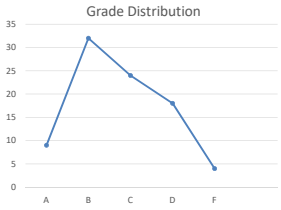
## GRADE DISTRIBUTION EXAM 2

**Maximum Scores**

| | |
|---|---|
| Exam | 100 |
| Atlas Ex. Cr. | 8 |
| TOTAL | 108 |




**Exam II Grade Distribution**

Highest grade = 106

6 students scored 95+

| | |
|---|---|
| A | 9 |
| B | 32 |
| C | 24 |
| D | 21 |
| F | 4 |
| Exams taken: | 90 |
| Not taken: | 5 |
| Withdrawals: | 5 |

1

## REMINDERS

- Two required essays (10% of your grade) were due on April 17.
- ✓ Late penalty now applies (better than a zero!).
- ✓ Must submit missing essays by May 12, 2020 to avoid a ZERO grade.

❑ EXAM III – **Final Exam**

**Tuesday, May 19, 2020 from 9 AM – 11 AM on BlackBoard**

Covers Part III of the course.

- ❖ Extra Credit: "Think Geographically" Essays from any five of Chapters 4-12
  - O R -
- ❖ The 3rd topic from required essay list plus 4 chapter essays.
  - Last day to submit is May 12 but it is best to do them as you read a chapter.

- Extra credit may be submitted before the deadline.
- Don't wait for the due day to write them.

**TEXTBOOK READING FOR PART III**

**Selected parts of Chapters 6-12**

**FREE TUTORING IS AVAILABLE REMOTELY from the HC Skirball Learning Center**

## GEOG 101 PART III

# 20 Life on Earth: Population Geography 1 - 2

Chapter 6

**Prof. Anthony Grande**
**Hunter College Geography**

150 years HUNTER



## Lecture Topics for Part III

- ✓ **I Intro. to Human Geography**
- ➢ **II Life on the Earth**
  - A. Habitat
  - B. Demography
  - C. Medical geography
  - D. Population growth
  - E. Biogeography/Ecology
- **III Economic Geography**
- **IV Urban Geography**
- **V Political Geography**

**Population Geography**
The study of people in relation to their habitat; spatially studies their distribution, make-up, movement, well-being and growth potential.

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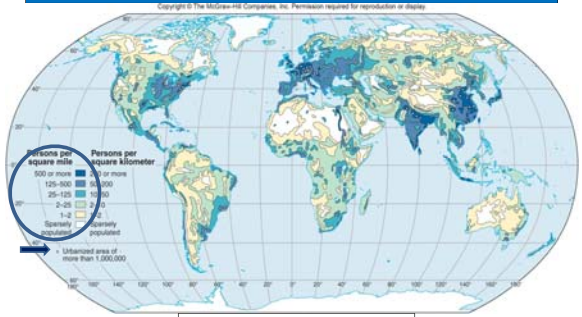
## World Population Distribution




This is a qualitative choropleth map showing actual distribution of people, not country totals.

5

## Earth as a Home for People

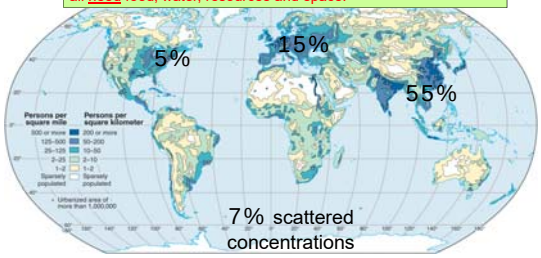
- **50%** of the world's people live on **5%** of the land.
- **90%** of the world's people live on **10%** of the land.
- **95%** of the world's people live on **40%** of the land.

Conversely, **60% of the land is virtually empty** and has only **5% of the world's people**.

6

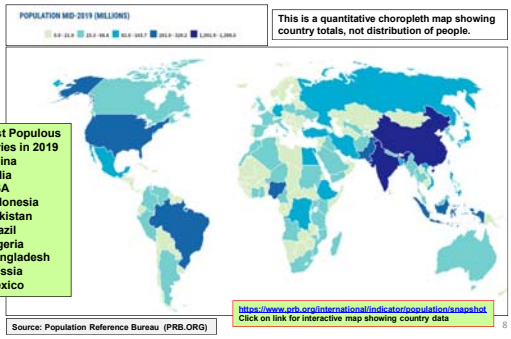
## Earth as a Home for People

**Over 80% of the world's people live in relatively high density:** all need food, water, resources and space.




7

## Population (headcount) by Country




This is a quantitative choropleth map showing country totals, not distribution of people.

**10 Most Populous Countries in 2019**
1. China
2. India
3. USA
4. Indonesia
5. Pakistan
6. Brazil
7. Nigeria
8. Bangladesh
9. Russia
10. Mexico

Source: Population Reference Bureau (PRB.ORG)

https://www.prb.org/international/indicator/population/snapshot
Click on link for interactive map showing country data

8

## World's 10 Largest Countries

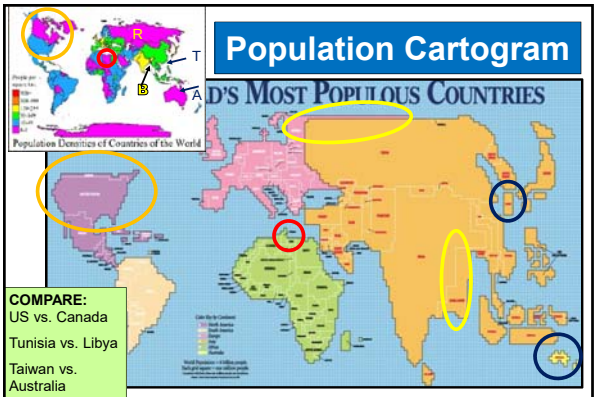
2020 World Population: 7,794,798,739

| Flag | Country | 2020 (Live) | 2019 Population | Area | 2019 Density | Growth Rate | World % | Rank |
|---|---|---|---|---|---|---|---|---|
| | China | 1,438,317,637 | 1,433,783,686 | 9,706,961 km² | 148/km² | 0.39% | 18.47% | 1 |
| | India | 1,377,465,900 | 1,366,417,754 | 3,287,590 km² | 420/km² | 0.99% | 17.70% | 2 |
| | United States | 330,635,126 | 329,064,917 | 9,372,610 km² | 35/km² | 0.59% | 4.25% | 3 |
| | Indonesia | 272,981,233 | 270,625,568 | 1,904,569 km² | 144/km² | 1.07% | 3.51% | 4 |
| | Pakistan | 220,091,906 | 216,565,318 | 881,912 km² | 250/km² | 2.00% | 2.83% | 5 |
| | Brazil | 212,281,435 | 211,049,527 | 8,515,767 km² | 25/km² | 0.72% | 2.73% | 6 |
| | Nigeria | 205,172,147 | 200,963,599 | 923,768 km² | 223/km² | 2.58% | 2.64% | 7 |
| | Bangladesh | 164,384,989 | 163,046,161 | 147,570 km² | 1,116/km² | 1.01% | 2.11% | 8 |
| | Russia | 145,925,112 | 145,872,256 | 17,098,242 km² | 9/km² | 0.04% | 1.87% | 9 |
| | Mexico | 128,679,137 | 127,575,529 | 1,964,375 km² | 66/km² | 1.06% | 1.65% | 10 |

http://worldpopulationreview.com Interactive and live updating site

9

## Population Cartogram



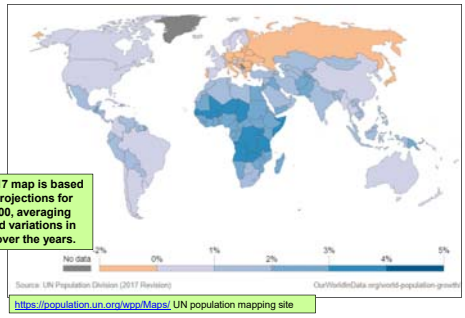

**COMPARE:**
US vs. Canada
Tunisia vs. Libya
Taiwan vs. Australia
Bangladesh vs. Russia

Bangladesh recently surpassed Russia in population. Russia is the world's largest country in land area; Bangladesh ranks 92nd in land area.

10

## Rate of Natural Population Growth

**Natural population growth is defined as the increase in population determined by births and deaths.** Migration (emigration/immigration) is not factored in.




This 2017 map is based on UN projections for 1950-2100, averaging assumed variations in BR/DR over the years.

https://population.un.org/wpp/Maps/ UN population mapping site

11

## Factors that Encourage Settlement and Higher Population Densities

1. **Landforms** (size, topography, altitude, situation)
2. **Climate**
3. **Soil fertility**
4. **Natural vegetation and wildlife**
5. **Water supply**
6. **Mineral and energy resources**
7. **Absence of natural hazards** (safe areas)
8. **Absence of disease and pests** (healthy areas)

12

## Factors that Encourage Settlement and Higher Population Densities

- 1. Landforms
- 2. Climate
- 3. Soil fertility
- 4. Natural vegetation/wildlife
- 5. Water supply
- 6. Mineral/energy resources
- 7. Absence of natural hazards
- 8. Absence of disease/pests

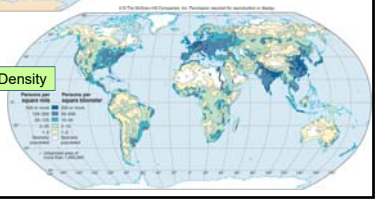
✓**All 8 are modified by levels of technology and forms of economy.**

✓**All 8 are influenced by historical circumstances and cultural parameters.**

13

## Soil Fertility vs. Population Density

Naturally fertile areas



World Population Density

## Habitat Decisions

❖**7.79 billion people need food, water, shelter, resources and living space + a place for their waste.**

- ➢People have a perception of what the environment has to offer.
- ➢They make choices; people make changes.
- ➢They create mental images and mental maps.
- ➢They are influenced by **push-pull-stay** factors.

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## Push-Pull-Stay Factors

❖**PUSH factor**: characteristic of a region that leads to dissatisfaction; encourages movement away **(negative connotation).**

❖**PULL factor**: characteristic of a region that has an attractive force, drawing migrants from other regions **(positive connotation).**

❖**STAY factor**: characteristic of a region that keeps people where they are **(can either be positive or negative)**.

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## Push-Pull-Stay

**These factors can be either real or imagined.**

**Variables** (perceptions) **include**:

- Distance
- Physical barriers
- Cultural factors
- Political factors
- Economic factors

17

## Where the People Are and What's There for Them

**We need data to evaluate a population.**

1. **Numbers of people.**
2. **Concentration of people.**
3. **Other data to help assess a situation** (quality of life within a habitat)

## Population Dynamics

**Things we need to know about a population:**

1. Where are they found (locations)?
2. What are their growth rates?
3. What is their density or grouping pattern?
4. What are the urban/rural ratios?
5. How do the numbers relate to an area's resource base (habitat) and will it put a strain on the area's carrying capacity (habitat quality)?

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## Carrying Capacity and Overpopulation

- **CARRYING CAPACITY: The ability of the land to support life.**
  - ✓ It is directly related to **resource base** (food-water-shelter) which composes a **habitat**. Carrying capacity is **reached** if too many people use what is available and the resource base is stressed to its limit.
  - ✓ Once carrying capacity is reached, the **quality of habitat diminishes** and an area is said to be overpopulated.
- **OVERPOPULATION: Too many people for the resource base.** (The term is also applied to animal habitats.)

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## Population Growth

**Can the earth support its fast-growing population?**

- **Does it have the capacity to keep up with a population's demands on its resources?**
- **How can we tell?**
- **Need data.**

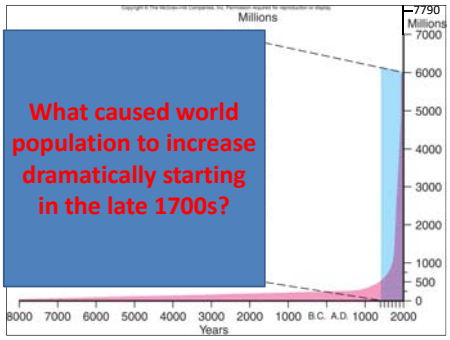
**DEMOGRAPHY: statistical study of a population.**

***However, there is a problem with the data.***

***Accuracy of national censuses varies.***

21

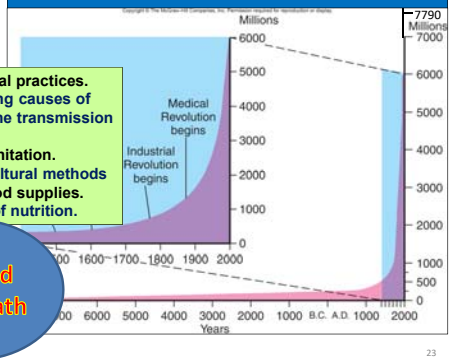
## Historic Population Growth




What caused world population to increase dramatically starting in the late 1700s?

22

## Population J-Curve

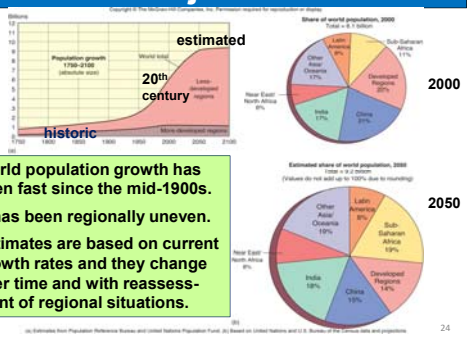



- ✓ Better medical practices.
- ✓ Understanding causes of illness and the transmission of disease.
- ✓ Improved sanitation.
- ✓ Better agricultural methods
- ✓ Improved food supplies.
- ✓ Knowledge of nutrition.

We slowed the death rate

23

## Population Growth and Projections




1. World population growth has been fast since the mid-1900s.
2. It has been regionally uneven.
3. Estimates are based on current growth rates and they change over time and with reassessment of regional situations.

24

## Population Change Data

**Greatest estimated country population** (headcount) **increases and declines for the period 2018 to 2050.**

**Population Reference Bureau** (PRB) estimates that **by 2050, India will surpass China** as the world's most populous country with c. 1.67 billion people, while Nigeria will have a popu-lation larger than that of the United States.

**HEADCOUNT INCREASES**

2018 WORLD POPULATION DATA

| | | | |
|---|---|---|---|
| 308.8 INDIA | 214.7 NIGERIA | 131.6 CONGO, DEM. REP. | 106 PAKISTAN |
| 83.4 ETHIOPIA | 79 TANZANIA | 69.5 EGYPT | 61.6 UNITED STATES |

**HEADCOUNT DECLINES**

WORLD POPULATION DATA

| | | | |
|---|---|---|---|
| 49.9 CHINA | 24.7 JAPAN | 9.4 RUSSIA | 7.3 UKRAINE |
| 4.4 ROMANIA | 4.4 POLAND | 3.7 GERMANY | 3.6 THAILAND |

http://www.worldpopdata.org/index.php/map
interactive map and data collection

25

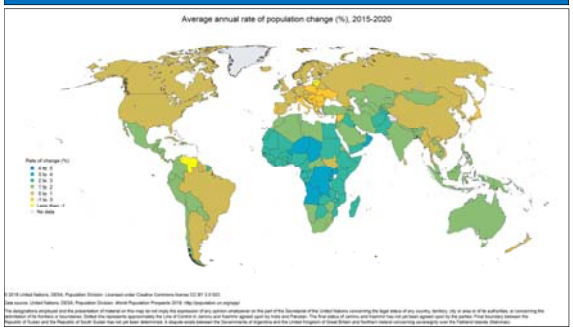
## Where the People Are and What's There for Them

**We need data to evaluate a population.**

1. **Numbers of people.**
2. **Concentration of people.**
3. **Other data to help assess a situation** (quality of life within a habitat)

## Recent Past Rate of Population Change

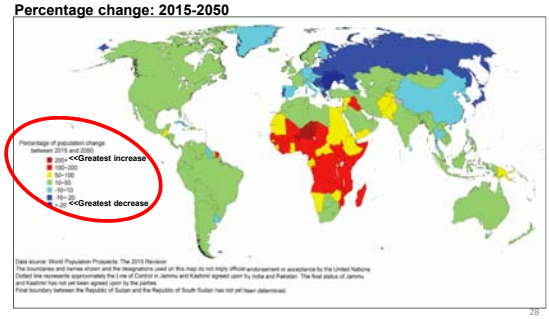
**2015-2020 average annual values in %**




27

## Projected Long-term (35 yrs) Population Change

**Percentage change: 2015-2050**




28

## World Birth Rates and Death Rates

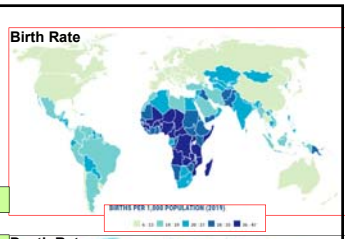
https://www.prb.org/international/indicator/births/snapshot
Click on link for interactive map.

https://www.prb.org/international/indicator/deaths/snapshot
Click on link for interactive map.

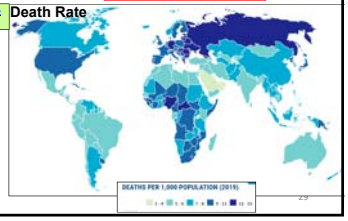
**Birth rate factors tend to be cultural** (customs/belief systems/female employment/infant mortality rate) **while death rate factors tend to be circumstantial** (medical/economic/environmental/technological/age structure).

Source: Population Reference Bureau (PRB.ORG)

Birth Rate




Death Rate

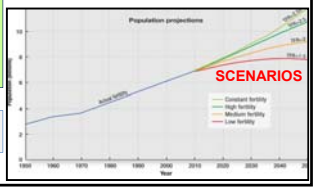



29

## Total Fertility Rate and ZPG

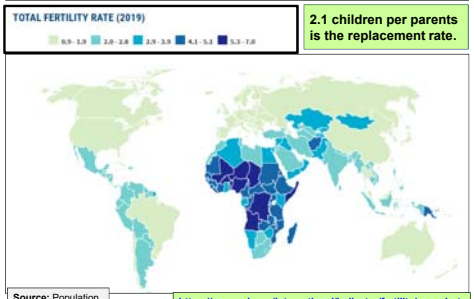
❖ **TFR: Total Fertility Rate. The number of children borne by child-bearing age women.** The younger and larger a population, the higher the TFR and the higher growth potential, especially, if infant mortality rates are reduced.

❖ **ZPG: Zero population growth** is considered to be the **replacement** rate *(statistically the number is 2.1 children/parents).* Any number higher than 2.1 leads to a population increase.




https://www.nytimes.com/2018/04/25/health/africa-infant-mortality-antibiotic.html : Antibotics reduce infant mortality in Africa.

## Total Fertility Rate



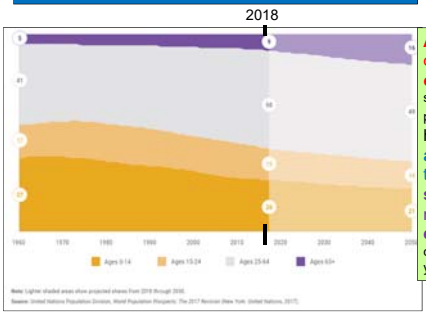

2.1 children per parents is the replacement rate.

**Source:** Population Reference Bureau (PRB.ORG)

https://www.prb.org/international/indicator/fertility/snapshot
**Click the link for the interactive map**

31

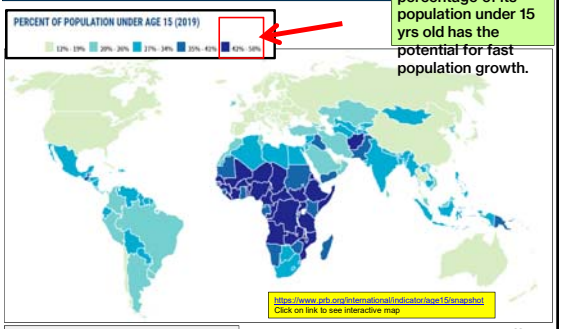
## Changing Age Structure 1960-2050




**Age structure** not only affects **quality of habitat** ( relation-ship to potential rates of population growth), it has an **economic aspect** with regard to **workers** and a **social aspect** with regard to **depend-ency ratios** (the caring for the very young and very old).

32

## Percent of Population UNDER 15 Years of Age




People under age 15 are considered a dependent group. An area with a high percentage of its population under 15 yrs old has the potential for fast population growth.

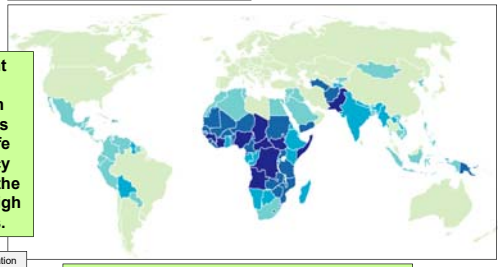
https://www.prb.org/international/indicator/age15/snapshot
Click on link to see interactive map

Source: Population Reference Bureau (PRB.ORG)

33

## Infant Mortality

The annual number of deaths of infants under age 1 per 1,000 live births.



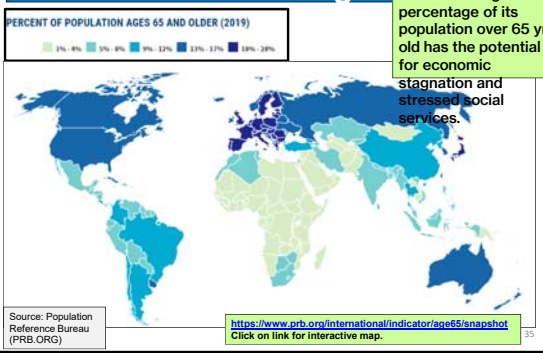

**High infant mortality rates, high death rates and low life expectancy reinforce the cycle of high birth rates.**

**Source:** Population Reference Bureau (PRB.ORG)

https://www.prb.org/international/indicator/infant-mortality/snapshot
**Click on link for interactive map.**

34

## Percent of Population OVER 65 Years of Age




People over age 65 are considered a dependent group. An area with a high percentage of its population over 65 yrs. old has the potential for economic stagnation and stressed social services.

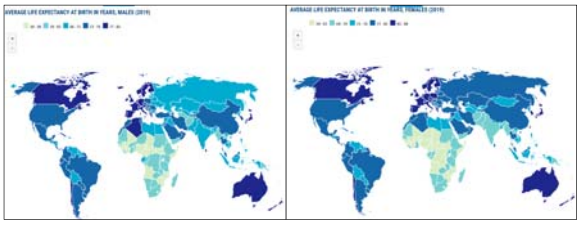
Source: Population Reference Bureau (PRB.ORG)

https://www.prb.org/international/indicator/age65/snapshot
**Click on link for interactive map.**

35

## Life Expectancy

**The average number of years an infant can expect to live under current mortality rates in their country.**
*Note difference between males and females worldwide.*

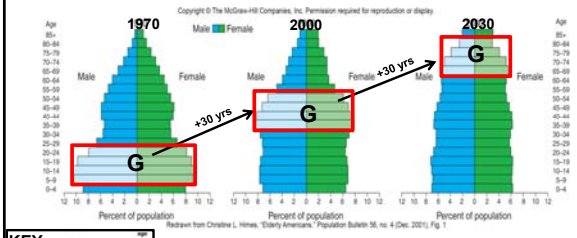


**Source:** Population Reference Bureau (PRB.ORG)

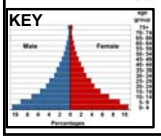
https://www.prb.org/international/indicator/life-expectancy-birth-male/snapshot
https://www.prb.org/international/indicator/life-expectancy-birth-female/snapshot
**Click on the link for the interactive map.**

36

## Population Pyramid



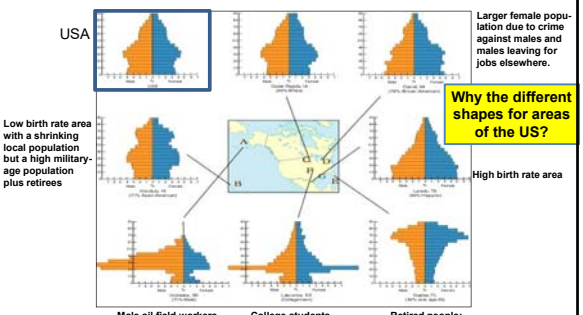

KEY



Every year age groups move up the pyramid. The groups get smaller as members die, unless an area experiences immigration.

37

## Population Pyramids for Regions of the United States




38

## Malthusian Theory

**In 1798 Thomas Malthus postulated that unless population growth was slowed** (by "self-control", war or natural disaster), **its rate of growth would soon exceed the rate of food production** (exceed carrying capacity).

**He predicted that people would not be able to feed themselves and wide-spread poverty and hunger would follow.**

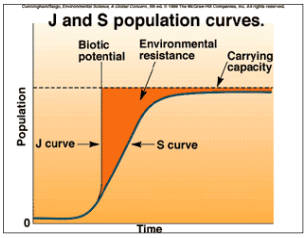
**WHY?** Because population tends to double in size quickly, while agriculture grows at a steady rate.

**His prediction did not take into account new technologies that allowed people to produce more food.**

39

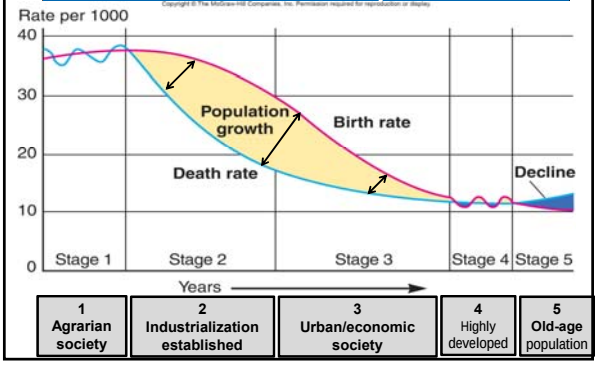
## Demographic Transition

- **The J-Curve becomes an S-Curve when a population reaches carrying capacity.**
  - It returns to a J-Curve when new technologies allow people to live longer.



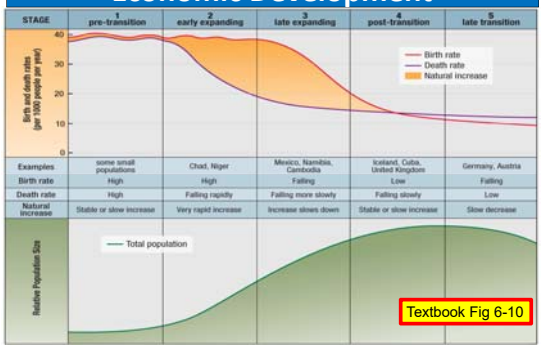

40

## Demographic Transition and Economic Development

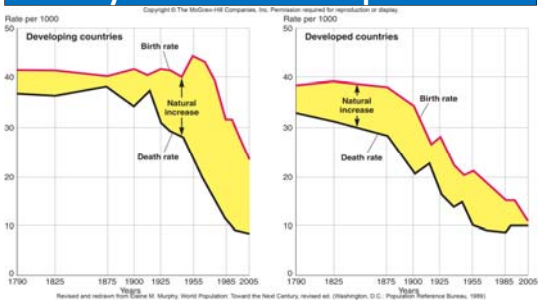



| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Agrarian society | Industrialization established | Urban/economic society | Highly developed | Old-age population |

## Demographic Transition and Economic Development



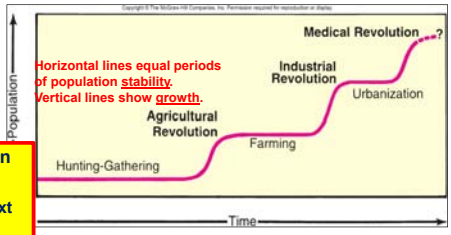
## Comparison of BR and DR by Economic Development




43

## Homeostatic Plateaus:
### Balance between population and resources

**The "J-Curve" turns into an "S-Curve" every time something occurs to either increase or slow down the death rate (changes existing equilibrium).**




**How long can this go on?**

**What's the next magic trick?**
***Biotechnology?***

44

## N E X T

**Health and Nutrition affecting Populations: Medical Geography**

**and**

**An introduction to Biogeography and Ecology**

45