

# 1 Human Population Biology

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## 2 Human Population Growth

- We have been busy!
  - 1997 - 5,800,000,000
  - 2001 (1/21/01) - 6,123,546,443
  - 2012 (11/13/12) - 7,052,038,733
  - increases 1.5% annually

## 3 Human Population Growth

- We have been busy!
  - 1/3 of world population is malnourished
  - most humans live on 10% of land
  - ½ live within 300 miles of seas and ocean

## 4 Human Population Growth

- Why are we so successful at increasing human population to the point of being out of control?
  - human intellect led us to tame new environments, areas, climates with relative ease
  - we increased the carrying capacity of the areas in which we live

## 5 Human Population Growth

- we defeated most limiting factors:
  - grew better food (more food, better food, more food/unit area)
  - improved healthcare or brought at least some to areas
  - improved pre and post natal care to reduce infant mortality
  - provide and improved geriatric health care
  - sanitation was improved
  - tamed disease and disease vectors such as insects and rodents
  - created vaccines to prevent serious illness and plagues
  - used fossil fuels and hydroelectric plants were used to power our population growth
  - mass production and industrial methods created more goods faster to help the population
  - education helped too!

## 6 Human Population Growth

- What Else is Still Out There for Us?
  - Plagues – epidemics and pandemics
    - cholera
    - anthrax
    - bubonic
    - Influenza (bird flu?)
    - AIDS HIV

## 7 Human Population Growth

- What Else is Still Out There for Us?
  - Vaccines are less able to cope
    - streptococcus
    - staphylococcus
    - STDs (gonorrhea, herpes, chlamydia, syphilis)
    - E. coli

8  **Human Population Growth**

■ **What Else is Still Out There for Us?**

- Increased use of antibiotics has reduced their effect
  - we have used artificial selection to enrich bacteria with resistance to antibiotics
  - we demand antibiotics for viral infections

9  **Human Population Control**

■ **Projections**

- based on 1996/1997 figures – 1.55% increase
- world population could reach 10-11 billion by 2050
- natural resources will not support this population
- we actually cannot support the present population of 7 billion

10  **Human Population Control**

- **Fertility rates – average # of children/woman during her reproductive years**
  - replacement rate – the reproductive rate to just barely maintain a level population
    - in developed countries = 2.1
    - in less developed countries = 2.5
- in 1950 the total fertility rate was 6.5 (baby boom)
- in 1996 the total fertility rate was 3.0 (still too high)

11  **Human Population Control**

- **Fertility rates vary by continent**
  - lowest = <1% - Europe, Russia, Antarctica

12  **Human Population Control**

- **Fertility rates vary by continent**
  - medium low = 1-1.9% - North America, India, China most of South America

13  **Human Population Control**

- **Fertility rates vary by continent**
  - medium high = 2-2.9% - Parts of Africa, Central America, Southeast Asia, parts Middle East

14  **Human Population Control**

- **Fertility rates vary by continent**
  - highest – >3% - Saudi Arabia, many of Africa some parts of India

15  **Human Population Control**

- 1/3 of current population is pre-reproduction
- A very rapid growth spurt will result if nothing is done to reduce the need and

desire to procreate

- 16  **Resource Allocation**
- US has 4.3% of the world population
    - 314,761,747 people (11/13/12)
    - produces 21% of all goods and services
    - uses 25% of minerals
    - uses 25% of fossil fuels
    - makes 25% of all trash
- 17  **Resource Allocation**
- India has 17% of world population **1,220,200,000**
    - produces 1% of all goods and services
    - uses 3% of the minerals
    - uses 3% of fossil fuels
    - produces 3% of all trash
- 18  **Negative Implications of Reduced Growth + Baby Boomers**
- Older individuals expect to be cared for
    - food
    - medical care
    - housing
    - Energy
  - Older individuals usually produce little
- 19  **Negative Implications of Reduced Growth + Baby Boomers**
- What about the baby boom?
    - as the population grays there are more non-productive members
    - the smaller younger population will support the larger aged population
  - The financial burden grows daily
  - Are you willing to explain why your parents and grandparents must go back to work?
  - It is planned to INCREASE the age YOU can retire to 70 or higher