PART 2 HUMAN POPULATION INFORMATION

world clock: http://www.poodwaddle.com/worldclock/society/#Health3

Video Clip

- The Science of Overpopulation:
  - http://www.youtube.com/watch?v=dD-yN2G5BY0

Case Studies – Population Control in India

- In 1952, India began the first national family planning program
- The program has been disappointing because of poor planning, low status of women, extreme poverty, & lack of funds
- Couples still have an average of 3.5 children because of the belief that they need children to work & care for them in old age

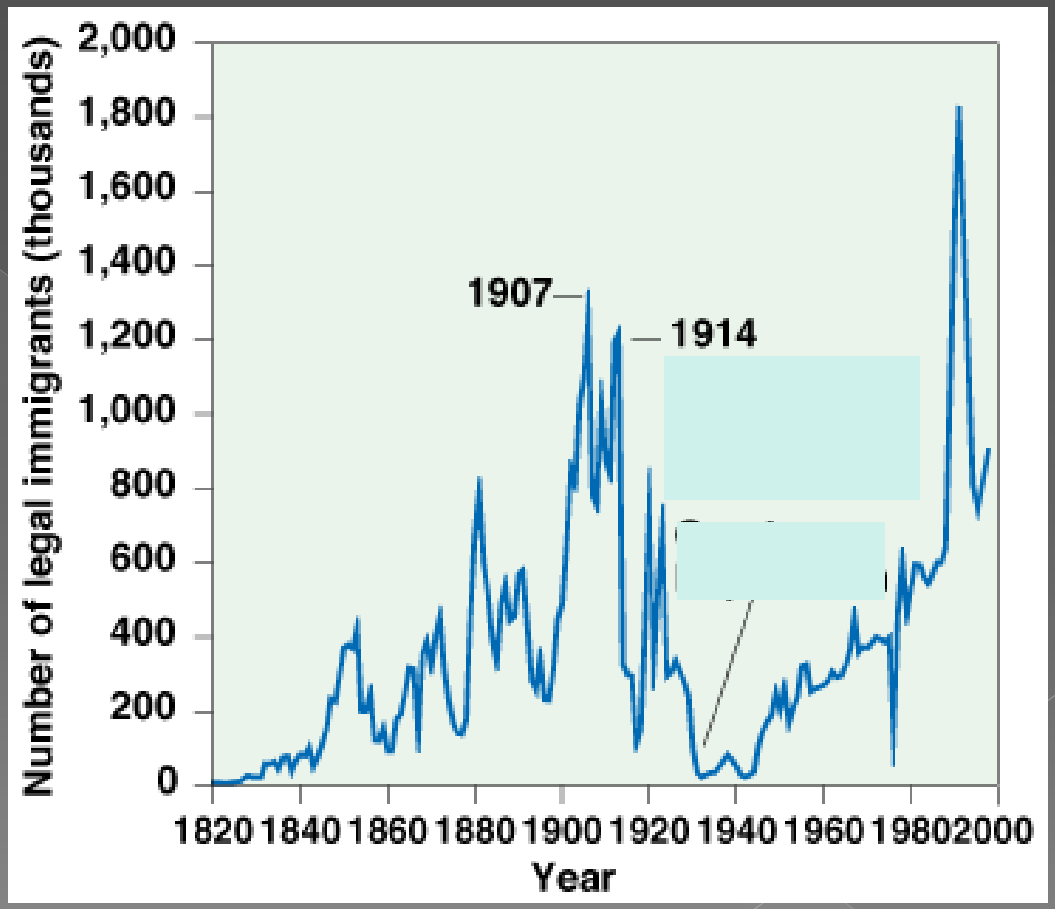
- http://www.ippf.org/our-work/what-we-do : India's International Planned Parenthood Federation

Case Studies – Population Control in China

- Since 1970, China has initiated efforts to better feed its people & control population growth
- Strict population control measures prevent couples from having more than one child
- Although considered coercive, the policy is significantly slowing population growth

Case Studies – Immigration in the U.S.

- As fertility decreases, immigration has become a major source of population increase in the U.S.
- In 1998, the U.S. received about 935,000 legal immigrants & 400,00 illegal immigrants
- Increasing levels of legal & illegal immigrants are expected



Should the U.S. Discourage Immigration?

- Since 1820, the U.S. has admitted almost twice as many immigrants and refugees as all other countries combined
- Immigration accounts for about 45% of the United States' annual population growth

Immigration in the United States

Should the U.S. reduce the number of immigrants allowed into the country?

Is the U.S. (or other wealthy countries) obligated to accept immigrants from very poor countries?

Human Population & Sustainability

How can governments reduce population growth?

- improve access to family planning & reproductive health care
- improve heath care for infants, children, & pregnant women
- encourage development of national population policies
- improve equality between men & women
- increase access to education, especially for girls
- increase the involvement of men in child rearing & family planning
- reduce poverty
- reduce & eliminate unsustainable patterns of production & consumption

The Population Crisis

"We have met the enemy, and he is us"

We are all gonna die!

- Earth is in the midst of another extinction
- Half of all species could be extinct in next 100 years
- Climate changing , ecological communities changing, natural world changing
- Less land; more development

How will humans adapt to this?

Can the planet support humans and at the same time provide habitat for everything else?

Exceeding "k"

- Population using up resources faster than being replenished → environmental degradation
- Leads to population crashes – humans have experienced this several times….
  - Black plague, Irish famine, tsunamis, earthquakes, wars, H1N1, H5N1, ebola???

Spread of Disease

- Epidemic: disease affecting large number of people at same time ; spread rapidly
- Endemic: expected/normal incidence of disease spreading
- Pandemic: disease occurring throughout the population of a country ; epidemic crossing over borders

- Most extensive to least:

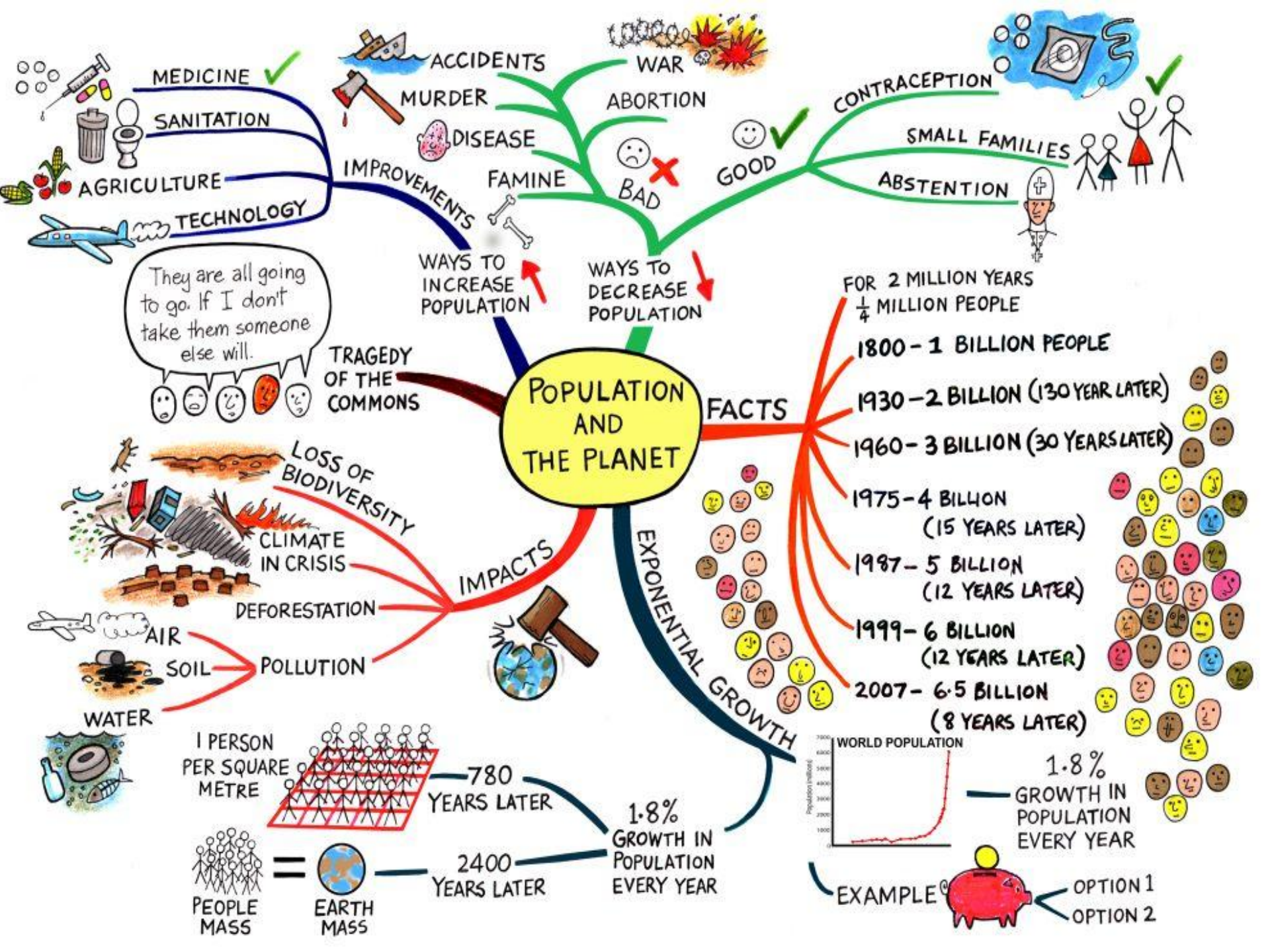
  Pandemic → Epidemic → Endemic

Ways to increase "K"

- Sanitation
- Medical advancements
- Agriculture
- Water
- Transportation
- Technological advancements (building/living structures)

Video Clip

- Visualizing how a population grows to 7 billion
- http://vimeo.com/31373691


POPULATION AND THE PLANET
WAYS TO INCREASE POPULATION
IMPROVEMENTS
MEDICINE
SANITATION
AGRICULTURE
TECHNOLOGY
WAYS TO DECREASE POPULATION
ACCIDENTS
MURDER
DISEASE
FAMINE
WAR
ABORTION
BAD
GOOD
CONTRACEPTION
SMALL FAMILIES
ABSTENTION
TRAGEDY OF THE COMMONS
They are all going to go. If I don't take them someone else will.
FACTS
FOR 2 MILLION YEARS ¼ MILLION PEOPLE
1800 – 1 BILLION PEOPLE
1930 – 2 BILLION (130 YEAR LATER)
1960 – 3 BILLION (30 YEARS LATER)
1975 – 4 BILLION (15 YEARS LATER)
1987 – 5 BILLION (12 YEARS LATER)
1999 – 6 BILLION (12 YEARS LATER)
2007 – 6·5 BILLION (8 YEARS LATER)
IMPACTS
LOSS OF BIODIVERSITY
CLIMATE IN CRISIS
DEFORESTATION
POLLUTION
AIR
SOIL
WATER
EXPONENTIAL GROWTH
1·8% GROWTH IN POPULATION EVERY YEAR
780 YEARS LATER
I PERSON PER SQUARE METRE
2400 YEARS LATER
PEOPLE MASS
EARTH MASS
WORLD POPULATION
1·8% GROWTH IN POPULATION EVERY YEAR
EXAMPLE
OPTION 1
OPTION 2

Social Factors

- Poverty, wealth, and education levels affect population size
- Developing nations: moderate to low income
  - Mexico, Africa, Central America, Eastern Europe
- Developed nations: high-income
  - US, Canada, Western Europe, Japan

Social Factors

- In 1950, 68% of population lived in developing nations
- By 2009, 82% of population lived in in developing nations
  - Increased population within developing areas

Current "Settings"

- "DC's" – developed
- BR = 11
- DR = 10
- Growing by 1.243 million/year

- "LDC's"- less developed
- BR = 25
- DR = 8
- Growing by 75.8 million/year

Current "Settings"

- "DC's" – developed
- ↑ industrialization
- ↑ commerical devel.
- Higher education
- Higher per capita income
- Low IMR
- Longer life span

- "LDC's"- less developed
- ↓ industrialization/ ↑ agri.
- ↓ commercial devel.
- Little to no schooling
- Lower per capita income
- High IMR
- Shorter life span

Impacts of Population

- Affluent societies : environmental impact of humans depends on how they live

more money → consume more food → purchase more items → produce more wastes → live in larger homes → use more energy

MORE! MORE! MORE!

Impacts of Population

- Relationship between affluence and environmental impact = **<u>ecological footprints</u>**
  - Amount of land needed to provide a person with the resources he/she consumes and to handle his/her wastes
- Pop. growth rate usually lower in affluent societies – yet have a larger ecological footprint than those from poor societies

Uneven Consumption Rates

- http://www.walltowatch.com/view/28822/A+Week+of+Groceries+in+Different+Countries

Why should USA care: do we have a vested interest?

- Global economics
- Resources
- Food
- Pollution
- Biodiversity
- Political stability
- Immigration
- Disease and medicine

WRAP-UP

Over 7 billion people who want to live like you: What are the consequences???

- ECOLOGICAL
  - Drain on resources
  - Environmental impact of resource extraction
  - Deforestation – Loss of natural habitat
  - Changes to atmosphere – Global warming
  - Impact on water quality and quantity

- POLITICAL
  - Energy / oil resources
  - Food supplies
  - Wood, mineral resources
  - Water supplies
  - Policies on regional / global environmental issu
- SOCIALOGICAL
  - Changes in cultures and lifestyles
  - Family size – attitudes
  - Role of women
  - Distribution of goods, services, income
  - Changes in value systems

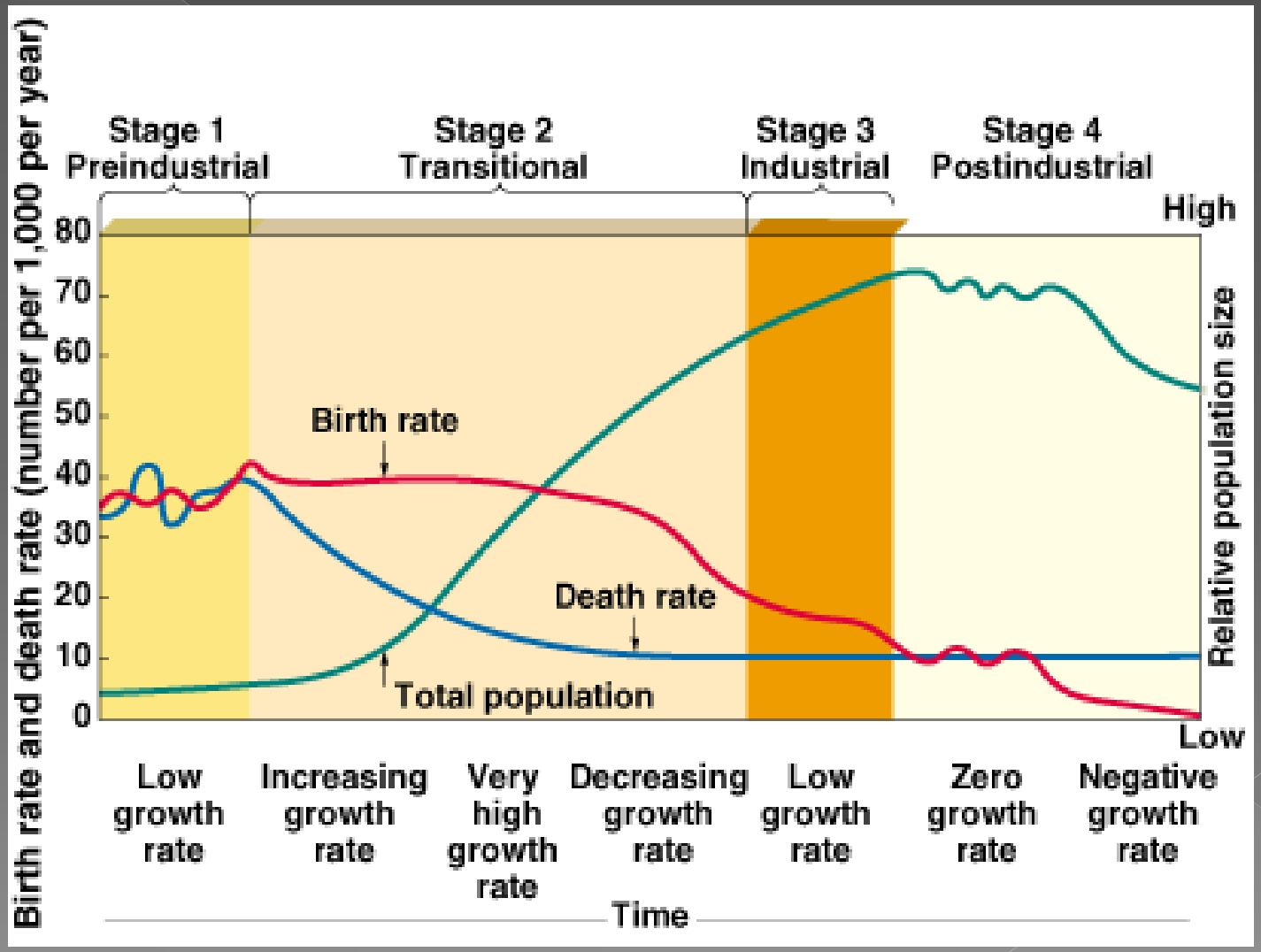
Global Population Growth 1960s compared 2010 and the future world

- http://www.eoi.es/blogs/carlosomargarcia/2013/01/13/dp-global-population-growth-an-issue-of-humanity/

- HW: Summarize what this was about.
- Do you feel that our current population growth is a problem? Why/why not – JYA with scientific support/data

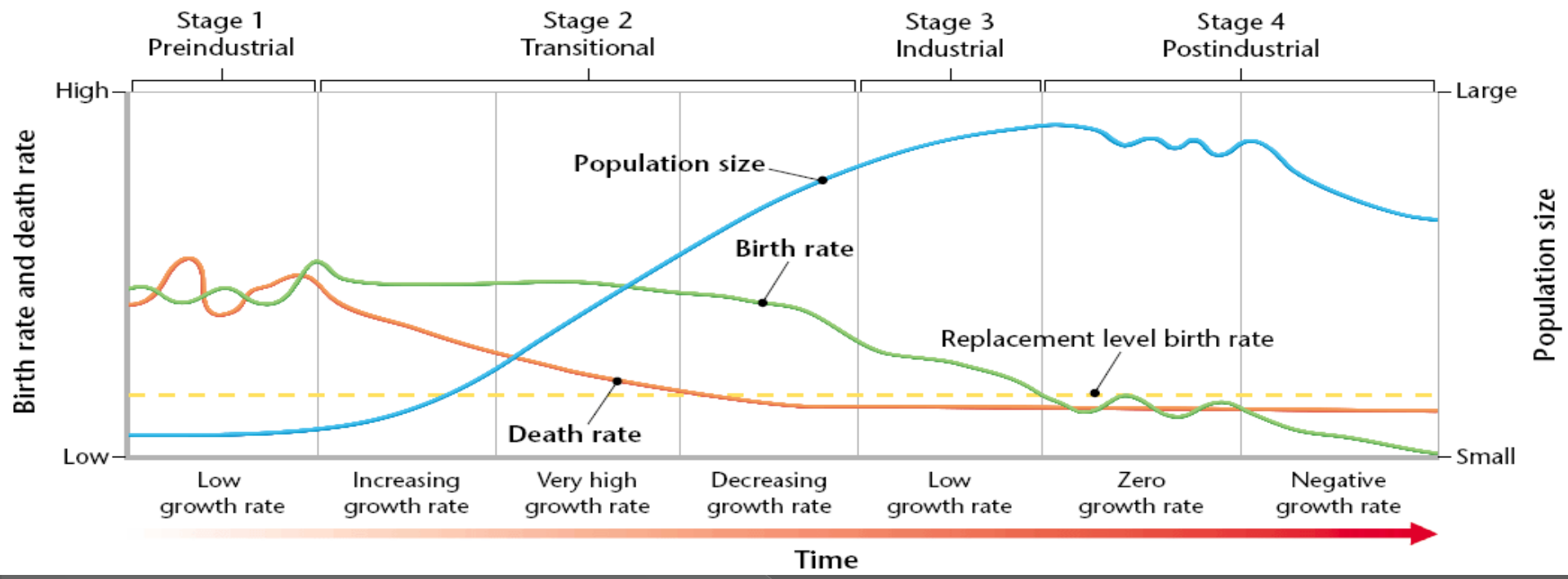
Demographic Transition

A generalized model of demographic transition



What is the Demographic Transition Model (DTM)?

- The demographic transition model explains the transformation of countries from having high birth and death rates to low birth and death rates.
- In developed countries this transition began in the 18th century and continues today.
- Less developed countries began the transition later and many are still in earlier stages of the model.



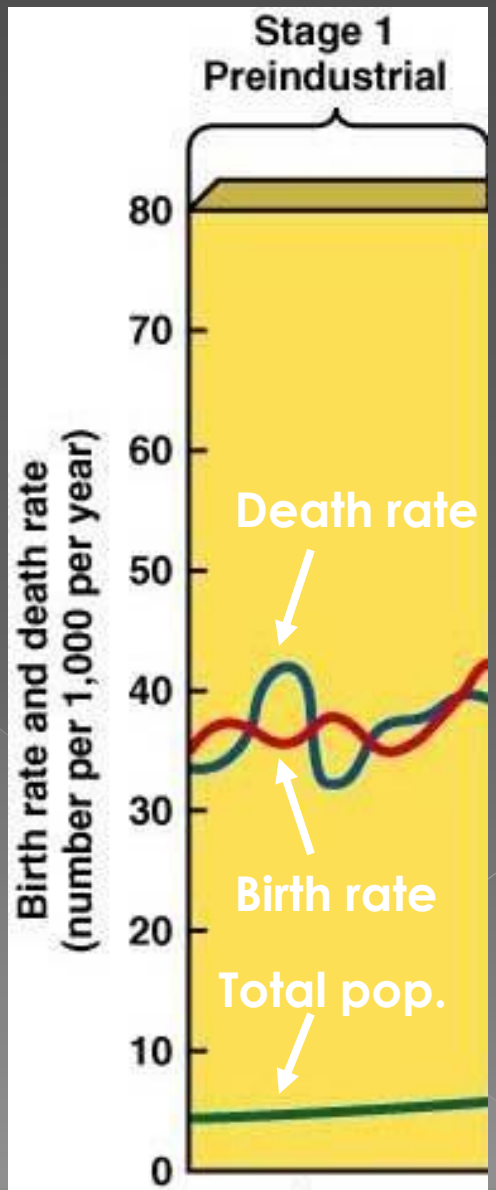
- Stage 1 : High Birth AND Death rates = little population change
- Stage 2 : Death Rates Fall, Birth Rates Still High = Population Growth
- Stage 3: Death Rates Low, Birth Rates Drop = Population Growth Slows
- Stage 4: Death Rates Low, Birth Rate Low = Population Declines

- DESCRIBE EACH STAGE: WHAT DO YOU SEE?

Demographic Transition

1) ***Preindustrial Stage:***

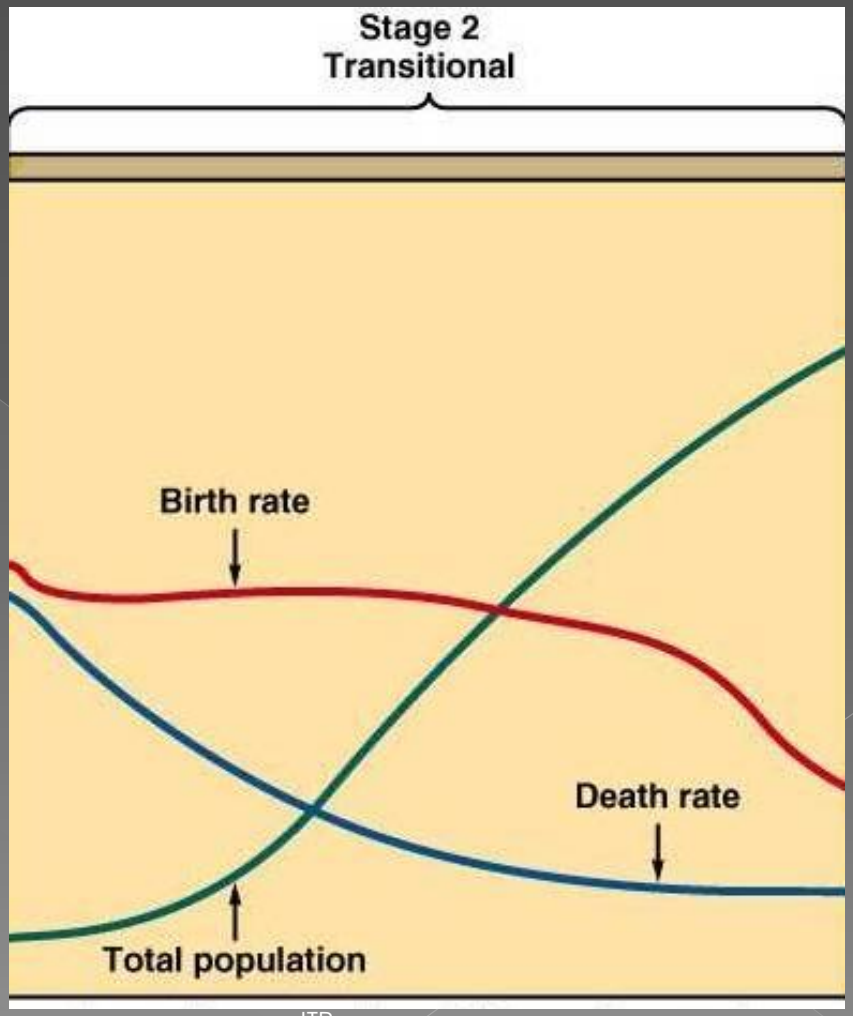
- *Birth rate and death rates are high & approximately equal*
- *population does not increase*
- *population size is small*



Demographic Transition

2) Transitional Stage:

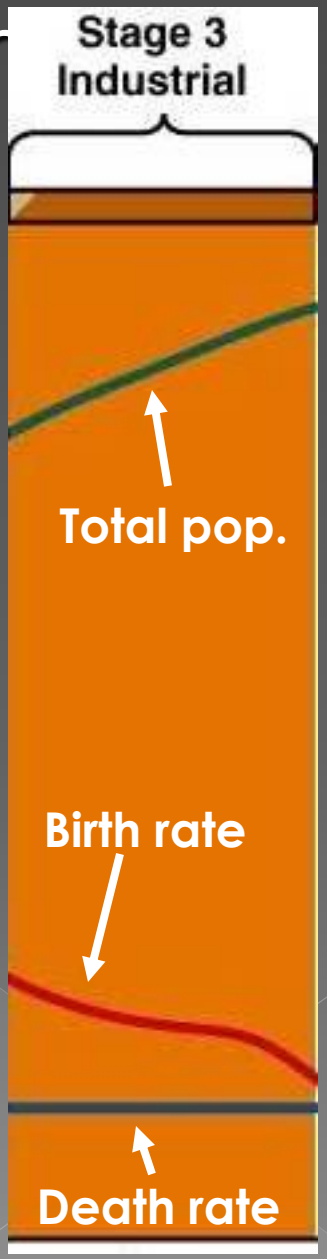
- *death rate decreases because of industrialization, increased food production, & improved health care*
- *birth rate remain high*
- *population grows rapidly*



Demographic Transition

3) Industrial Stage:

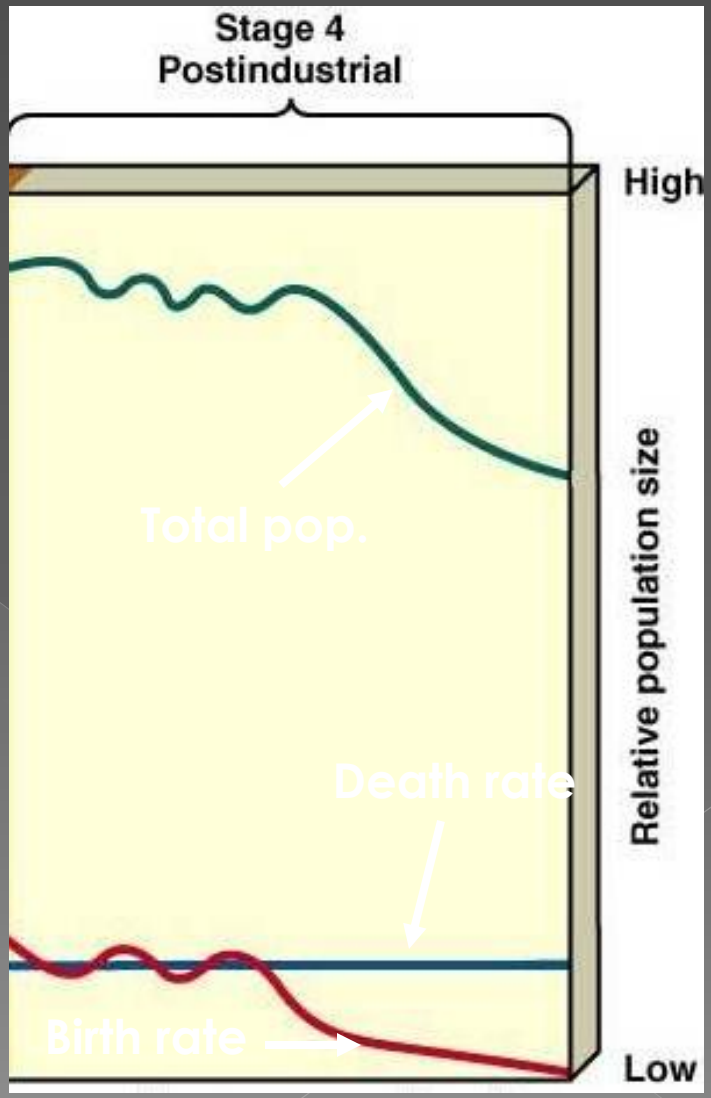
- *birth rate drops & eventually approaches a balance with death rate*
- *slowing of population growth*



Demographic Transition

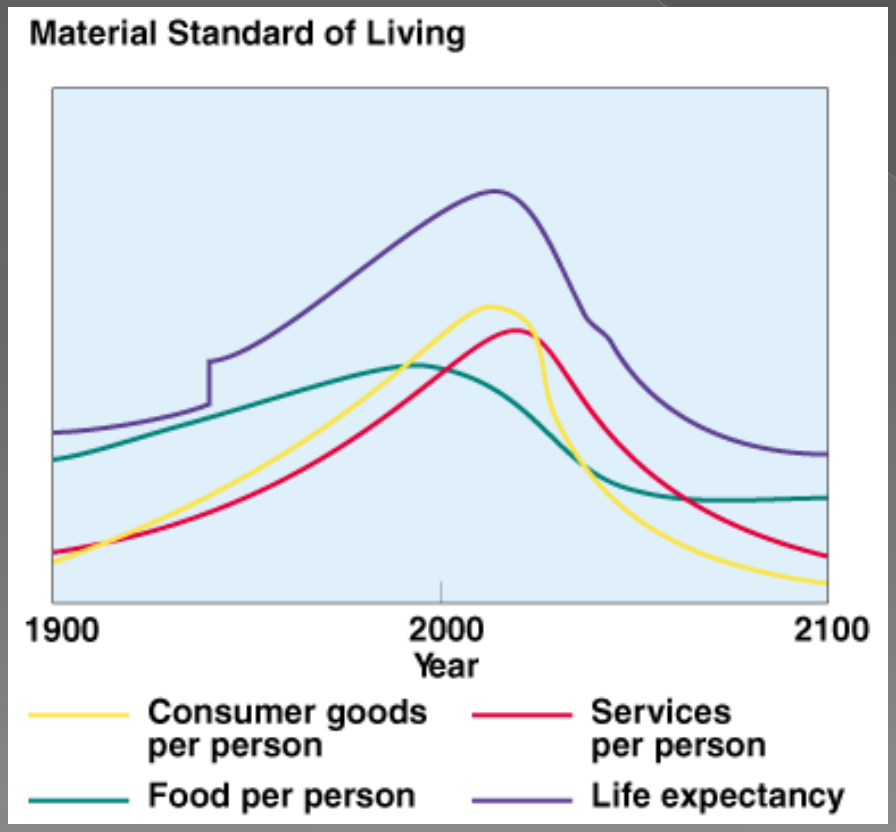
4) Postindustrial Stage:

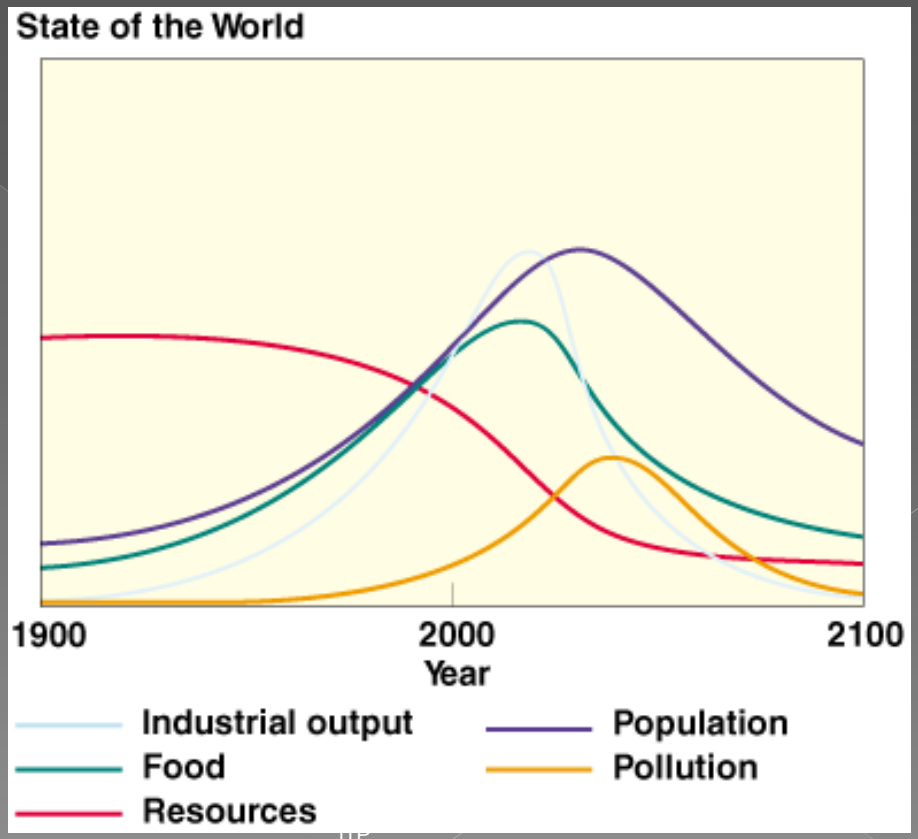
- *birth rate & death rates approximately balance*
- *zero population growth*
- *population stabilizes at a size much higher than the preindustrial size*
- *if birth rate declines below death rate negative population growth may even be attained*



Computer Models of Human Population

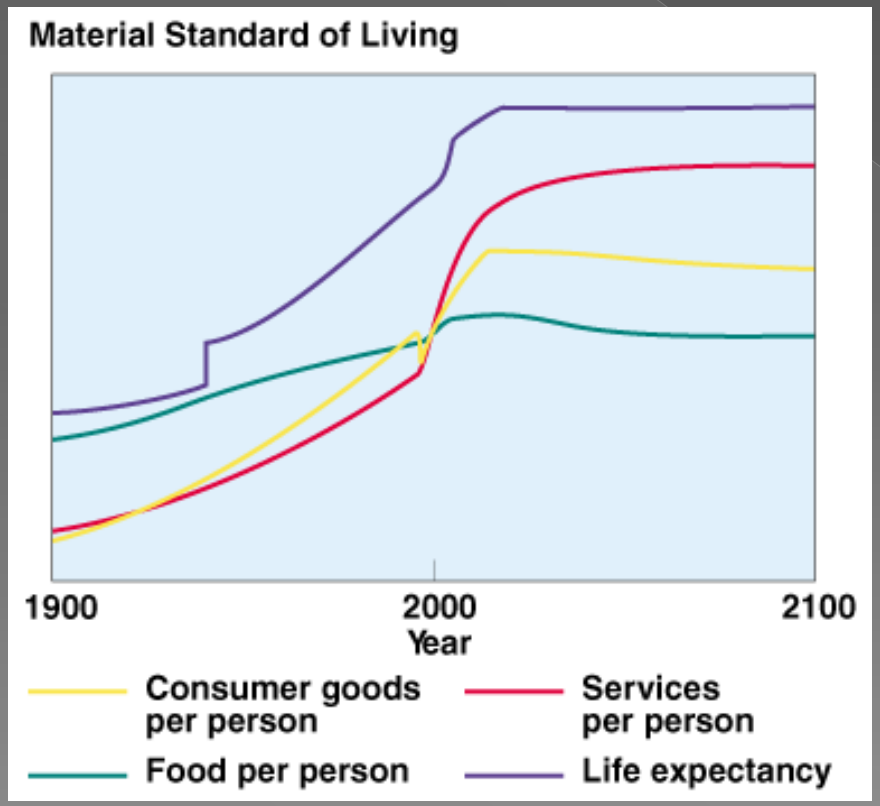
This computer model projects what might happen if the world's population & economy continue to grow exponentially at 1990 levels.

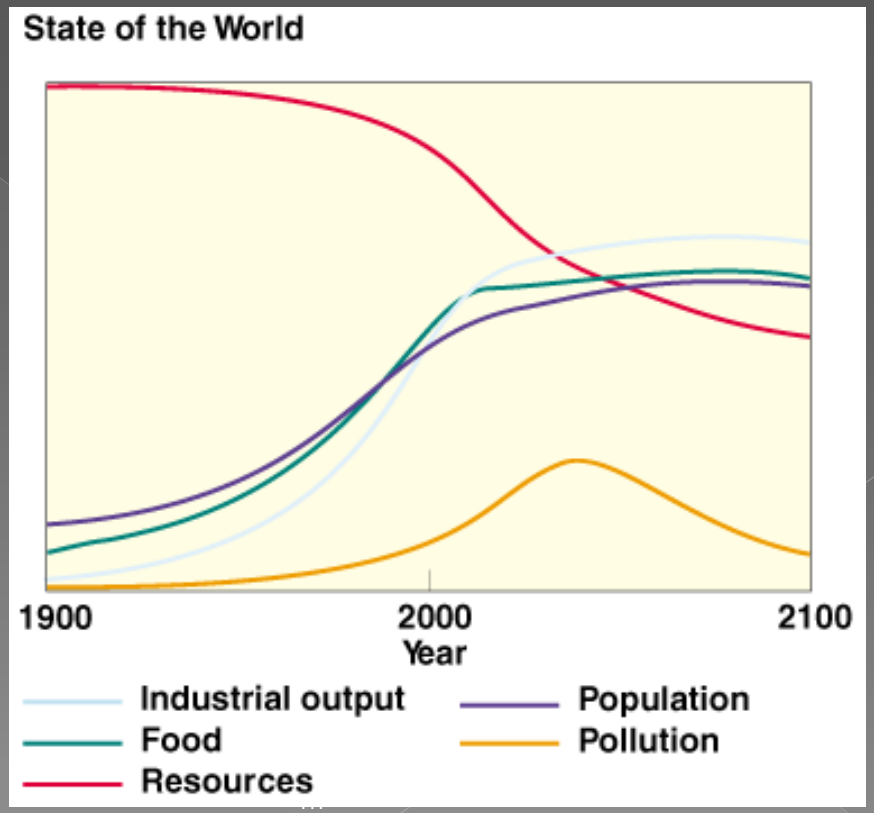




Computer Models of Human Population

This computer model projects how we can avoid overshoot & collapse to make a fairly smooth transition to a sustainable future by stabilizing fertility ***<u>at two children per couple</u>***.





HOMEWORK:

Chapter 11.3
The human population: growth and distribution