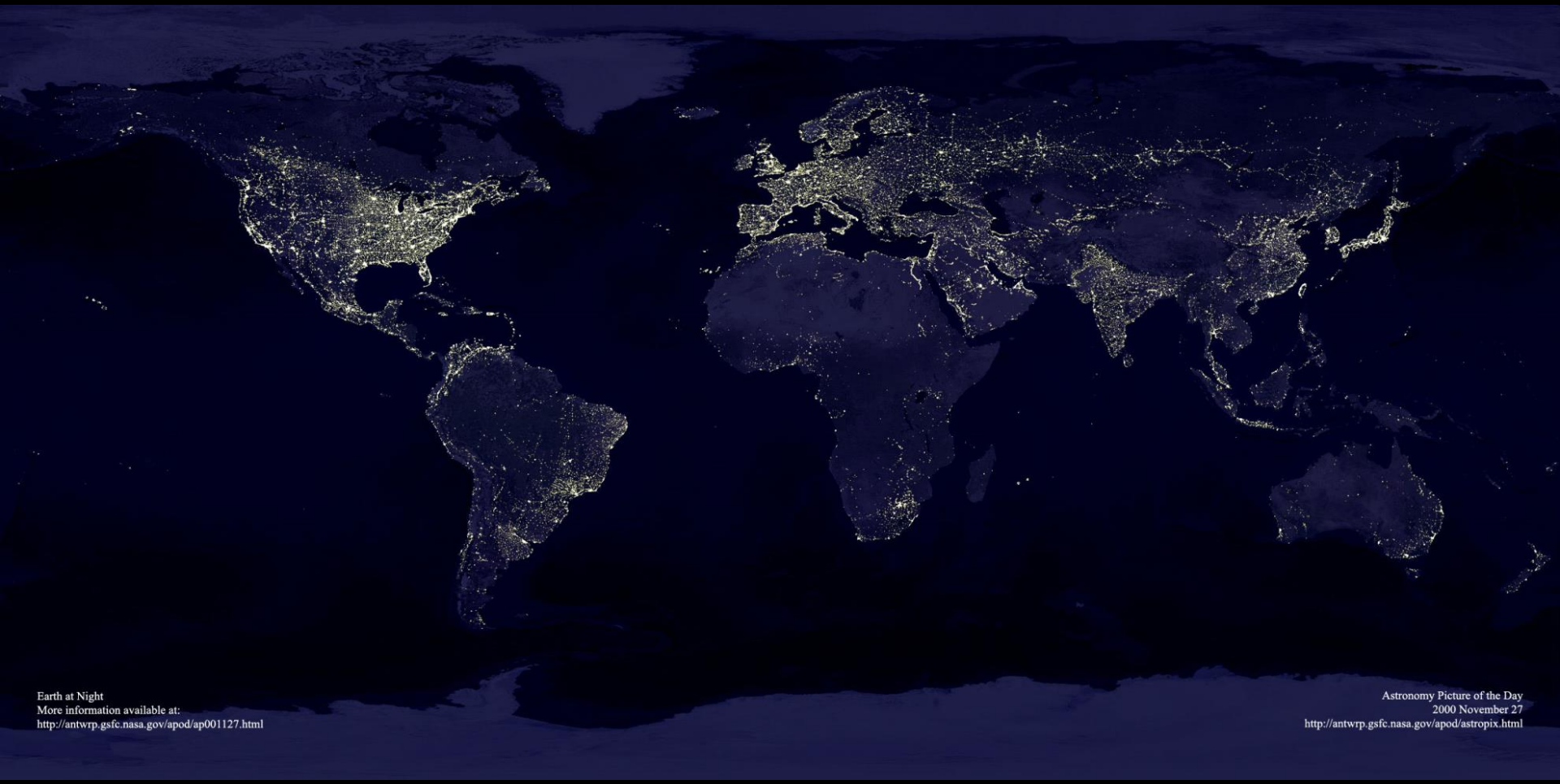
- US tax breaks for children
- Romania banned all elective abortions and criminalized the import of contraception. If childless after the age of 25 subject to a tax.
- Russia instituted national holiday to encourage conception.

Anti-natalist Policies

Government policies designed to reduce the number of children being born.

- One-Child Policy in China (no longer in use)
- India pays newlyweds approx. 100 dollars to delay first child. Having more than two children disqualifies you from holding public office.

- Immigration Policies: Governments may institute pro or anti immigrant policies, effecting overall population.



2.8 Women and Demographic Change

Causes of Lowering Fertility Rates

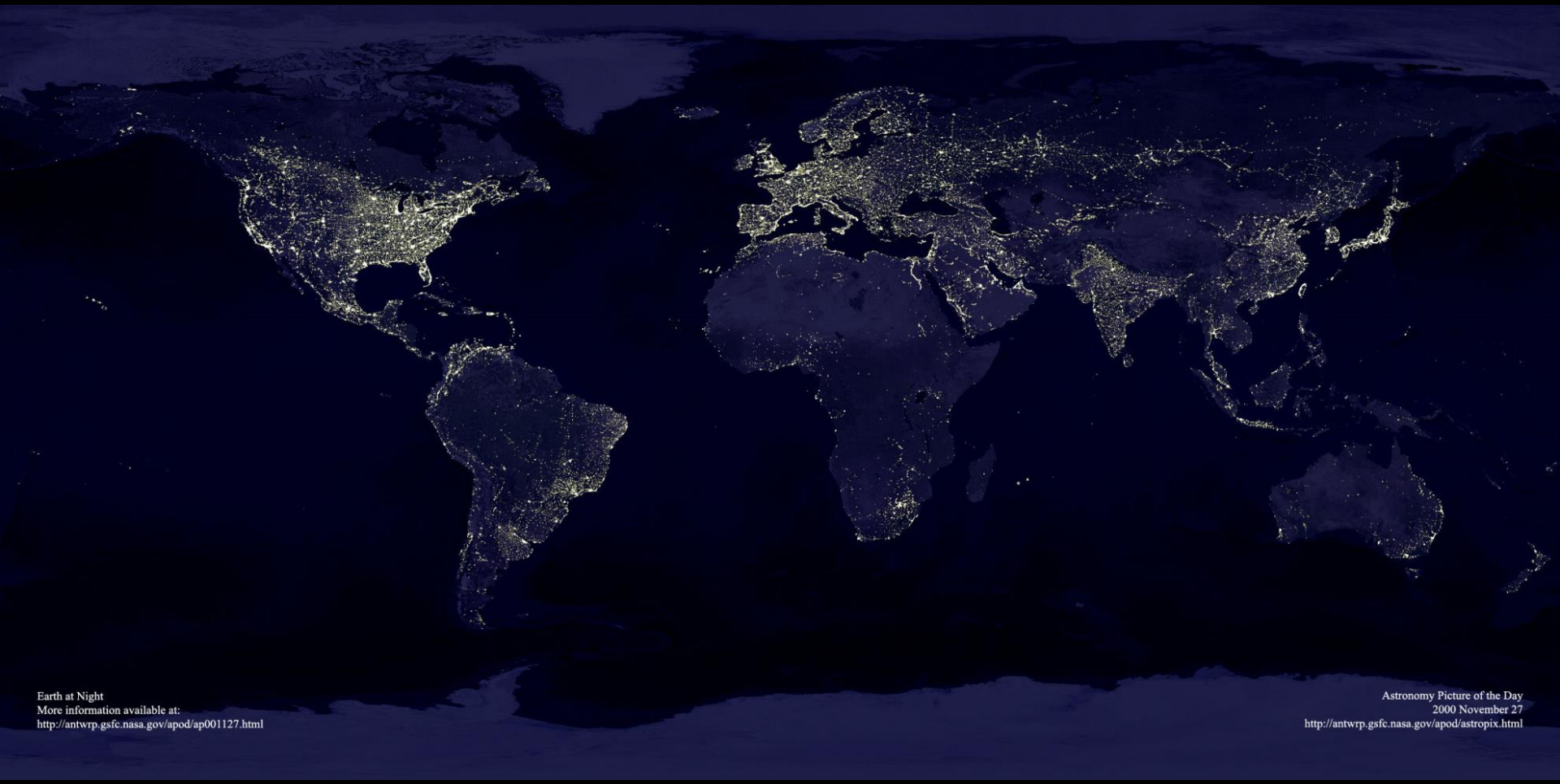
Total Fertility rates have dropped in most of the world over the past 200 years.

Ultimate Guide

The changing role of woman in society has had dramatic effects on fertility rates.

- Identify three changes in the role of woman that have significantly effected fertility rates.
- Describe and explain each change and the impact it has had on fertility.
- Include examples that demonstrate the changes and impacts at a local, regional and global level.

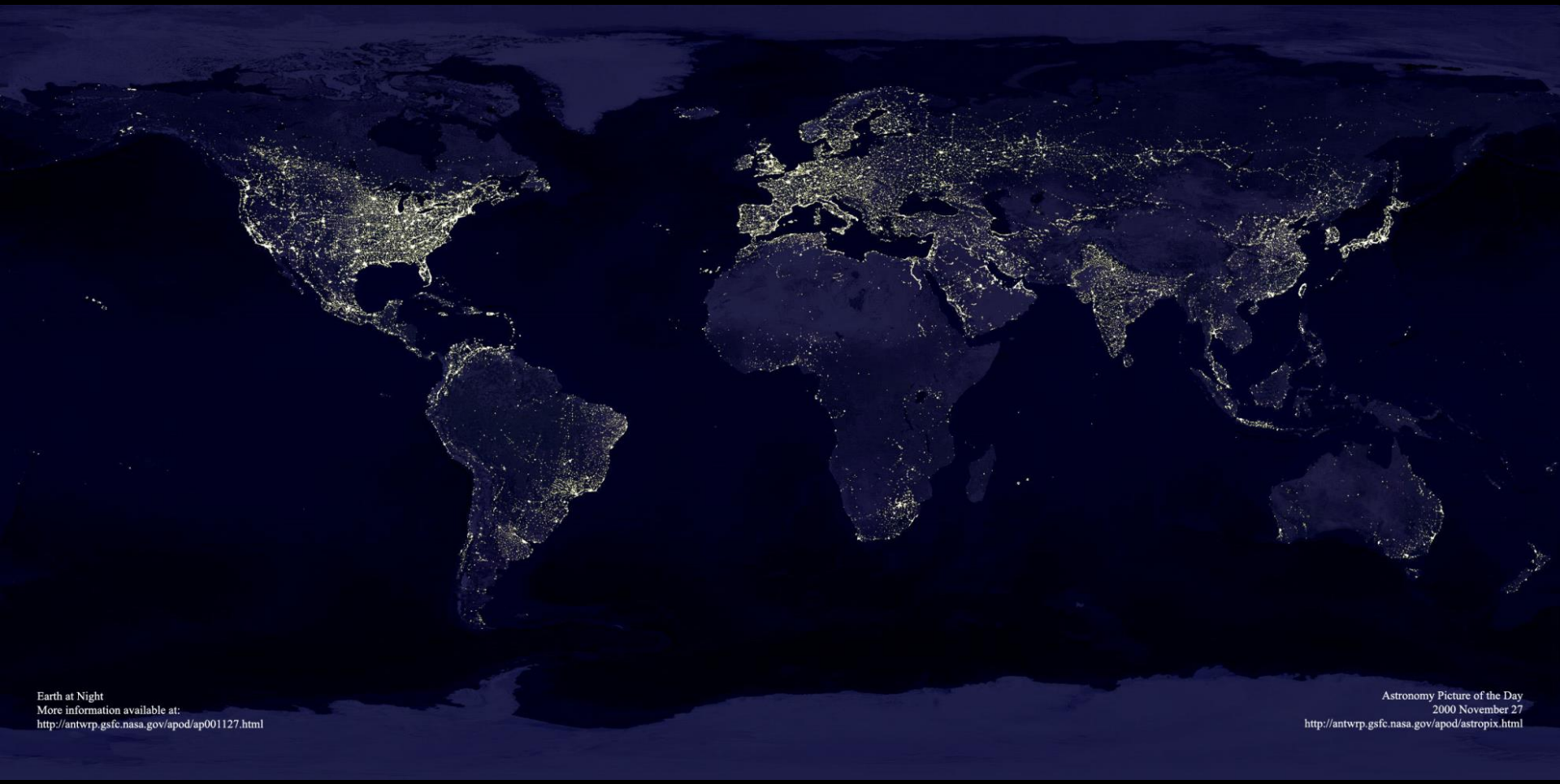
2 pages in length.



2.9 Aging Populations

Graying Population

- A population with more middle aged and elderly people than young, reproductive people
- Generally indicates a slow growing or declining population.



2.10 Causes of Migration

Catalysts for Migration

- Factors that lead to migration, such as economic conditions, political circumstances, armed conflict & civil war, environmental conditions, culture and traditions and technological advances.

Push Factors: Negative influences that make a person want to move away.

Major Push Factors

- High crime rates and safety concerns
- Environmental catastrophe
- War or conflict
- Economic conditions – Poverty
- Persecution by government for political beliefs
- Persecution based on religious beliefs or ethnicity
- Fear that culture or traditions are being threatened
- Expelled from country

Pull Factors: Positive influences that pull a person toward a particular place. They tend to be vague and based solely on perceptions.

Major Pull Factors

- To reunite with family
- Economic opportunity
- Religious freedom
- Political freedom
- Education opportunity

What is a push and what is pull?

- Highly personal – one persons push is another one's pull.
- Often based on perceptions.

Economic P&P Factors

- Most common reason people migrate is that they lack jobs and economic opportunities

Social P&P Factors

- People migrate when they experience discrimination and persecution because of their ethnicity, race, gender, or religion.

- People also influenced by ties with family that have already settled in a place.

Political P&P Factors

- People who oppose the policies of a government often migrate because they face persecution arrest and discrimination.

Environmental P&P Factors

- People migrate to escape harm form natural disasters, drought and other unfavorable environmental conditions.

Demographic P&P Factors

- Imbalances in demographics may cause migration.

- Example: A gender imbalance may lead some young adults to migrate because they cannot find someone to marry.

Ravenstein's Laws of Migration

- In the 1880's, geographer E.G. Ravenstein noted several patterns of migration.

Short Distances

- Most migrants travel a small distance.

- The further apart two places are, the less likely people will migrate between those places. Ravenstein referred to this as distance decay.

Urban Areas

- Migrants traveling longer distances are more likely to settle in an urban area.

Multiple Steps

- Most migration occurs through step migration. A process in which migrants reach their eventual destination through a series of smaller moves.

Rural to Urban

- Historically, most migration has been from rural areas to urban areas.

Counter Migration

- Each migration flow produces a movement in the opposite direction, called a countermigration.

Youth

- Most migrants are younger adults, between the ages of 20 and 45.

Gender

- Most international migrants are male.
- Most internal migrants are female.

Gravity Model of Migration:

- Predicts interaction between places on the basis of their population size and distance between them.
  - Larger more populated places will attract more migrants than smaller less populated places
  - Closer places will attract more migrants than places farther away.

Distance Decay and Migration: Prospective migrants are likely to have more complete perceptions of nearer places than of farther ones.

- Since interaction with faraway places generally decreases as distance increases, prospective migrants are likely to feel much less certain about distant destinations than about nearer ones.

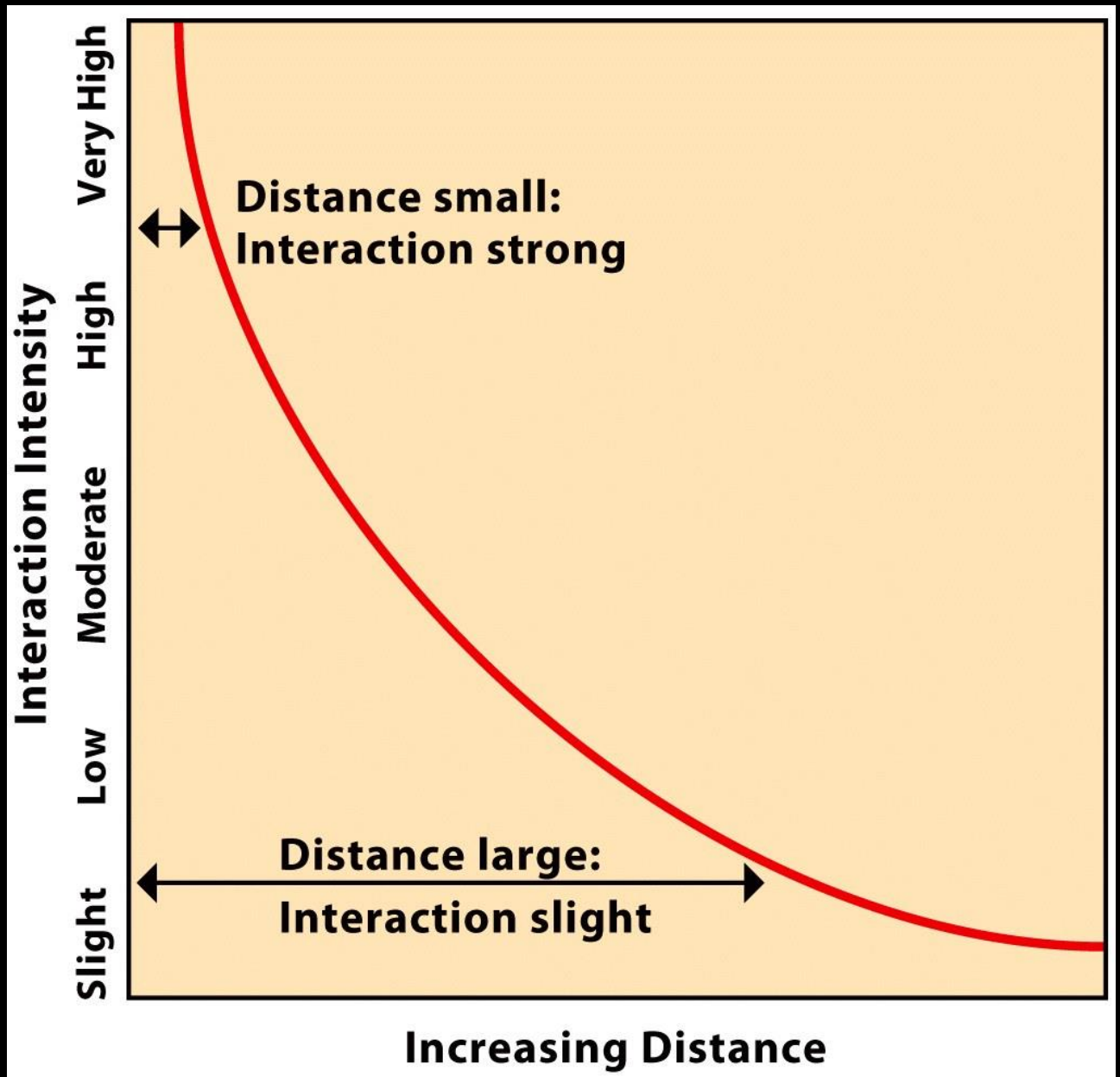


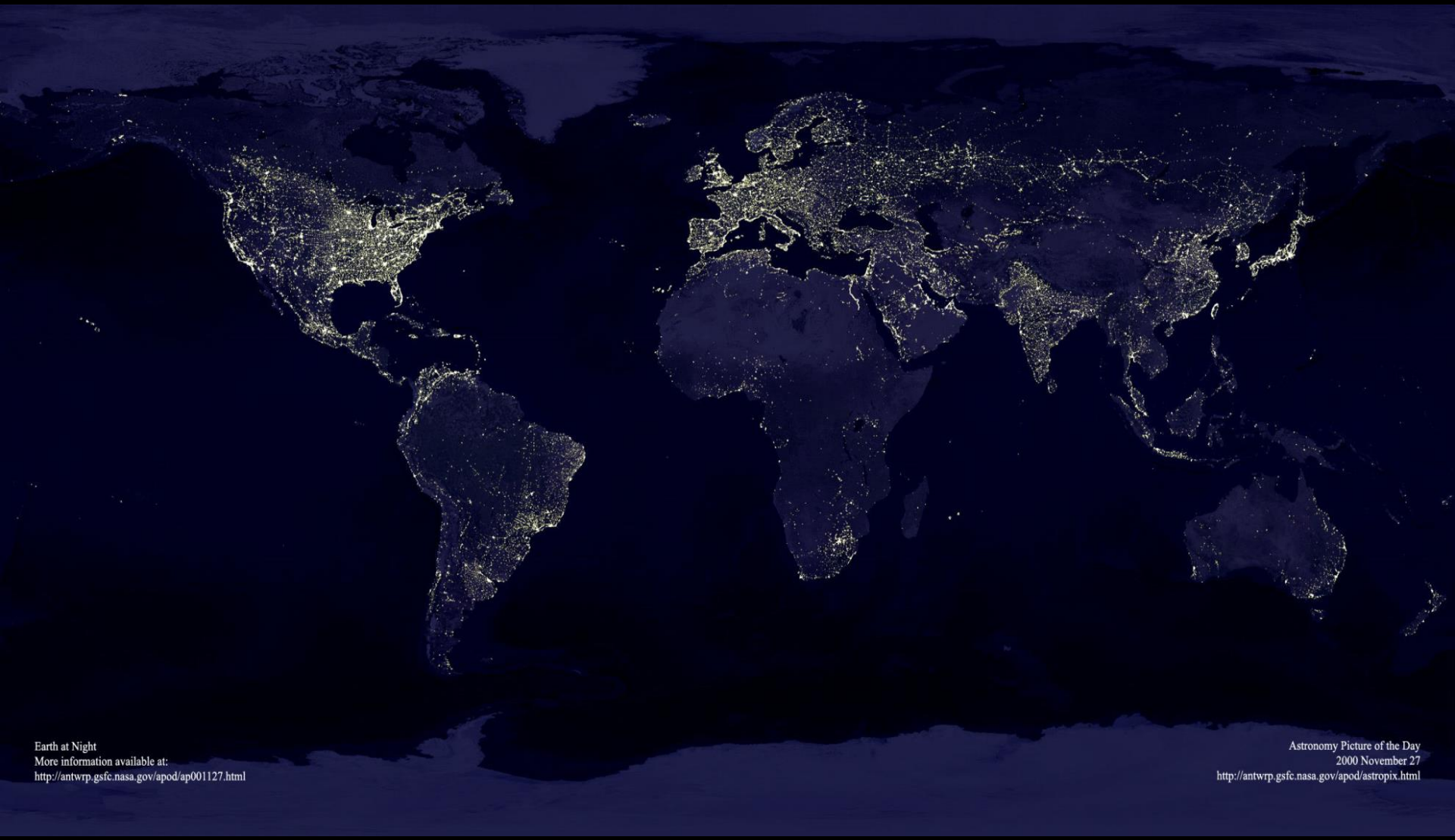
Figure 3.8

MIGRATION RESEARCH

- Research each of the following migrations.
  - US / Mexican Border Immigration Crises – Current
  - European Refugee Crises – 2015 to current
  - European Guest Worker Immigration – Post WWII

- Take a series of bullet point notes, focusing on;
  - What happened (or is happening)
  - Where are the migrants coming from, where are they going to
  - Why did it happen (or is happening),
  - Who is involved
  - What are the social, political, economic and environmental impacts of the migration.

- 1 page of notes for each migration.



2.11 Forced and Voluntary Migration

Forced Migration

- Migrants are pushed from their home
- Atlantic slave trade: the largest and most devastating forced migration in the history of humanity

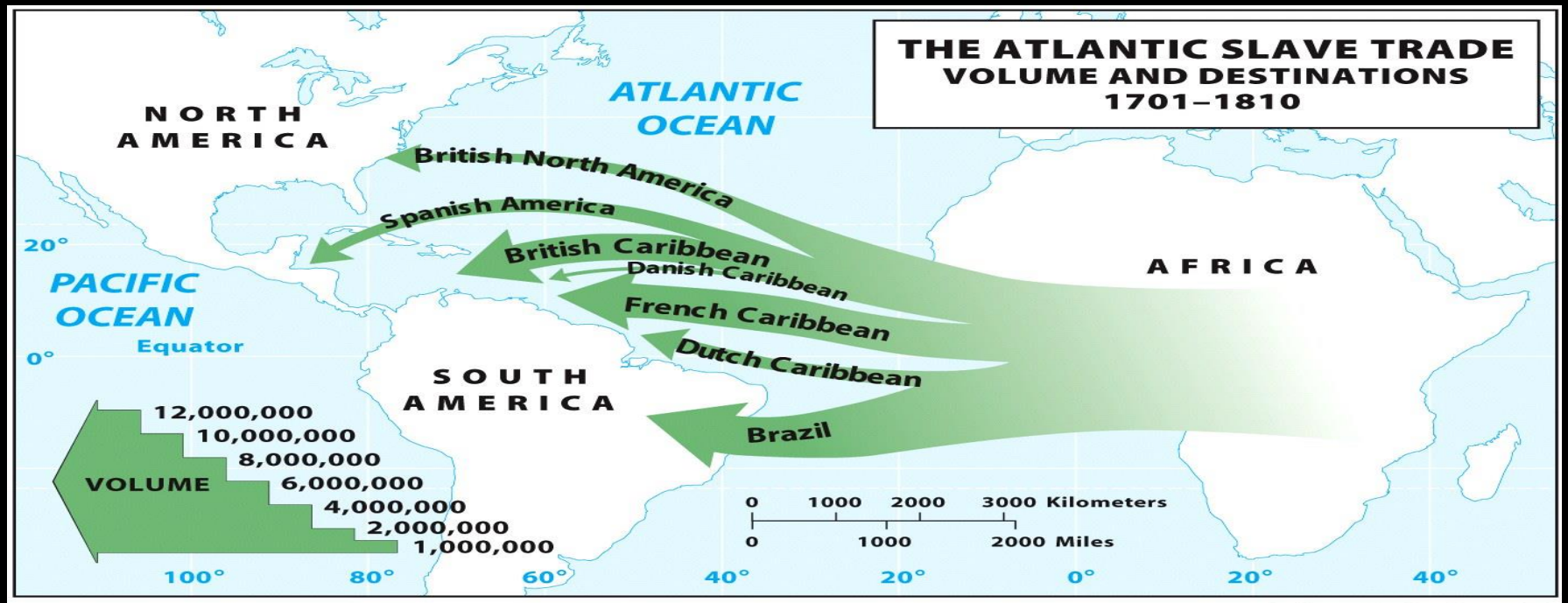


Figure 3.6
Adapted with permission from: Philip D. Curtin, *The Atlantic Slave Trade*. University of Wisconsin Press, 1969, p. 57 and Donald K. Fellows, *Geography*. John Wiley & Sons, Inc., 1967, p. 121.

Voluntary Migration

Migrants have an option of whether or not to move.

Refugees

- The 1951 Refugee Convention defines a **refugee** as “a person who has a well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion.”

Internally displaced persons (IDP's): People who have been displaced within their own countries, but they do not cross international borders as they flee.

Asylum: The right to protection in the first country in which the refugee arrives.

FORCED MIGRATION CASE STUDY
The Rohingya of Myanmar

- Purpose of a case study is to describe and explain a problem or situation in detail.
- TWO PARTS
  1. Describe the situation: Explain history and background, What is happening, who is involved, where is it occurring?
  2. Explain why the situation is occurring.

1.5 - 2 Pages

- https://www.youtube.com/watch?v=04axDDRVy_o

Transnational Migration

- Migration across country borders.

Transhumance

- Migration based on the seasonal herding of animals from higher elevations in the summer to lower elevations in the winter.

Internal Migration

- Movement within a country.
- Varies according to the mobility of the population.
  - More internal migration in MDC's.

Chain Migration

Occurs when people migrate to be with people who migrated before them and they feel some linkage.

- Family
- Religion
- Ethnic
- Cultural

Step Migration: **A** migration in which an eventual long distance relocation is taken in a series of steps. For example from a farm, to a village, to small town, to a city.

Guest Worker Migration

- Guest workers are legal, documented migrants who have work visas, usually short term.

- Millions of guest workers live outside of their home country and send remittances from their jobs home.

Remittances

- Money migrants send back to family and friends in their home countries.
- Becomes an important part of the economy in many poorer countries.

Reverse Remittances

- Money sent to a migrant from family and friends in the home country
- US economic downturn many migrants asked family back in Mexico for financial help.

Effects of Migration on Countries of Origin

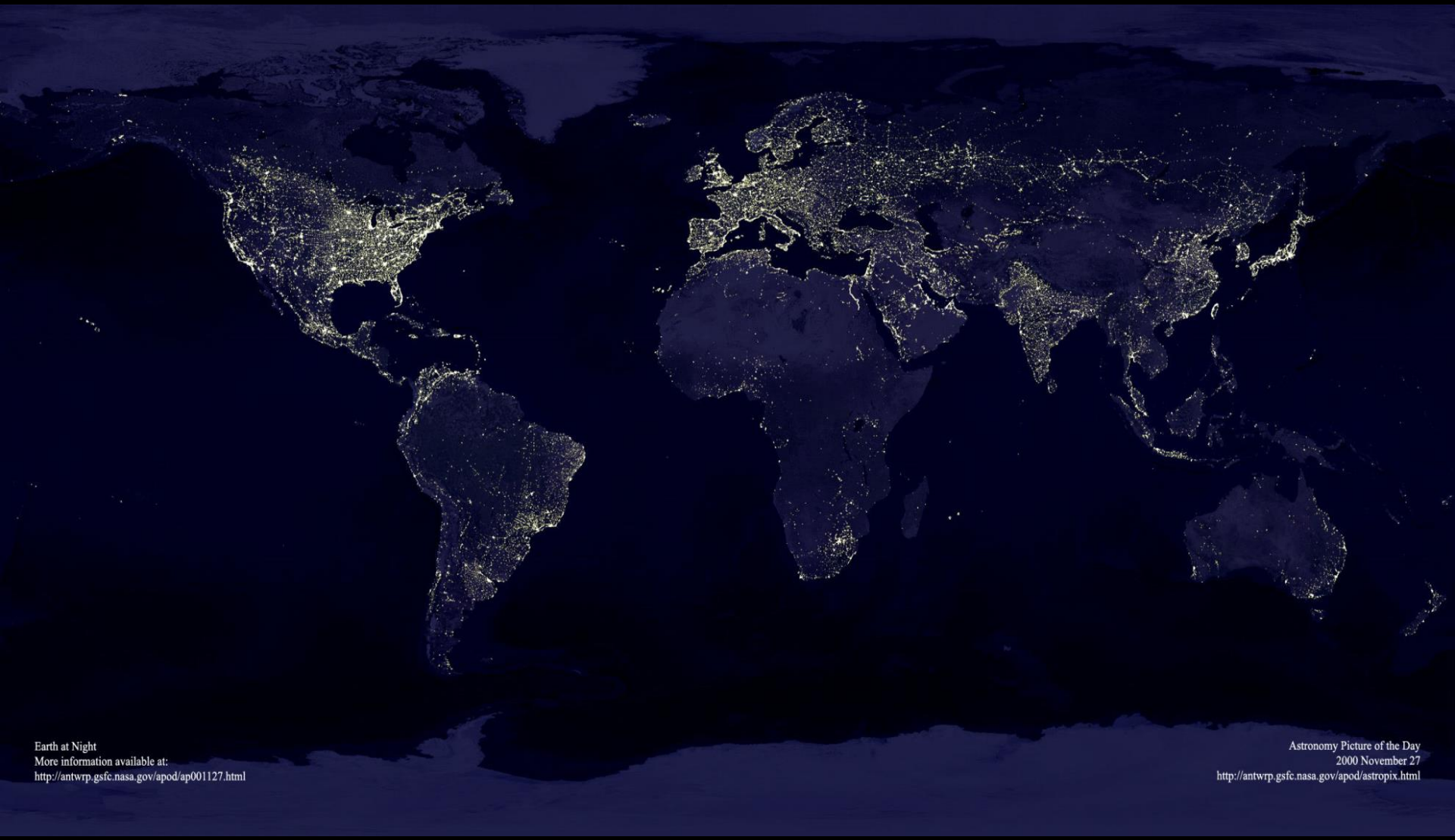
+ Can relieve overcrowding.
- If working age people leave, population is skewed toward dependents (young and old).
- May result in brain drain – Highly educated and skilled leave for opportunities in other countries.

Effects of Migration on Receiving Countries

+ Cultural contributions, such as new foods, new words, diverse entertainment and religious tradition.

+ Often highly motivated to get an education, work hard and succeed. Start small, labor intensive businesses.

- Often met with resistance from anti-immigration groups, creating conflict.
- -Influx of young dependents may put financial burden on country providing services.



2.12 Effects of Migration

Effects of Colonization

Process where colonizing country takes over another place, putting its government in charge and taking control

– Moves in its own people or indentured servants

- Most of migration in the past 500 years was generated by European colonization

Three Historical Waves of Migration to United States

1. Colonial Era Immigration (1600 – 1776):

- Primary source of migrants was Europe and Africa (both voluntary and forced).
  - Europeans fleeing political and religious persecution
  - Vast Majority of Europeans (90%) came for Great Britain
  - Africans forced into slavery

2. Nineteenth Century Immigration (1840 -1910)

- Primary source of migrants was Europe
  - 1840 – 1850 – Ireland and Germany
  - 1870's – Western Europe
  - 1880's – Scandinavian countries
  - 1900 – 1910 – Southern and Eastern Europe (Italy, Russia, and Austria-Hungary).

3. Late Twentieth and Early Twenty First Century Immigration (1970 – current).

- More than three fourths of recent US migrants have been from Asia or Latin America

The Great Migration

- Large U.S. internal migration
- Great Migration occurred during WWII
- African Americans left the South.

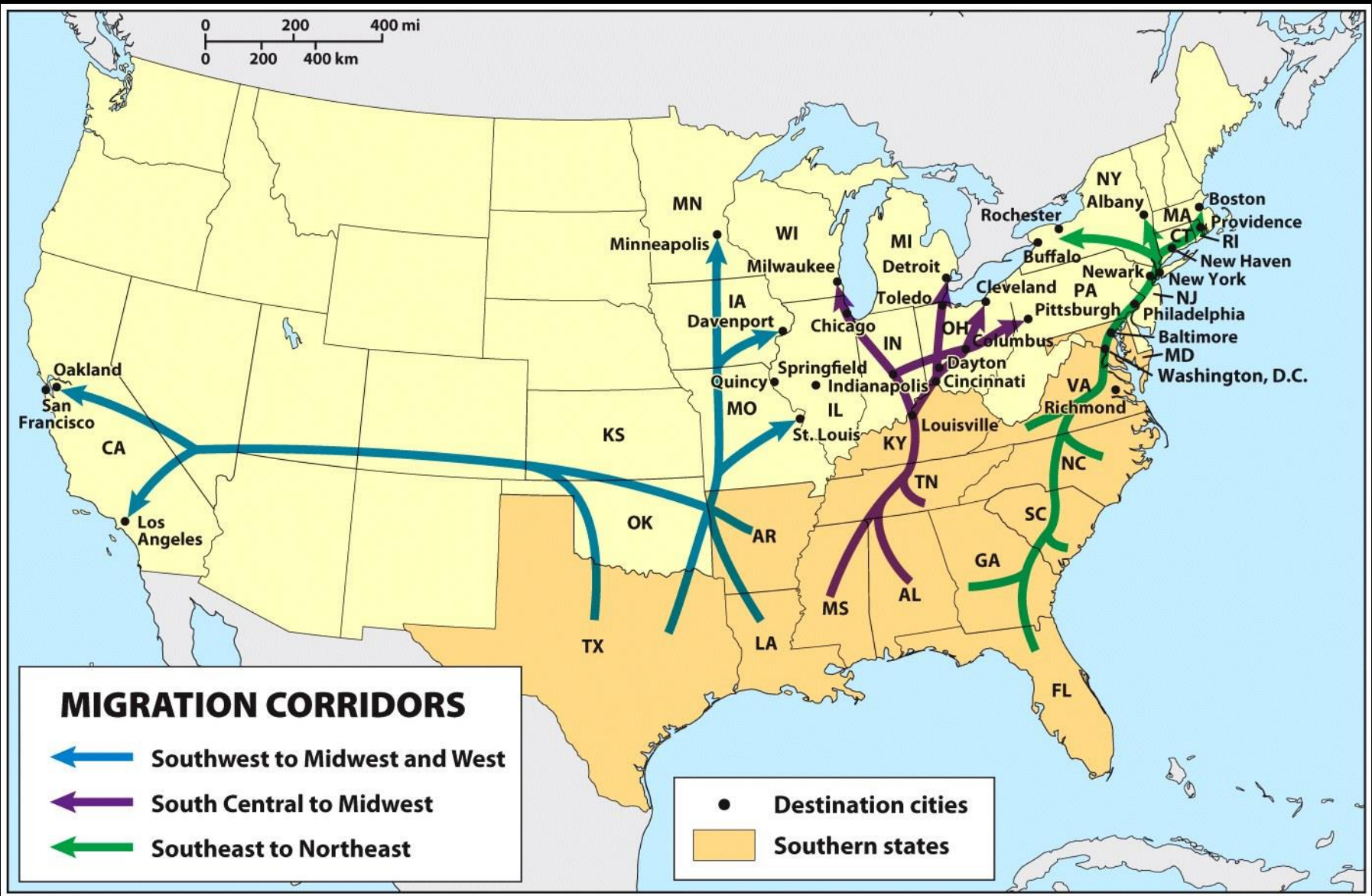


Figure 3.4

The Great Migration in Reverse

- In 1970's more African Americans returning to the South than were moving North.
- Known as the move from the Rustbelt to the Sunbelt

RESEARCH FRQ

- Define and explain the Great Migration in reverse. One page
- List and explain two push factors – what was pushing people out of Midwest and Northeast regions? Two paragraphs – one for each factor.
- List and explain two pull factors –what was pulling people back to the South. Two paragraphs – one for each factor.

RESEARCH FRQ

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