Think of the earth as a living organism that is being attacked by billions of bacteria whose numbers double every forty years. Either the …bacteria dies, or both die.
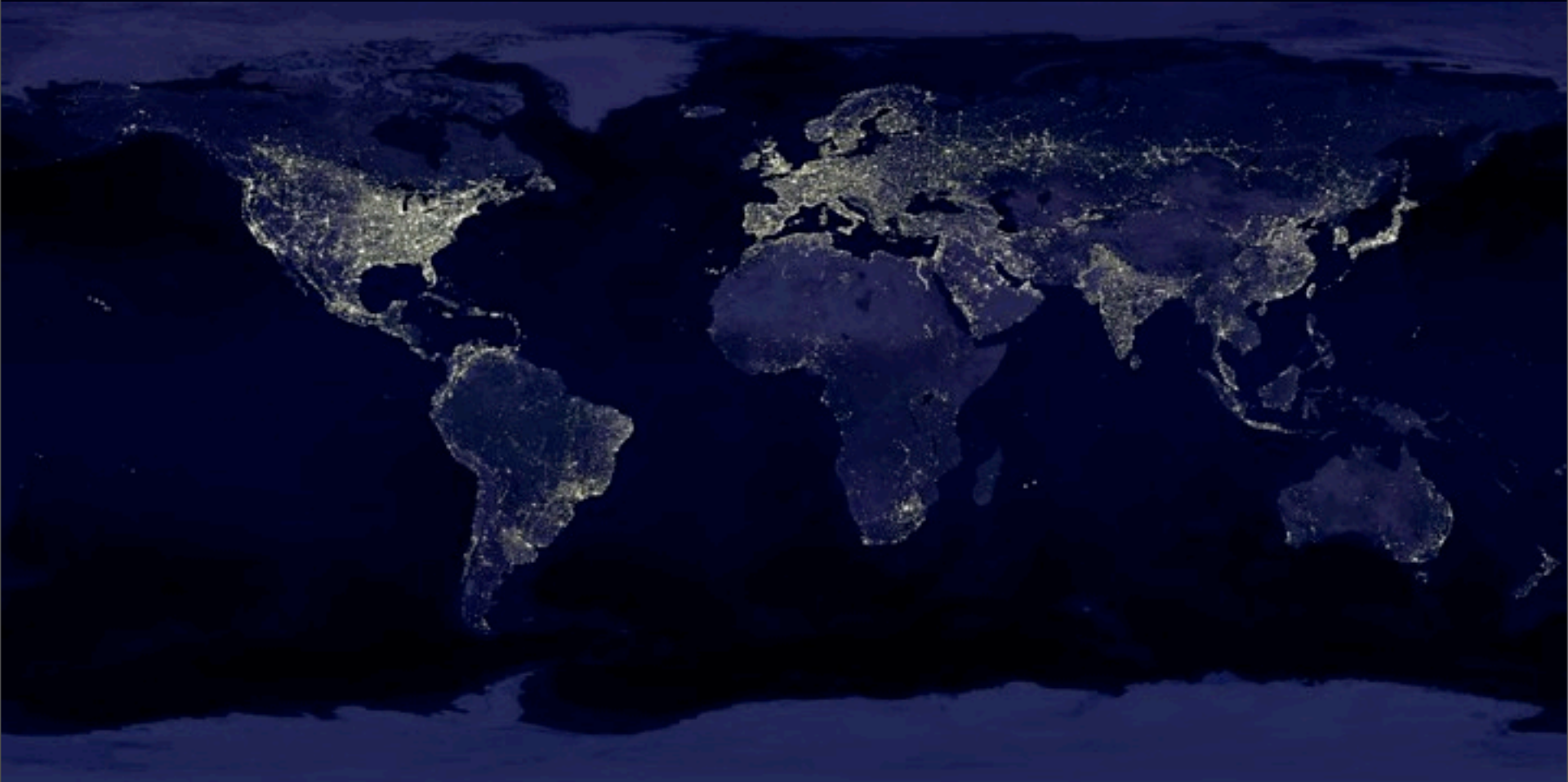*- Gore Vidal*

1

The Human Population

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- Gore Vidal

1

Friday, January 11, 13

HUMAN DEMOGRAPHY

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    - ❖ Includes statistics about people such as births, deaths, gender, race, and economic status.

HUMAN DEMOGRAPHY

- **Demographics** – The study of human populations.
  - ❖ Includes statistics about people such as births, deaths, gender, race, and economic status.
  - ❖ Human Population reached 7 billion in 2011

2

3

POPULATION GROWTH

3

POPULATION GROWTH

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Friday, January 11, 13

POPULATION GROWTH

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  - ❖ It took nearly 72,000 years to reach 1 billion.

3

POPULATION GROWTH

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  - ❖ 150 years to reach 3 billion.

3

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- For most of human history, humans have not been very numerous compared to other species.
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3

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  - ❖ 12 years to reach 6 billion.

3

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    - ❖ 25 years to reach 4 billion.
    - ❖ 20 years to reach 5 billion
    - ❖ 12 years to reach 6 billion.
        - ‐ Human population tripled during the twentieth century..

3

4

World Population "Dots" Video

- This [video](#) represents the growth of the human population since 0 A.D.

Human Population History

Friday, January 11, 13
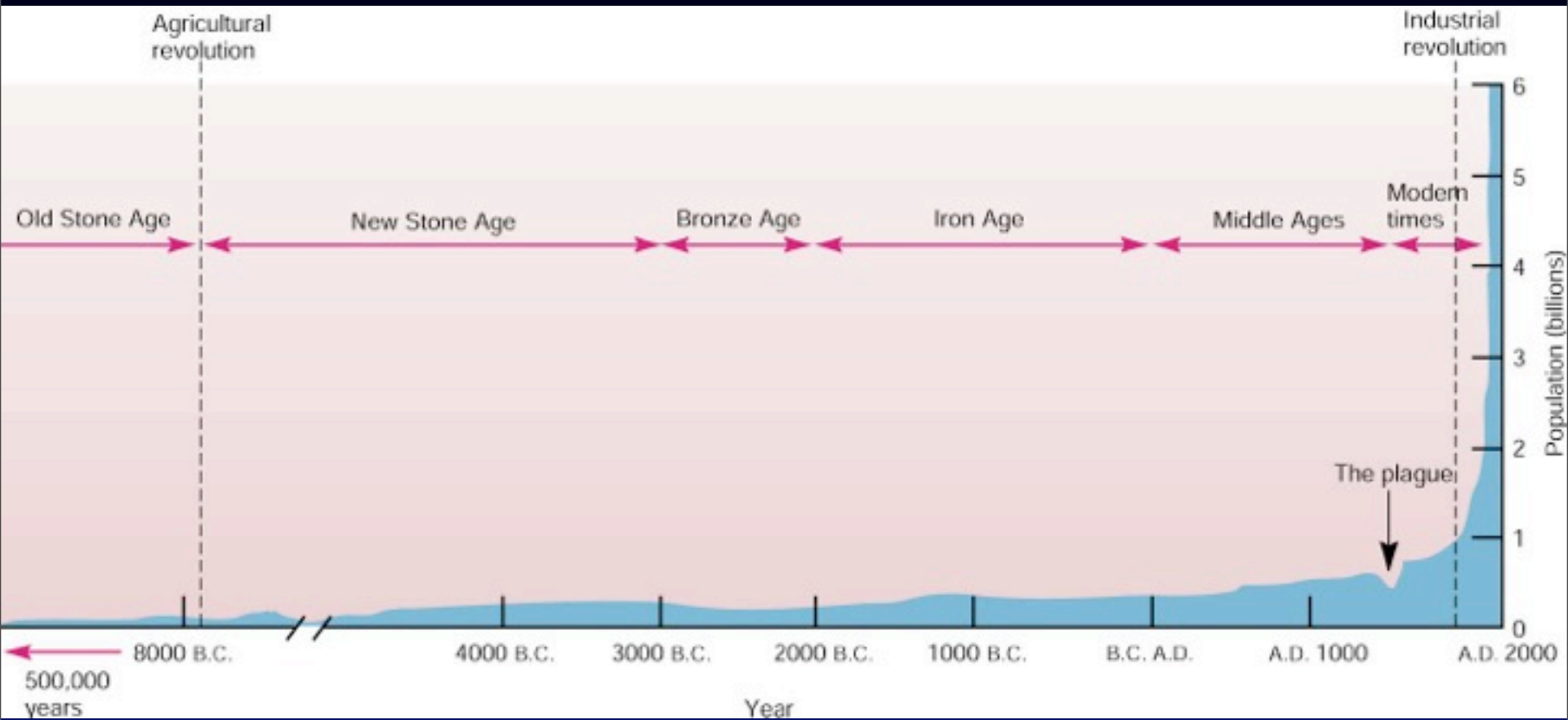
Human Population Growth

Human Population Growth

- Exponential Growth

6

Human Population Growth

- Exponential Growth
  - ❖ Human population has increased

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Human Population Growth

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6

Human Population Growth

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6

Human Population Growth

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  - ❖ When growth is exponential:
    - Doubling Time = 70 / annual % growth
      - ➢ 70/2.0% = 35 years

6

Friday, January 11, 13

- Exponential growth is when the population and growth rate both increase.

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7

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- A wealthy, eccentric relative of yours passes away. You are listed as the primary beneficiary on the will. You have two options for collecting the money.

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  ❖ Option 1:$200,000 per day for thirty days.

7

Different types of Growth

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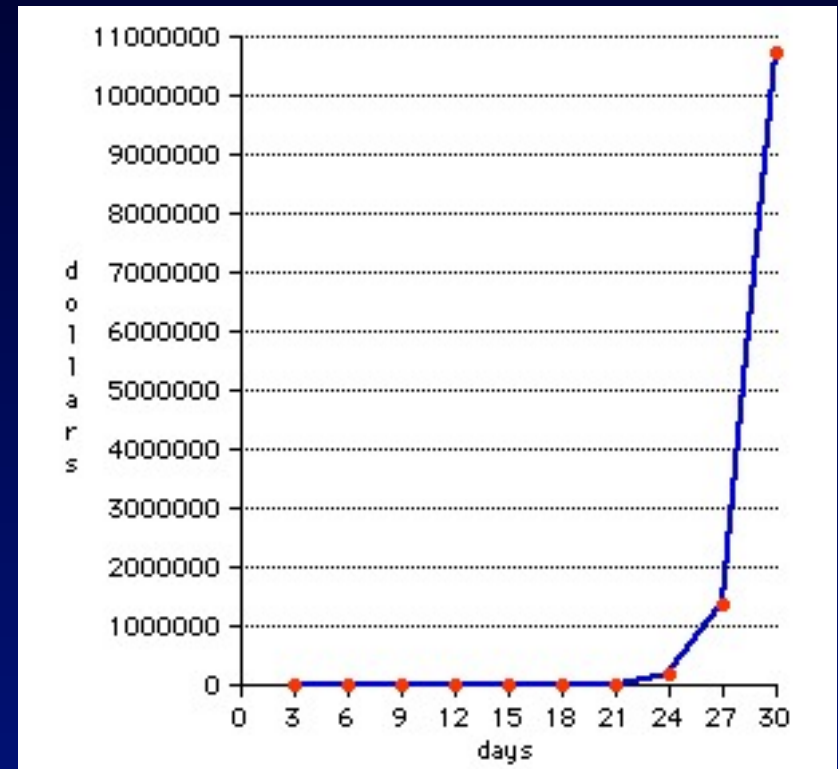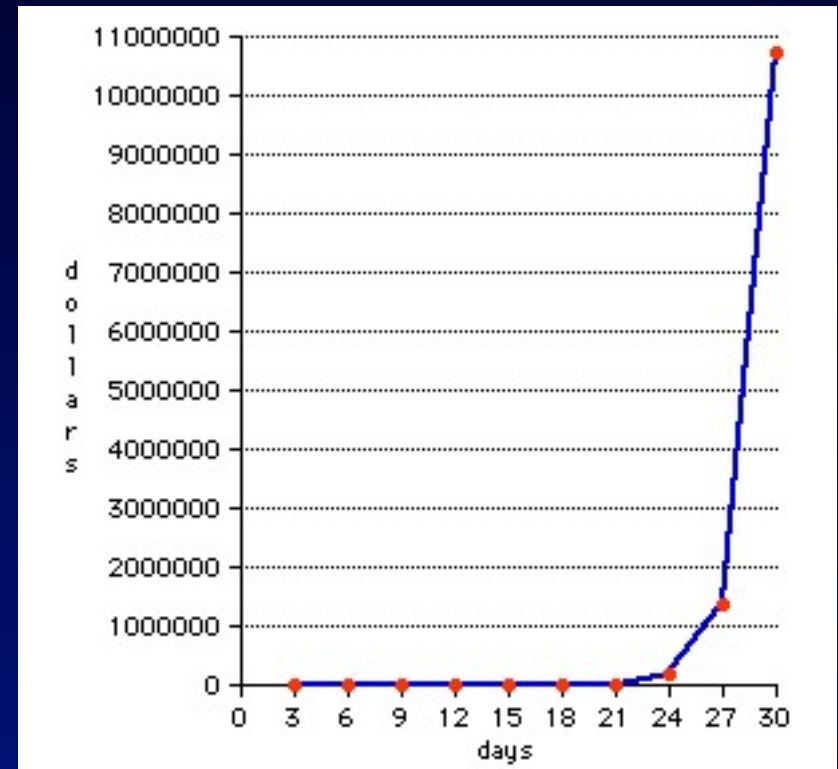 - ❖ Option 2: One penny doubled every day for thirty days
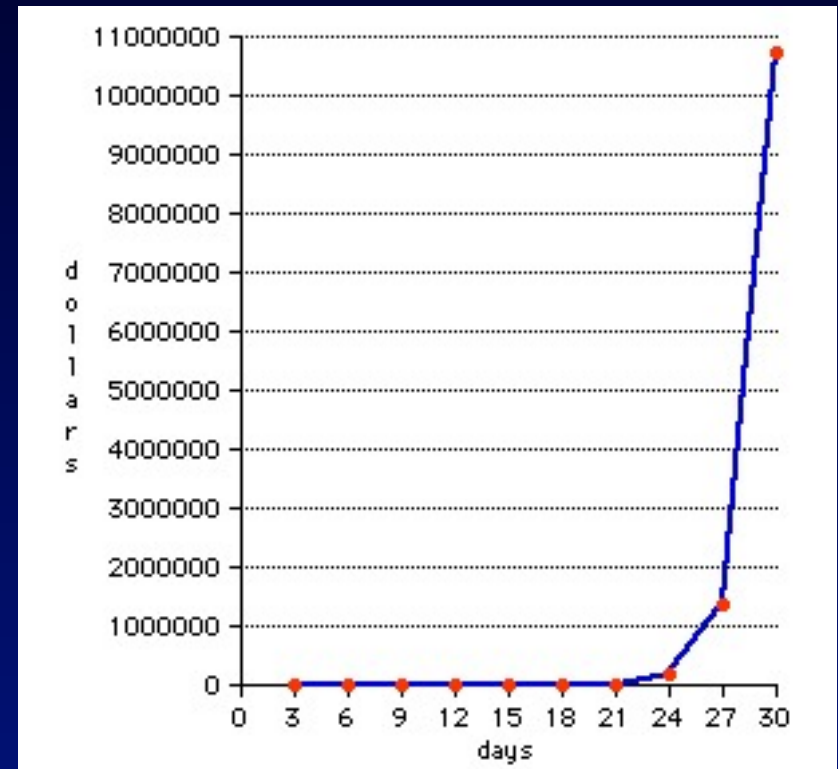
8
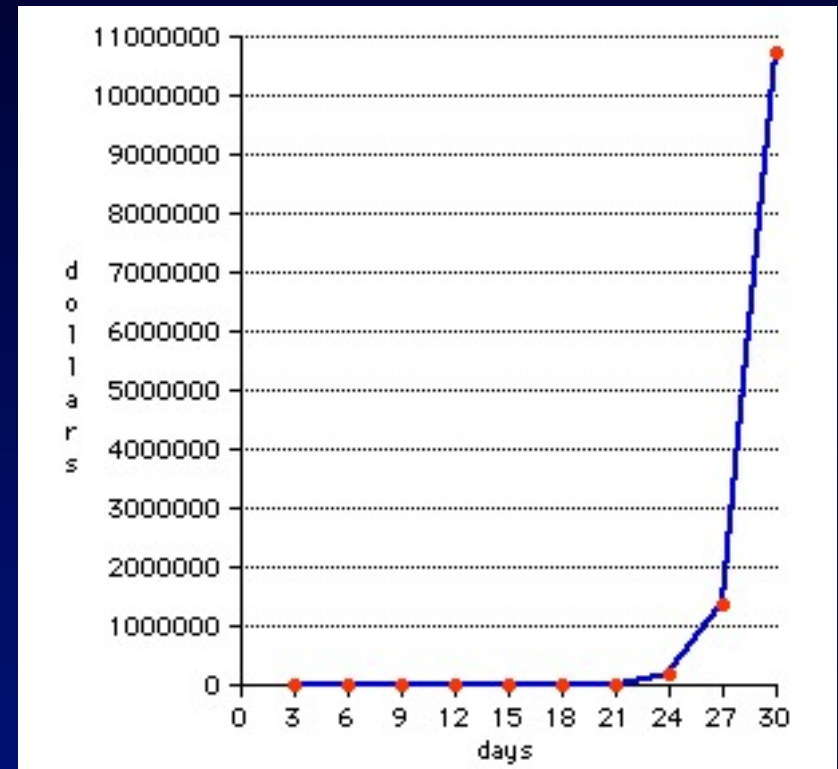
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8

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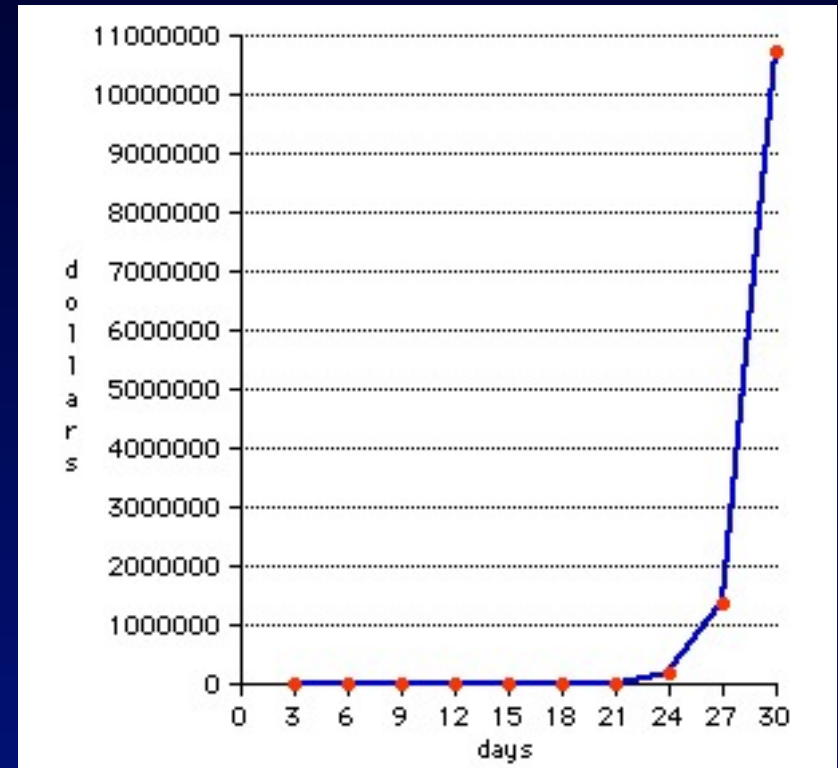 30days x $200,000 = $6,000,000

8

- Option 1:
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- Option 2:

8
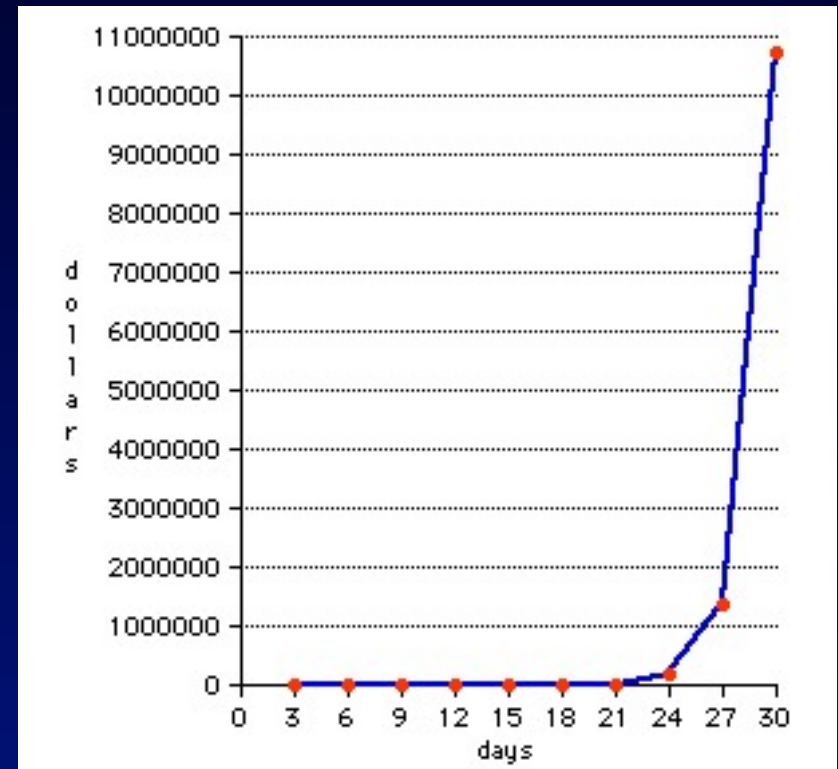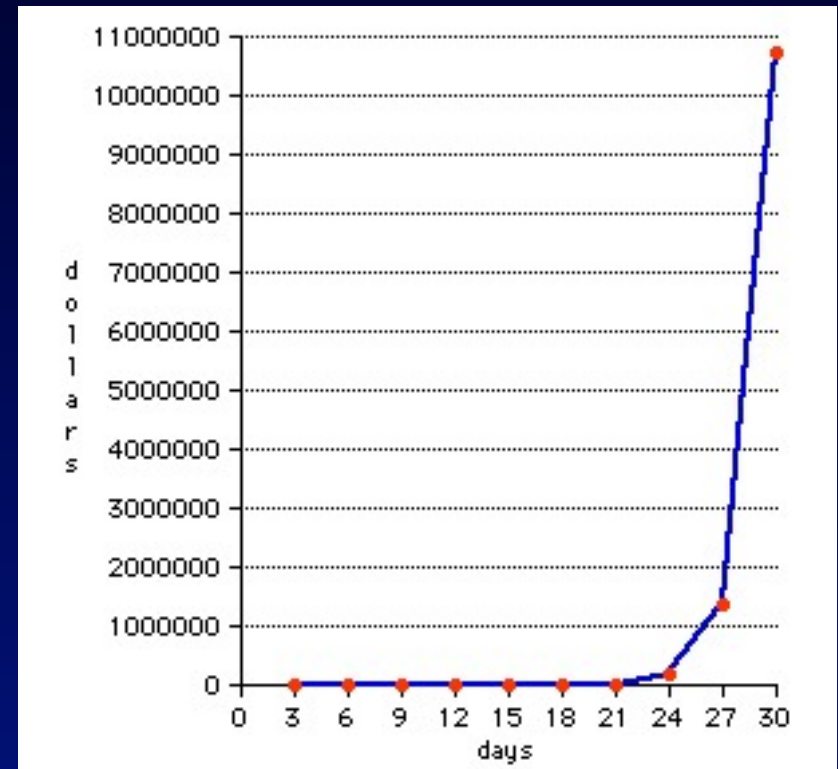
Solution

- Option 1:

  30days x $200,000 = $6,000,000

- Option 2:
  - ❖ Over $18,000,000!

8

9

Two Demographic Worlds

9

Two Demographic Worlds

· **Developing countries** are poor, young, and rapidly growing.

Two Demographic Worlds

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  - India, China, Bolivia (S. America), Congo (Africa)

Two Demographic Worlds

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  - ❖ Contain 80% of world population, and will account for 90% of projected growth.

9

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  - ❖ United States, Japan, France
  - ❖ Populations often expected to decline.

10

Estimated Human Population Growth

Friday, January 11, 13
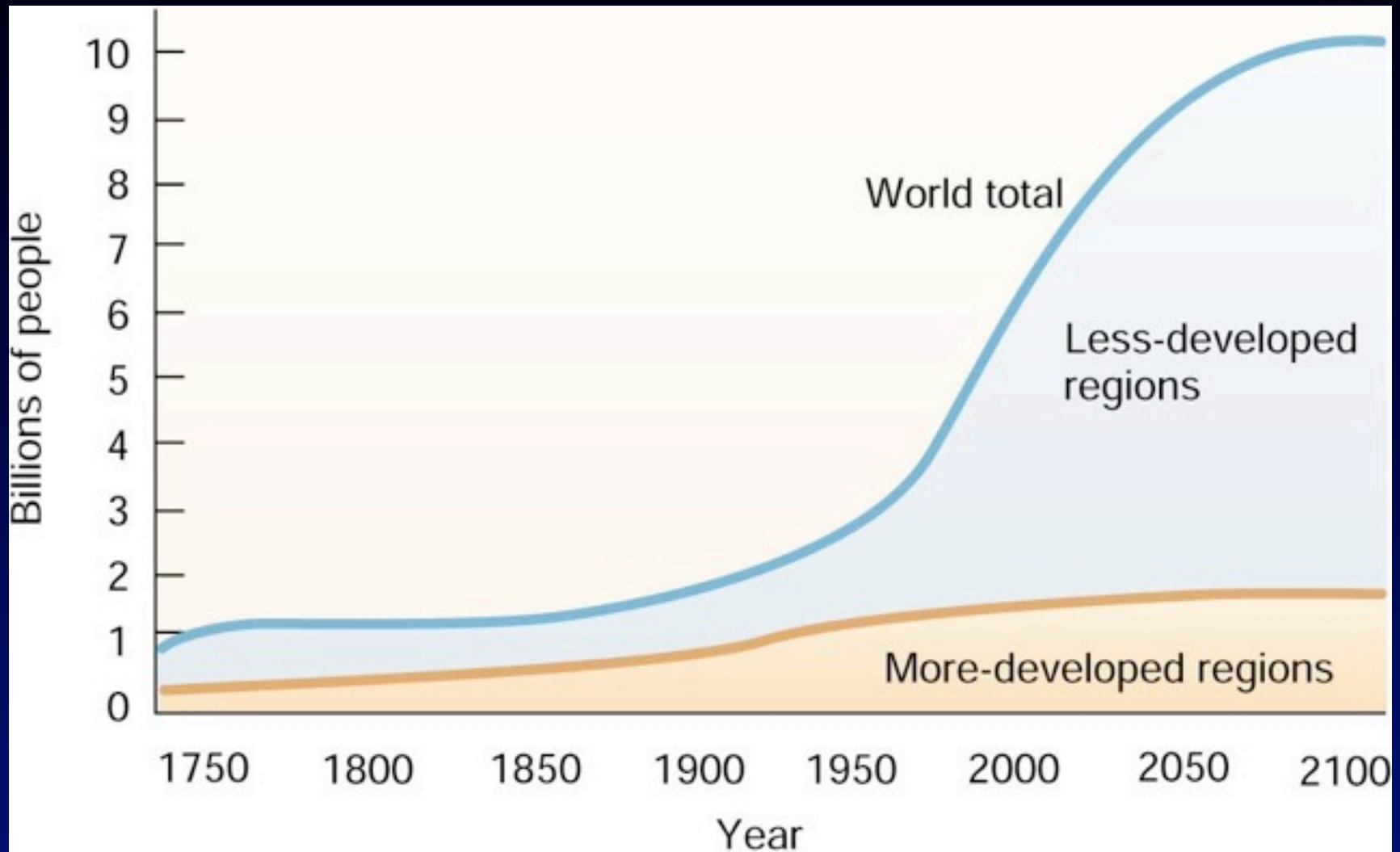
Measurements of Population Growth

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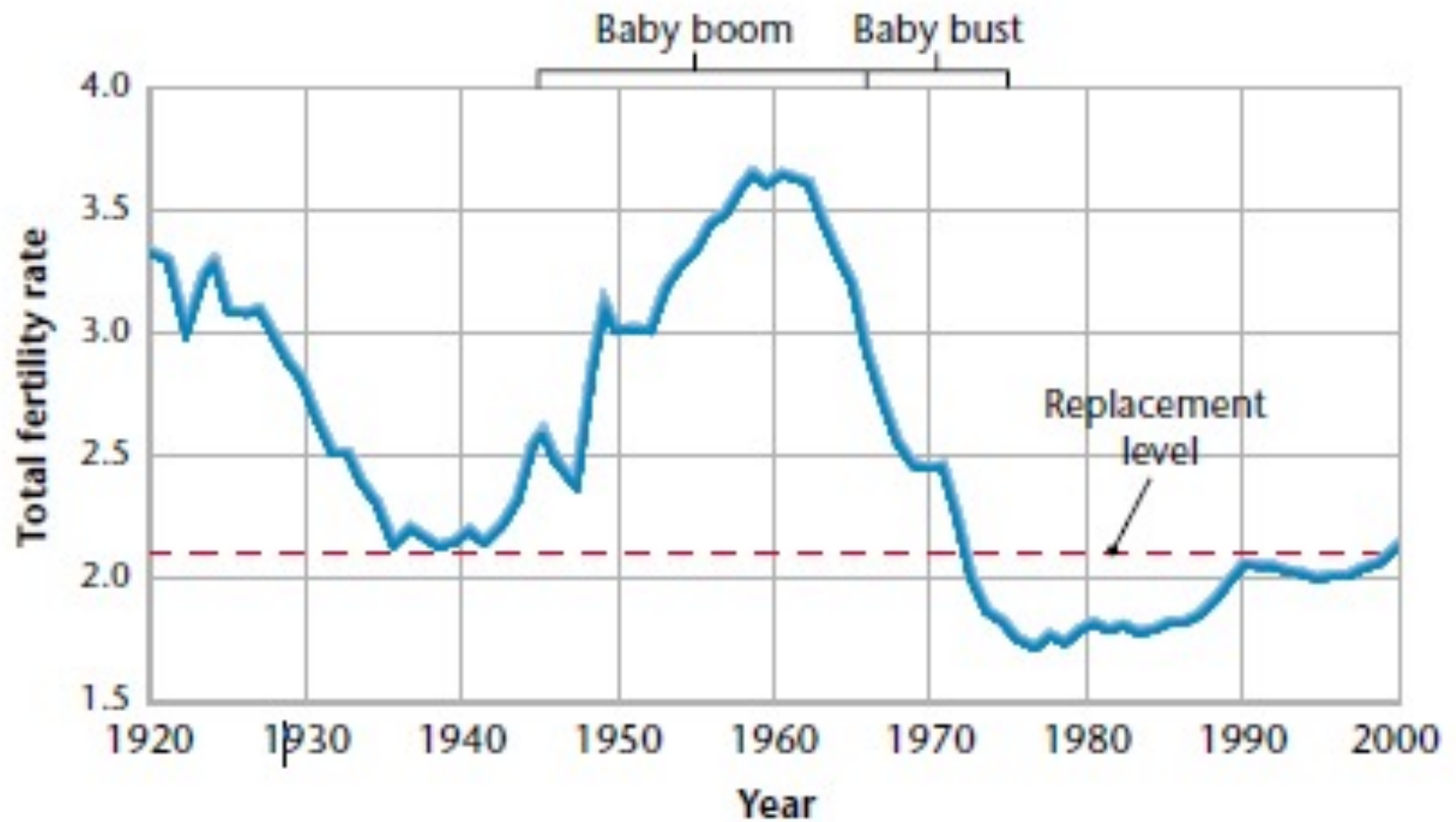   - ❖ Congo = 4.41

Measurements of Population Growth

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    - Congo = 4.41
    - India = 2.68
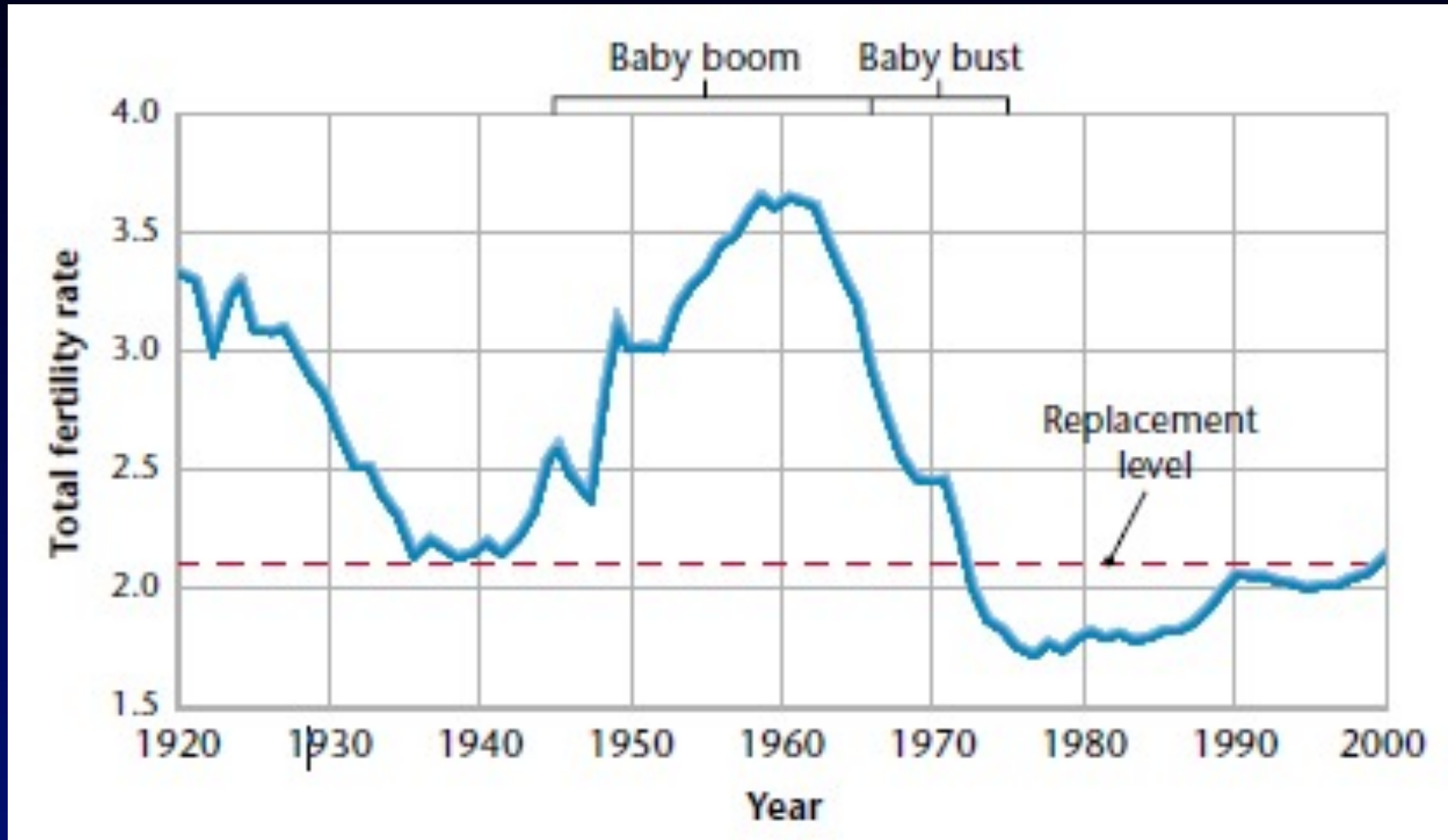
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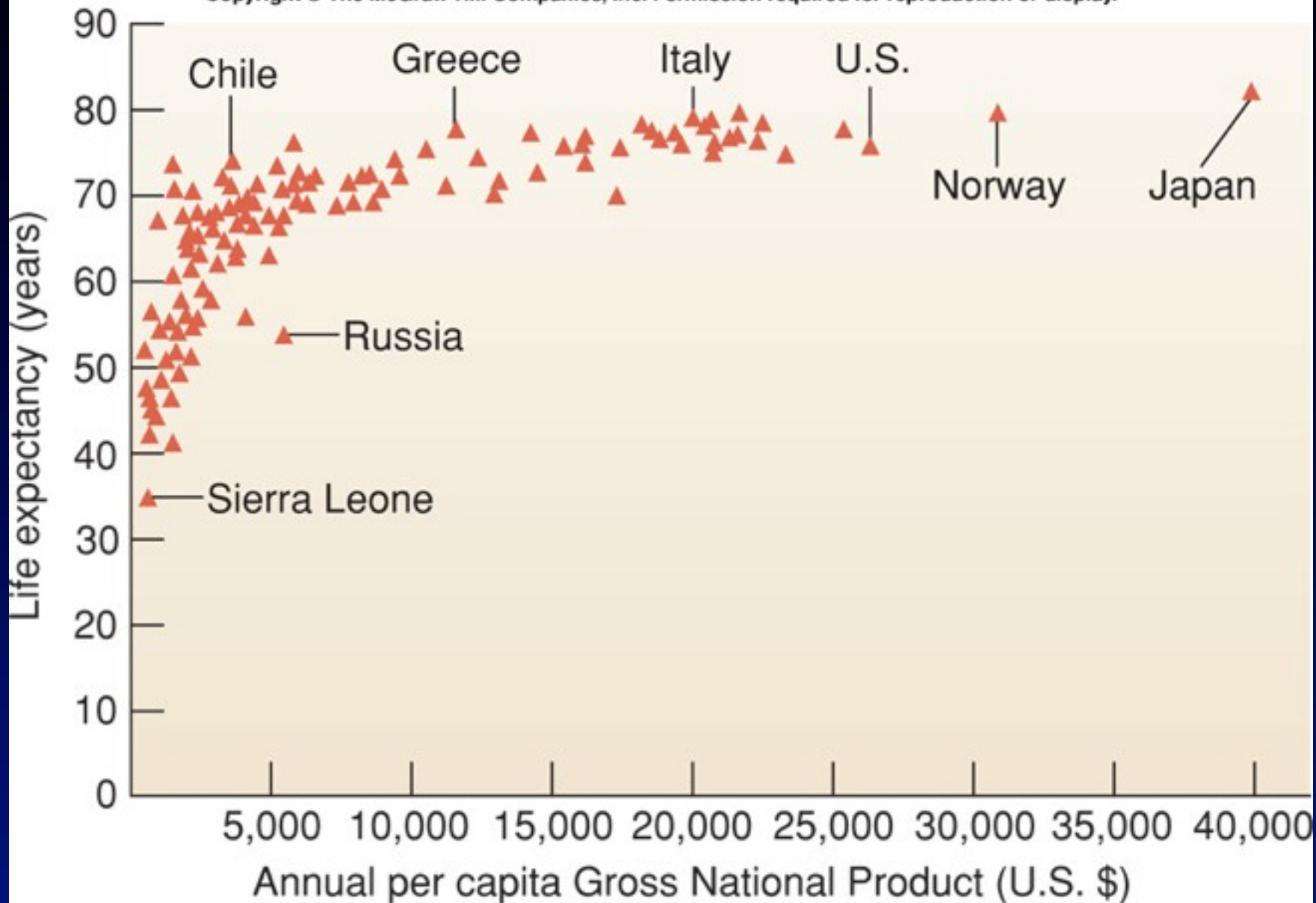
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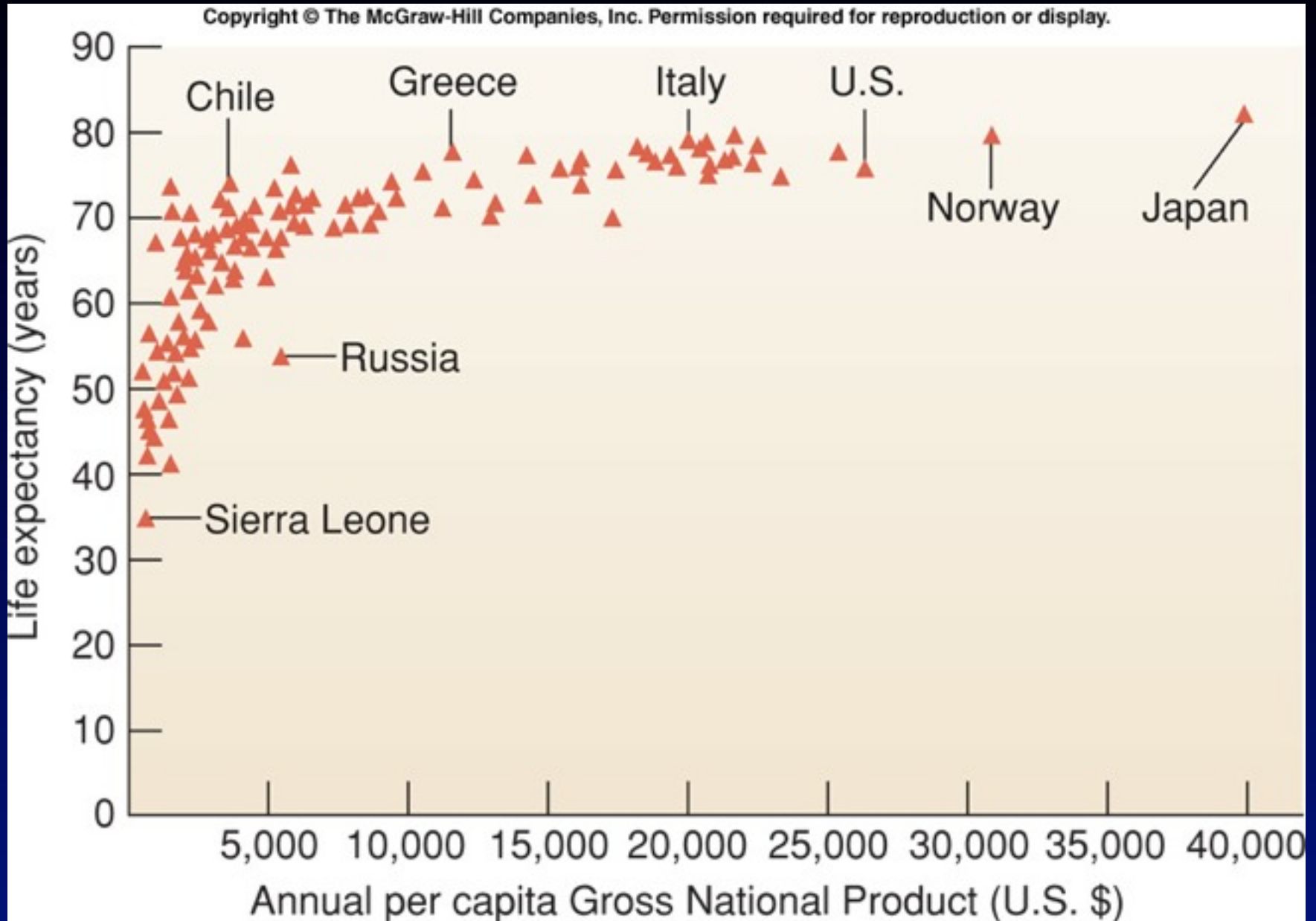- **The replacement level** is when you have 2.1 children per couple.

11

Fertility Rate of United States

Figure axes: Life expectancy (years) vs Annual per capita Gross National Product (U.S. $)

Labeled points: Chile, Greece, Italy, U.S., Norway, Japan, Russia, Sierra Leone

13

Life Expectancy
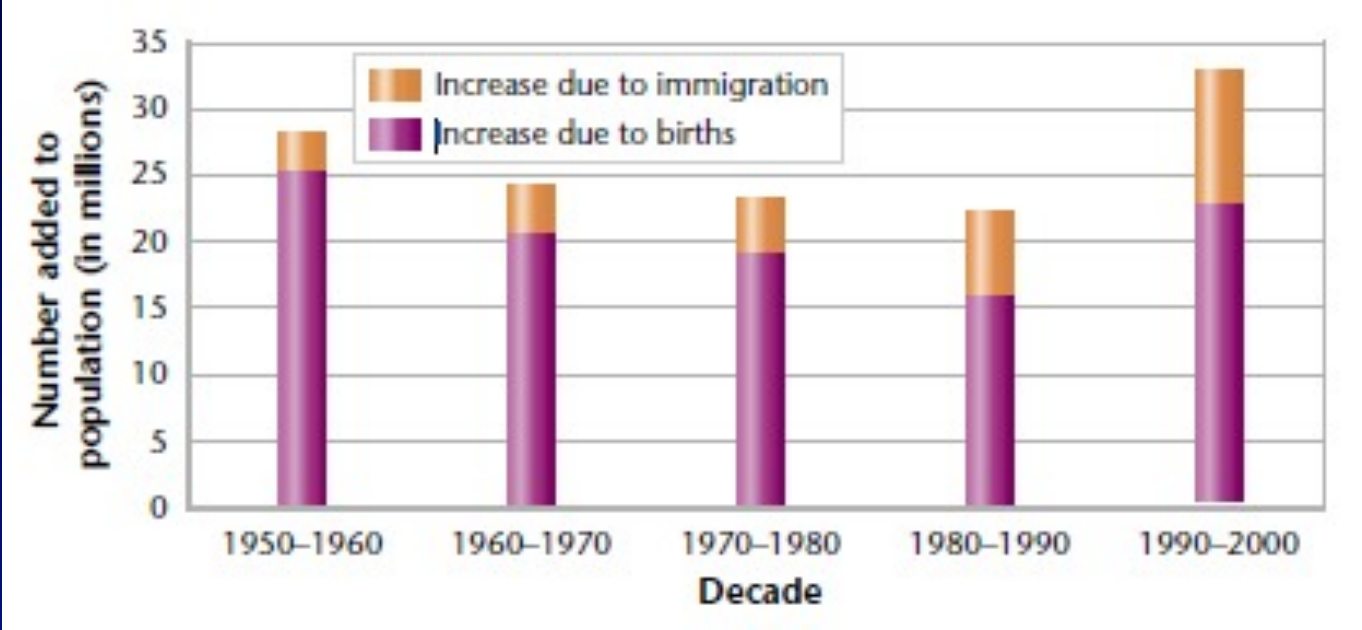

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Friday, January 11, 13

13

35
Number added to population (in millions)
30
25
20
15
10
5
0

Increase due to immigration
Increase due to births

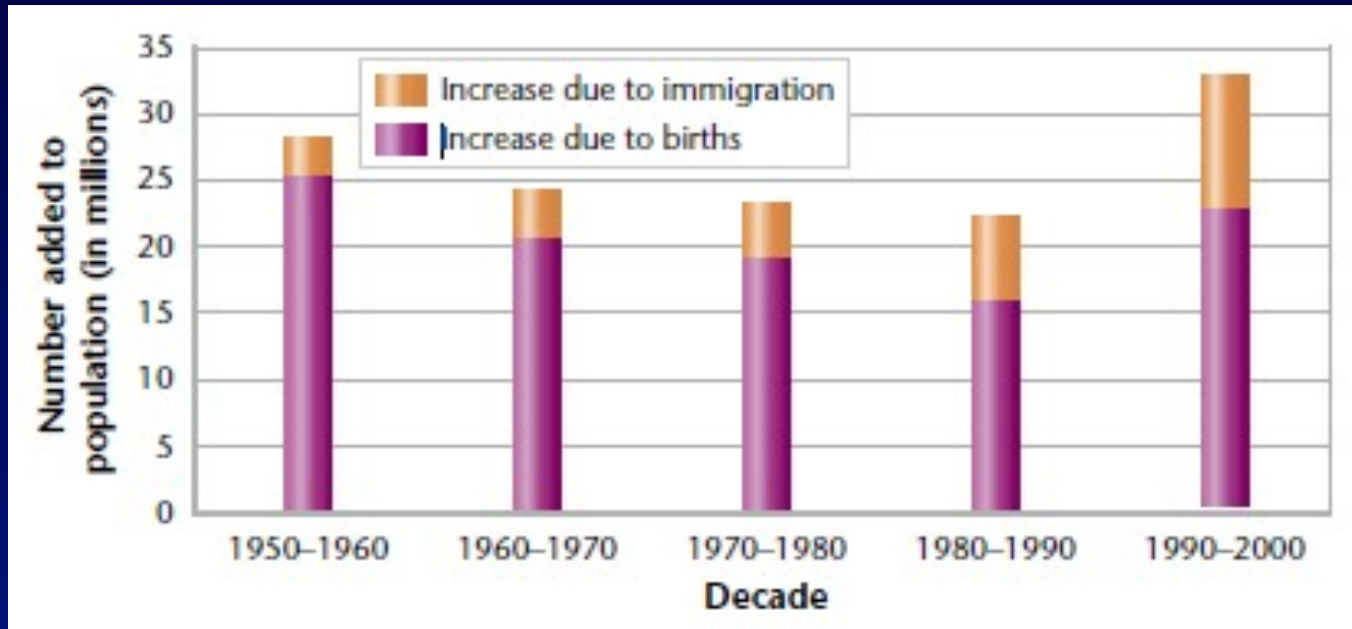1950–1960   1960–1970   1970–1980   1980–1990   1990–2000
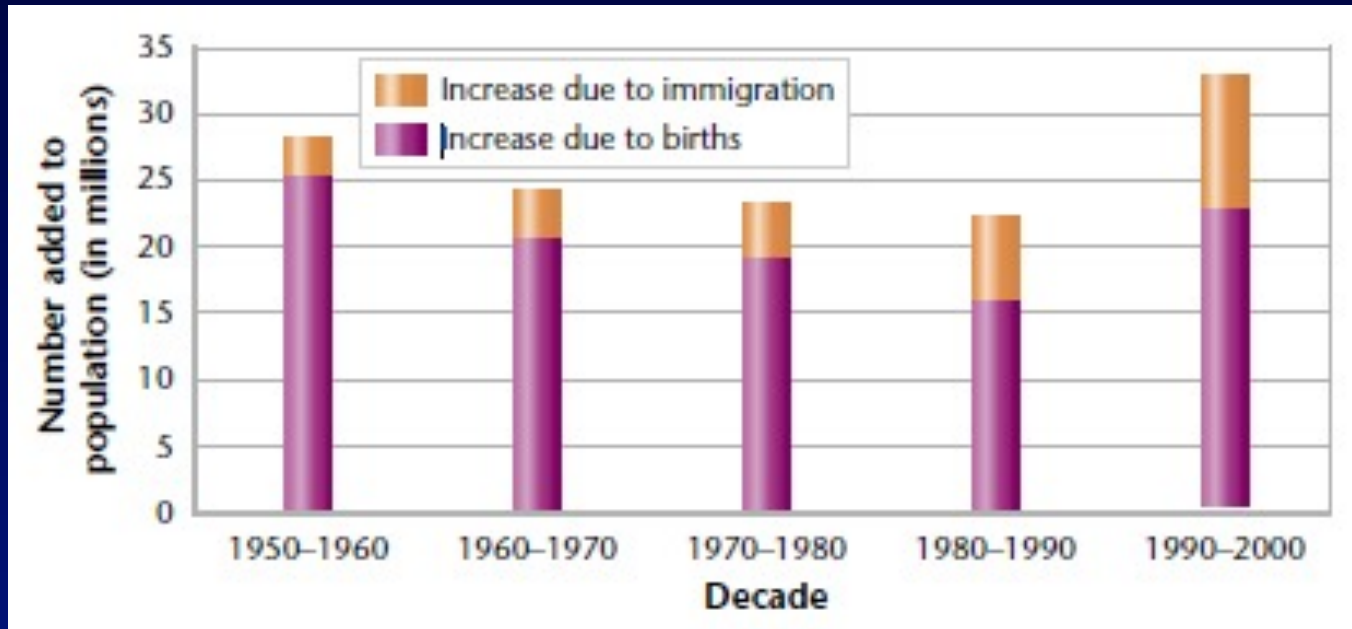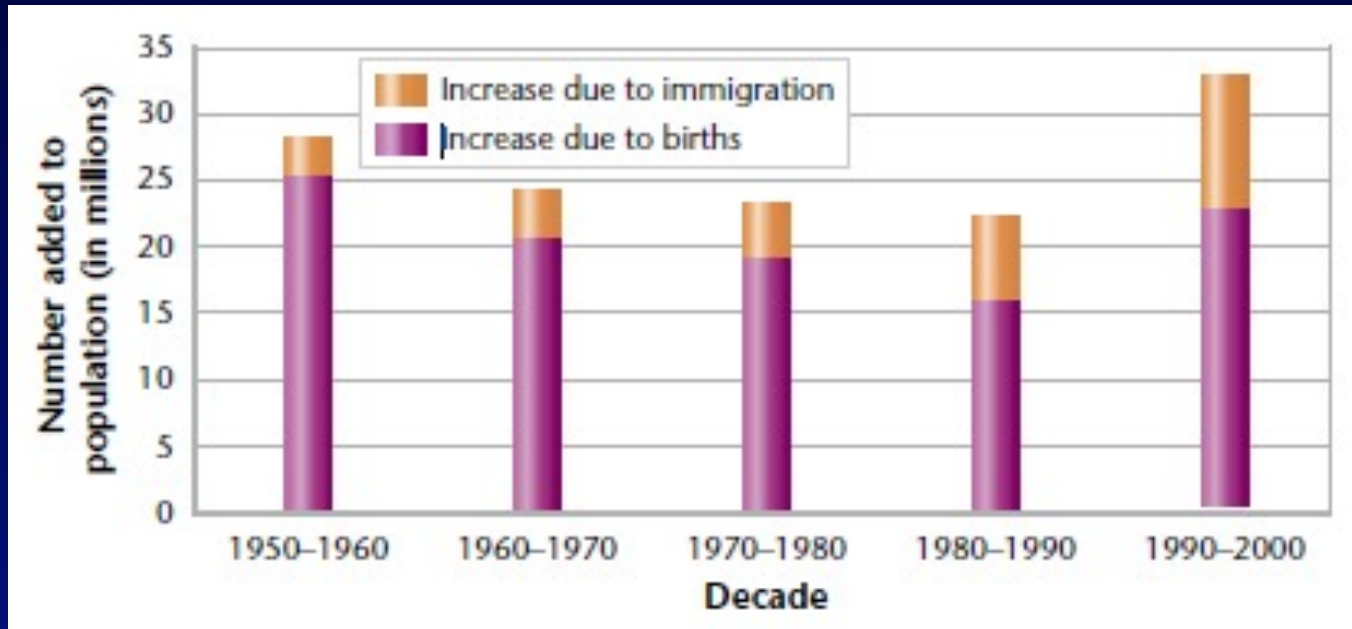Decade

14

Migration

14

Migration

- The movement of individuals between areas.
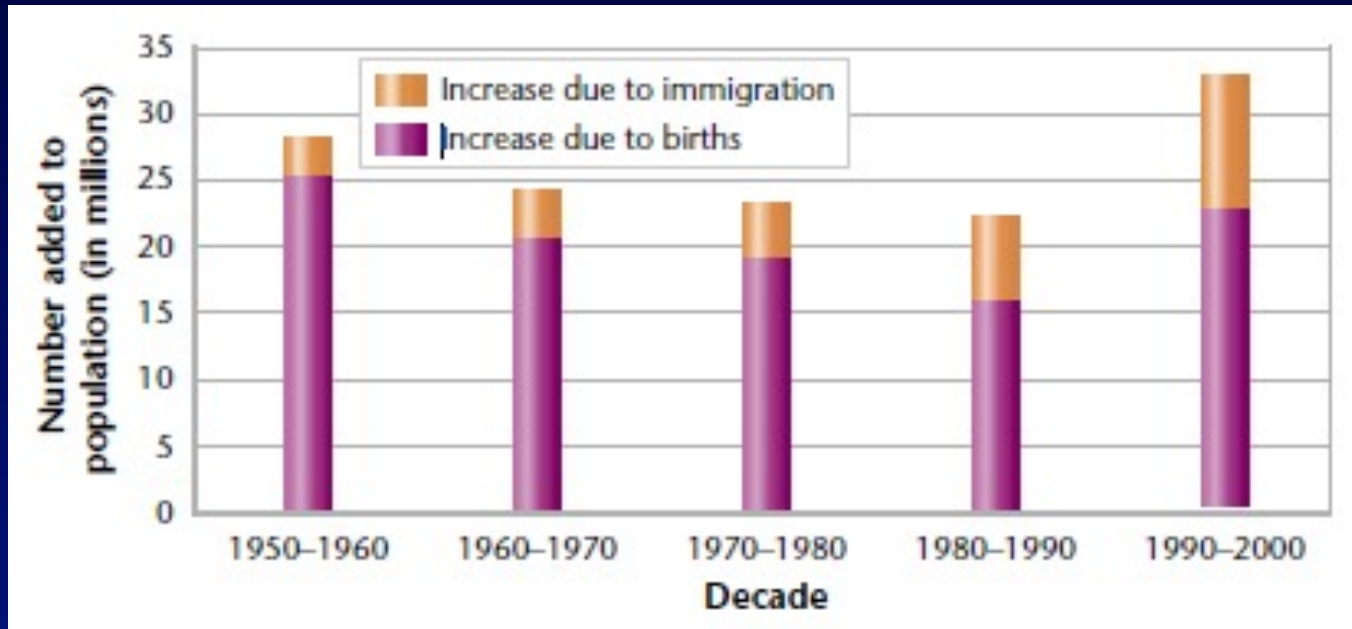
Migration

- The movement of individuals between areas.
  - ❖ Emigration: Move out of an area

Migration

- The movement of individuals between areas.
  - ❖ Emigration: Move out of an area
  - ❖ Immigration: Move into an area

Average Life Expectancy by Region

Source: UN Population Division.

15

Survivorship

Average Life Expectancy by Region

Friday, January 11, 13

Survivorship

- Life Expectancy - Average age a newborn can expect to attain in any given society.

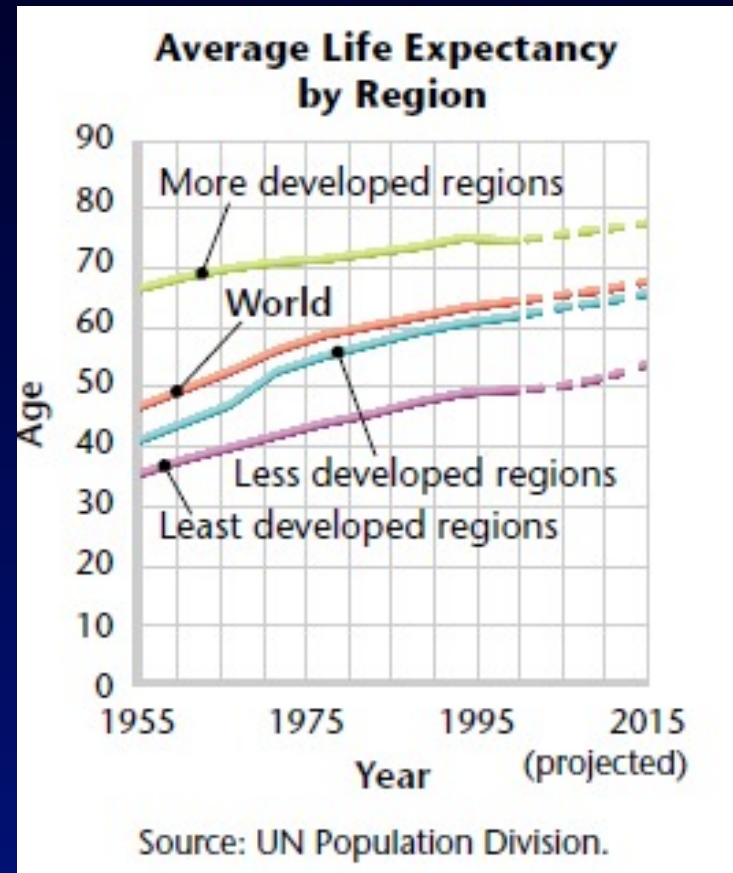**Average Life Expectancy by Region**

Source: UN Population Division.

Survivorship

- **Life Expectancy** - Average age a newborn can expect to attain in any given society.

  ❖ Most affected by infant mortality rates.

Average Life Expectancy by Region

More developed regions

World

Less developed regions

Least developed regions

Source: UN Population Division.

Survivorship

- Life Expectancy - Average age a newborn can expect to attain in any given society.

  - ❖ Most affected by infant mortality rates.
  - ❖ Strongly correlated with income up to about $4,000.00 (U.S.) per person.

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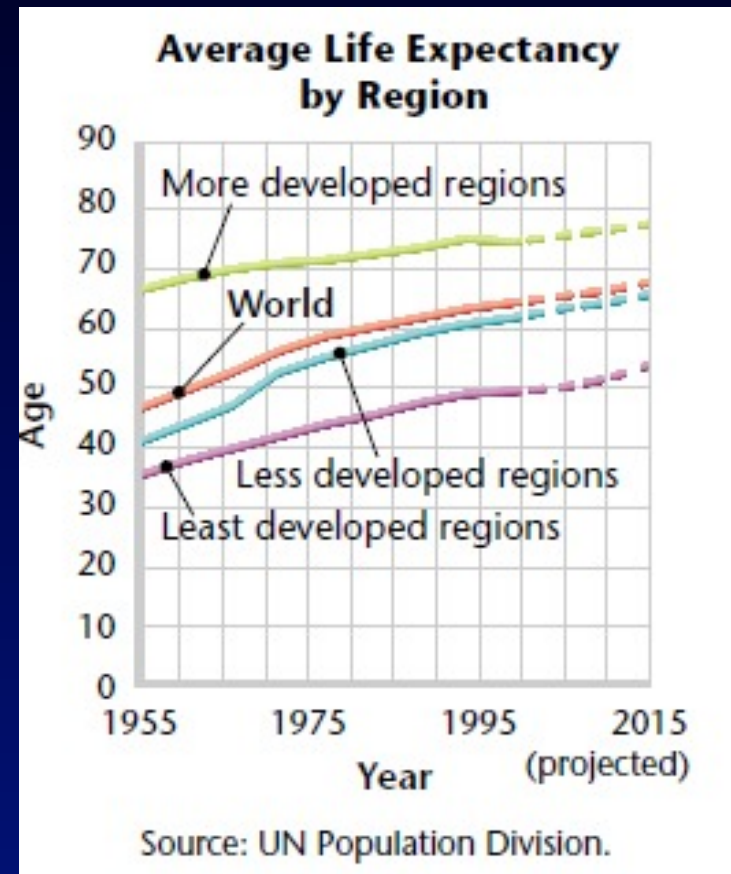Source: UN Population Division.

15

Survivorship

- **Life Expectancy** - Average age a newborn can expect to attain in any given society.
  - ❖ Most affected by infant mortality rates.
  - ❖ Strongly correlated with income up to about $4,000.00 (U.S.) per person.
- What happens if the number of retirees exceeds the number of working adults?
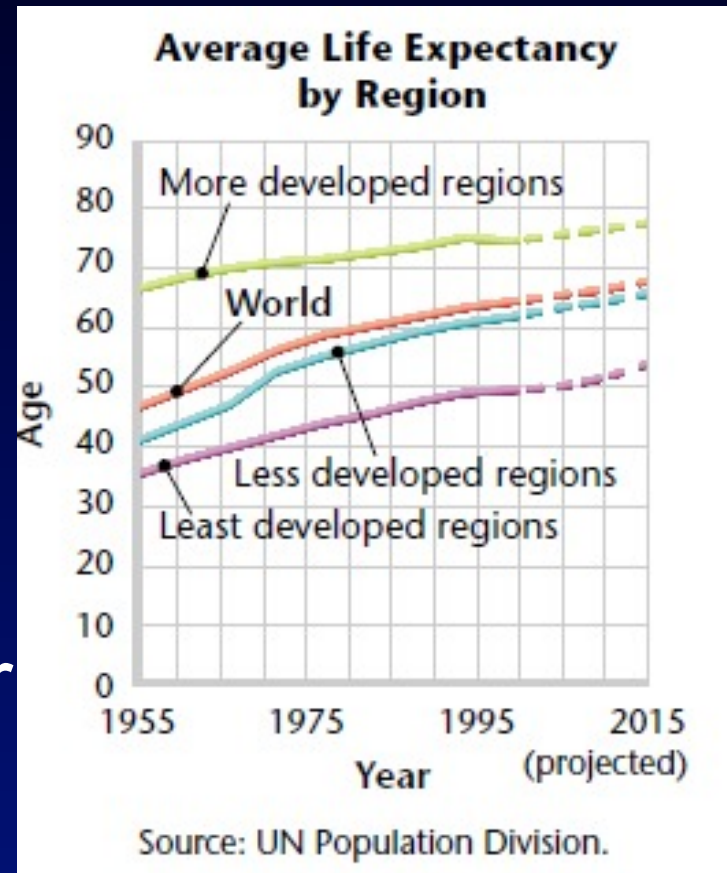
Average Life Expectancy by Region

More developed regions

World

Less developed regions

Least developed regions

Age

1955 1975 1995 2015 (projected)

Year

Source: UN Population Division.

15

16

Population Growth : Opposing Factors

Population Growth : Opposing Factors

- Pronatalist Forces

Population Growth : Opposing Factors

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  - ❖ Factors that increase the desire for children.

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Population Growth : Opposing Factors

- Pronatalist Forces

  ❖ Factors that increase the desire for children.
  - Source of pleasure, pride, comfort.
  - Source of support for elderly parents.
  - Current source of family income.
  - Social Status
    ➢ Boys frequently valued more than girls.

Population Growth : Opposing Factors

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- Most antinatalist forces involve women.

Population Growth : Opposing Factors

- Most antinatalist forces involve women.
- Women are less likely to have children when they have…

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Population Growth : Opposing Factors

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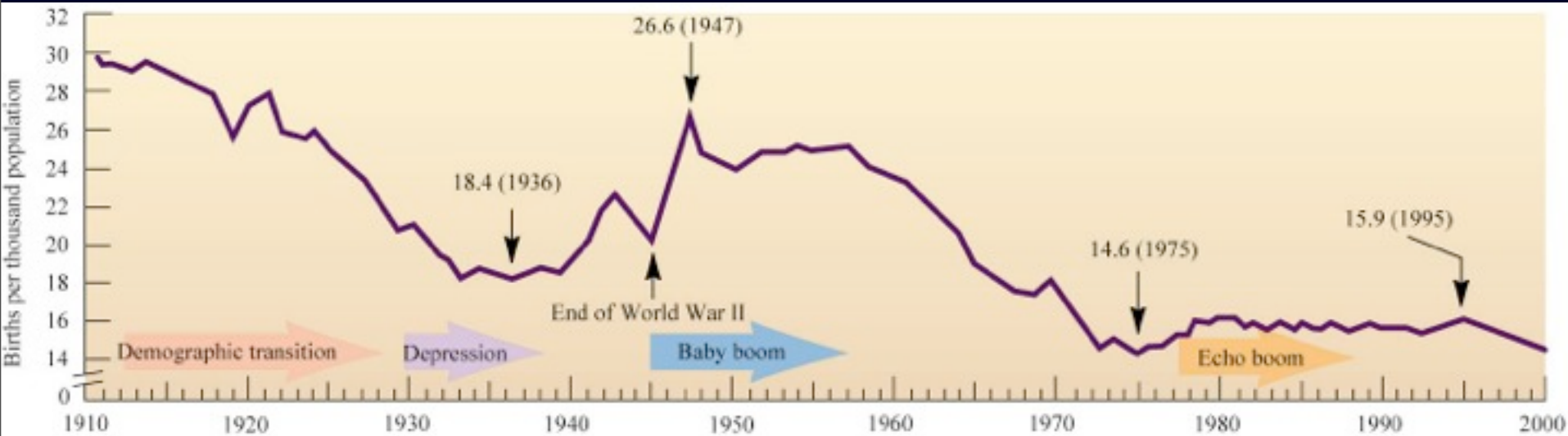# Population Growth : Opposing Factors

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  - ❖ Higher education and personal freedom.
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  - ❖ Higher socioeconomic status

18

United States Birth Rate

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DEMOGRAPHIC TRANSITION

Friday, January 11, 13

DEMOGRAPHIC TRANSITION

- Model of how economic development alters population dynamics.

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  1. Preindustrial

DEMOGRAPHIC TRANSITION

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  1. **Preindustrial**

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19

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  2. Early Transitional

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19

DEMOGRAPHIC TRANSITION

- Model of how economic development alters population dynamics.

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        - Food shortages, malnutrition, lack of sanitation and medicine keep death rates high.
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        - Hygiene, nutrition, and education improve.
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19

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   2. **Early Transitional**

      - Hygiene, nutrition, and education improve.

      - Death rates drop dramatically.

      - Birth rates remain high initially.

      - Population increases very quickly.

19

20

3. Late Transitional

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❖ Birth rates begin to fall.

3. ## Late Transitional

❖ Birth rates begin to fall.

❖ Population may have increased from 2x to 4x by this point.

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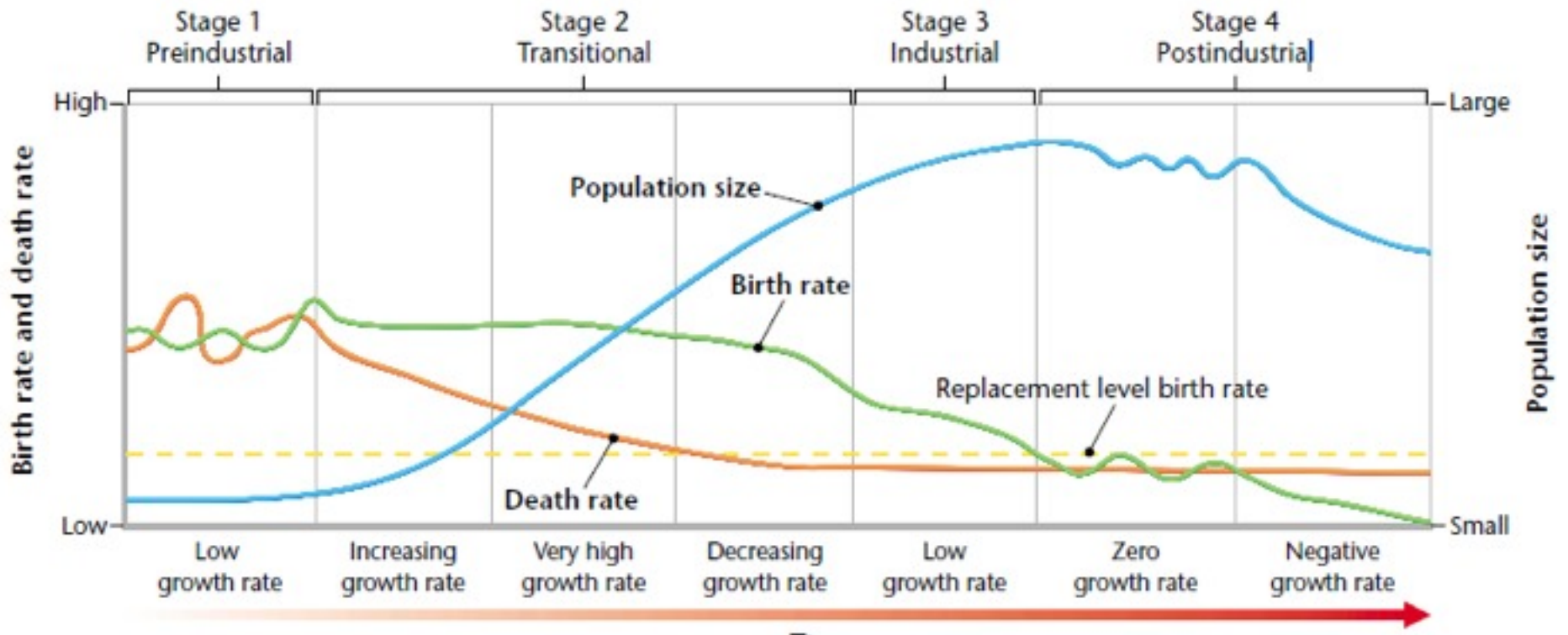
4. ## Industrial

DEMOGRAPHIC TRANSITION CONT'D

3. ## Late Transitional

   - ❖ Birth rates begin to fall.
   - ❖ Population may have increased from 2x to 4x by this point.

4. ## Industrial

   - ❖ Transition is complete.

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4. ## Industrial

- ❖ Transition is complete.
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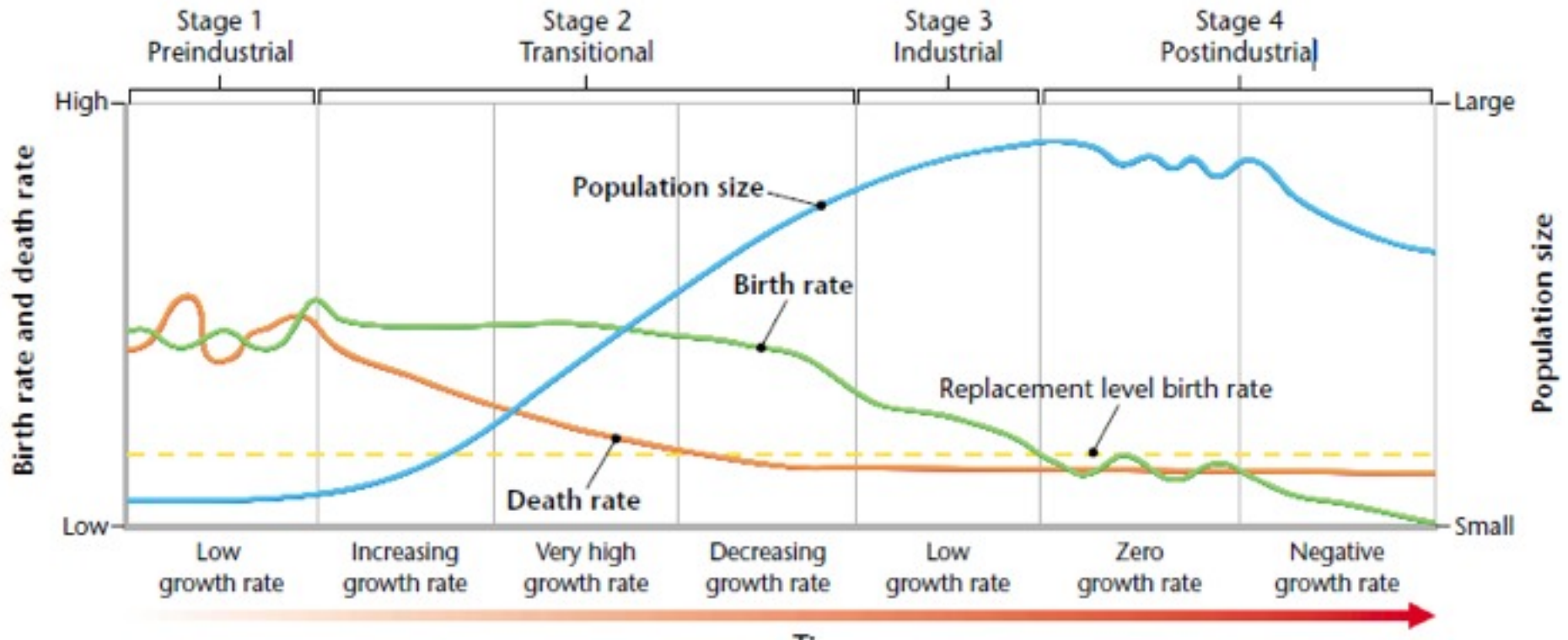
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4. ## Industrial

- ❖ Transition is complete.
- ❖ Both death and birth rates are low.
- ❖ Population is in equilibrium.

Stage 1 Preindustrial | Stage 2 Transitional | Stage 3 Industrial | Stage 4 Postindustrial

Birth rate and death rate — High, Low

Population size — Large, Small

Population size

Birth rate

Death rate

Replacement level birth rate

Low growth rate | Increasing growth rate | Very high growth rate | Decreasing growth rate | Low growth rate | Zero growth rate | Negative growth rate

Demographic Transition

22

Age Structure

Friday, January 11, 13

Age Structure

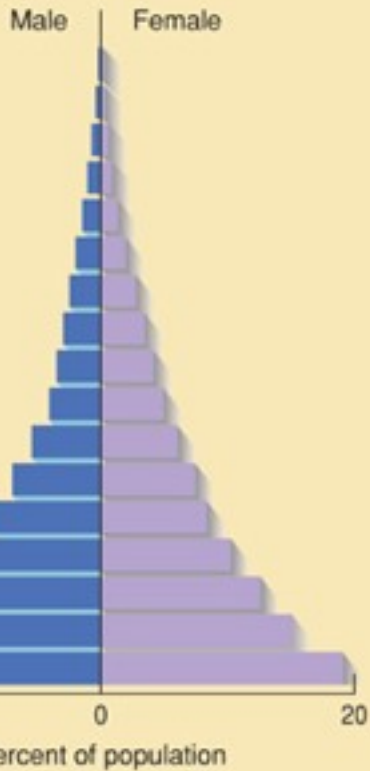- Distribution of ages in a population at a specific time.

Age Structure

- Distribution of ages in a population at a specific time.
- Graphed as a population pyramid.
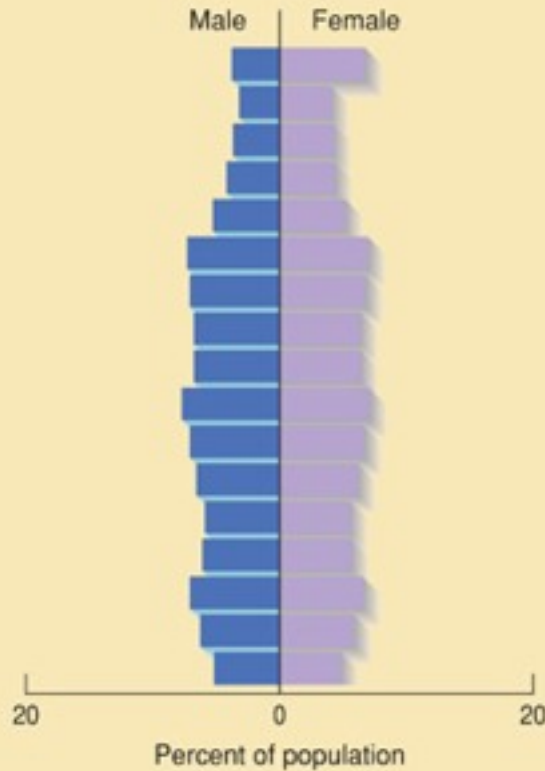
Age Structure

- Distribution of ages in a population at a specific time.

- Graphed as a population pyramid.
  - ❖ More young people in a population usually means higher growth rates.

Rapid growth
(Niger)

Male   Female

20   0   20
Percent of population

Stable
(Sweden)

Male   Female

20   0   20
Percent of population

Declining
(Singapore)

Male   Female

20   0   20
Percent of population

23

Age Structure Diagrams

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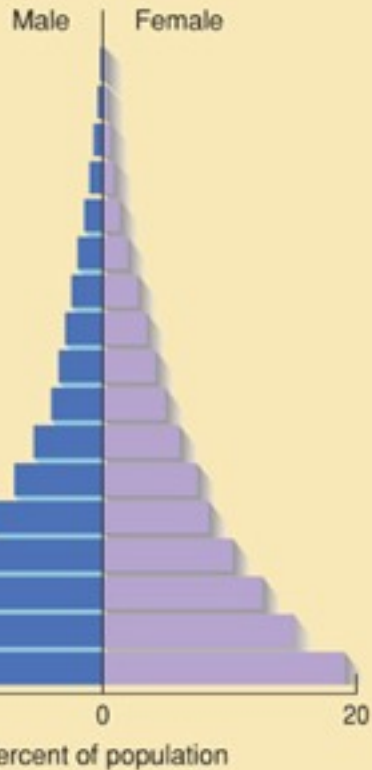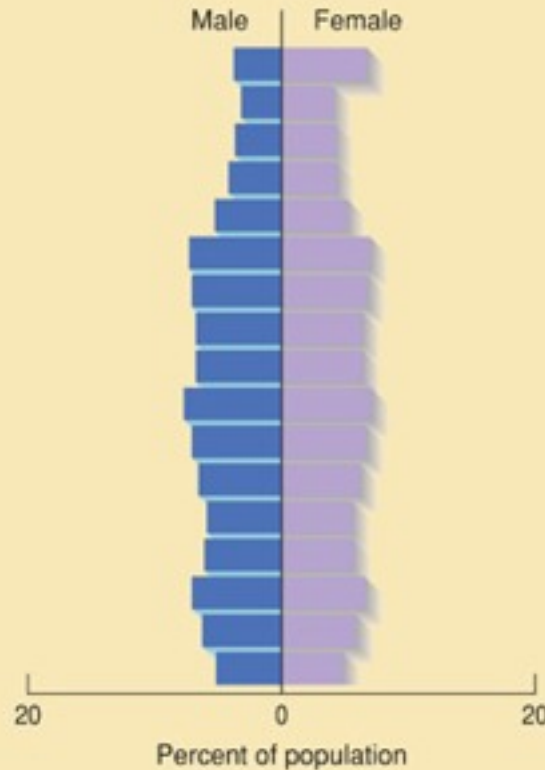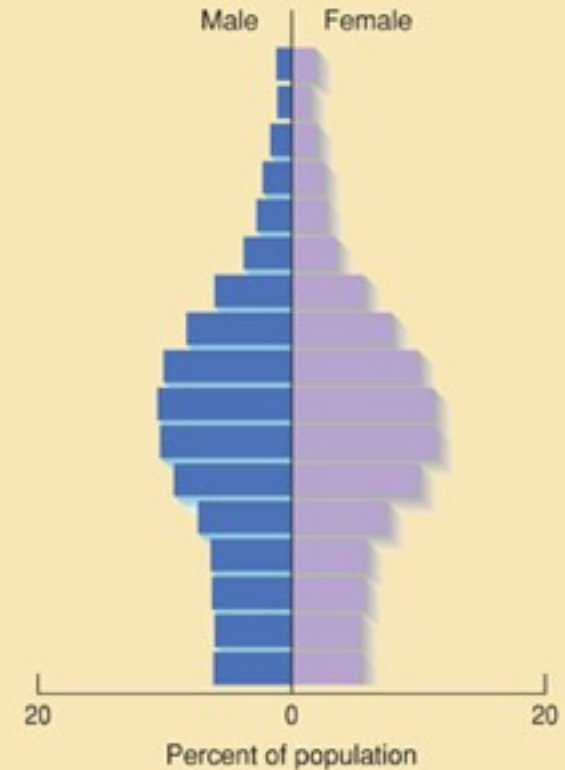Rapid growth (Niger) — Male / Female — Percent of population

Stable (Sweden) — Male / Female — Percent of population

Declining (Singapore) — Male / Female — Percent of population

23

Friday, January 11, 13

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FUTURE OF HUMAN POPULATIONS

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