

Population Geography Course, by W. W. Munroe (2010)

Chapter 1 – Population estimates and forecasting

Main points: Current local and global population change.

Overview

This course explores three main topics, namely, 1) Humans, What are they and how many of them are there, where did they come from and what does their future look like; 2) the Earth, What is it, how is it different from other planets in the solar system, how did it spawn life, how does it work, and what does the future look like, especially with regards to human activity; and 3) Measurement, proportion, perspectives, how do we know things, science, what is it, distances both across time and space, and moving across scale.

The students described their interests and these formed the topics to be shared and examined. Interests included concerns about:

Human population growth exceeding Earth's carrying capacity; and concerns about human waste impacting the environment.

How do we achieve sustainability with the rapidly growing population?

Was Malthus correct, will we exceed Earth's carrying capacity?

Another student asked about which species will become dominate next and what about life forms like viruses.

There were also concerns about rapid population growth in poorer countries while the population of rich countries declines.

Early human migrations could be explored as well as contemporary migrations, and how was the local area settled?

Also, how do we predict populations and what confidence do we have in the numbers.

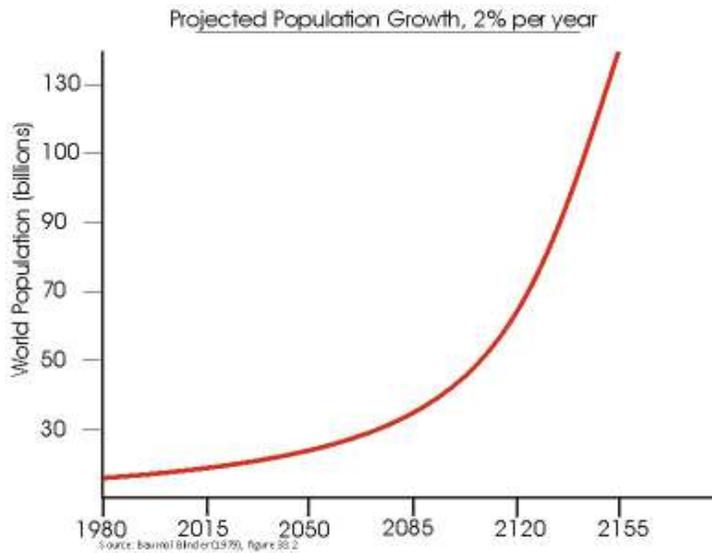
What can humans do to make a difference?

How can/will our policies change to address environmental impacts?

Chapter 1 -How many humans are there? What are the components of population change? What's the forecast?

In the 1960's, concern about over-population increased.

If the rate of population increase continued, there would be standing room only.



Components of population change

Natural Change – Births and Deaths – Infant Mortality

Births

Age of mothers and fathers

Concerns about over-population

Acceptance of birth control

Decline in birth rate

Deaths

Life expectancy

Death expectancy

Why do men die earlier than females?

Industrial – respiration – asbestos – ¼ of ...

“One out of four workplace deaths in British Columbia over the past three years resulted from exposure to asbestos. An additional seven per cent result from exposure to other chemicals, dusts and carcinogens. Three-quarters of the deaths in the 65-plus population result from workplace exposure to such harmful substances.”

Business in Vancouver March 8-14, 2005; issue 802 LIQUIDS#4398

An employee of a contracting company that was involved in the cleaning of a smelter boiler at Teck Cominco collapsed on the job and died on Tuesday.

Home renovations

War

Infant Mortality Rates – Indicators

High defence spending and high rural population combine to make a multiplicative effect

Destabilized area resulting from conflict in rural areas results in increased migration including migration of some people to the countries that sent in their troops.

Migration

Migration In

Migration by age and sex and other characteristics

Migration Out

Migration by age and sex and other characteristics

Migration Measures

Net migration

Gross migration

high turn over / weak social networks ; high use of public and private services
health and education

housing

Economic Cycles

Local and Global Population (see full article under the articles tab)

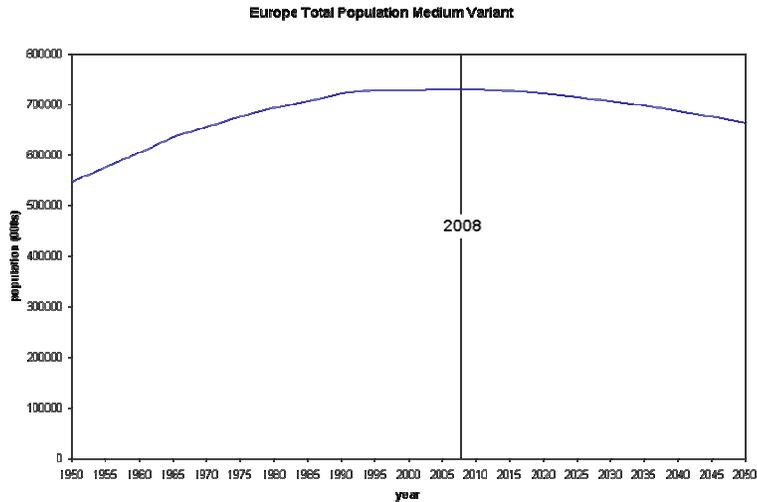
West Coast reverberations

Go forth, be fruitful, and multiply

Now we speak of conservation and sustainability

If North America were twice as wide with fresh water and coast like the Mediterranean Sea more places for pop growth people might still be talking of going forth and multiplying

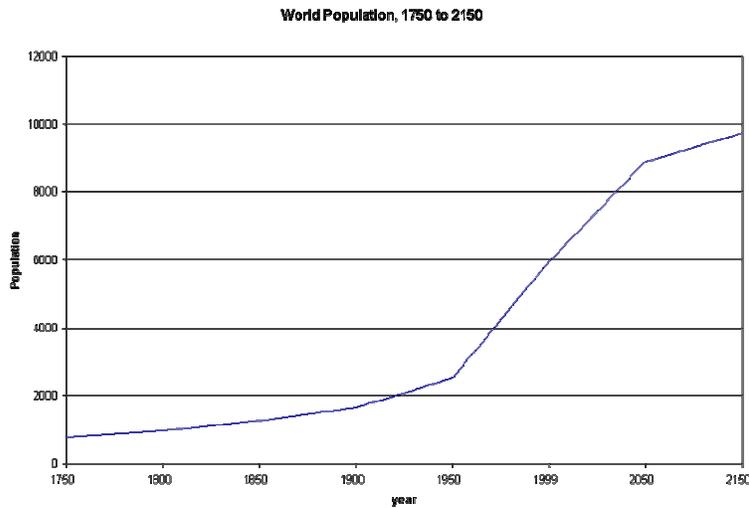
Chart – Marriage Change



Global 1750 to 2150 forecast

World population

Chart of World Pop est 1750 to 2150 by the UN



Continents

UN population forecasts for continents

Remove the largest continents one by one starting with Asia, then Africa, all the way until only Oceania is shown.

Here we can see that the idea of leveling out at or near the carrying capacity will likely occur in every continent.

We also see that population growth starts to increase at different times in different continents.

Population grew rapidly first in Europe and is leveling off and now declining as the birth rate declines and the death rate increases.

The rapid population growth over the last 250 years or so is attributable to industrialization.

The improvements in the tool kit increase ability to access and refine raw resources

North America followed with rapid population growth and is expected to level off in the next 100 years

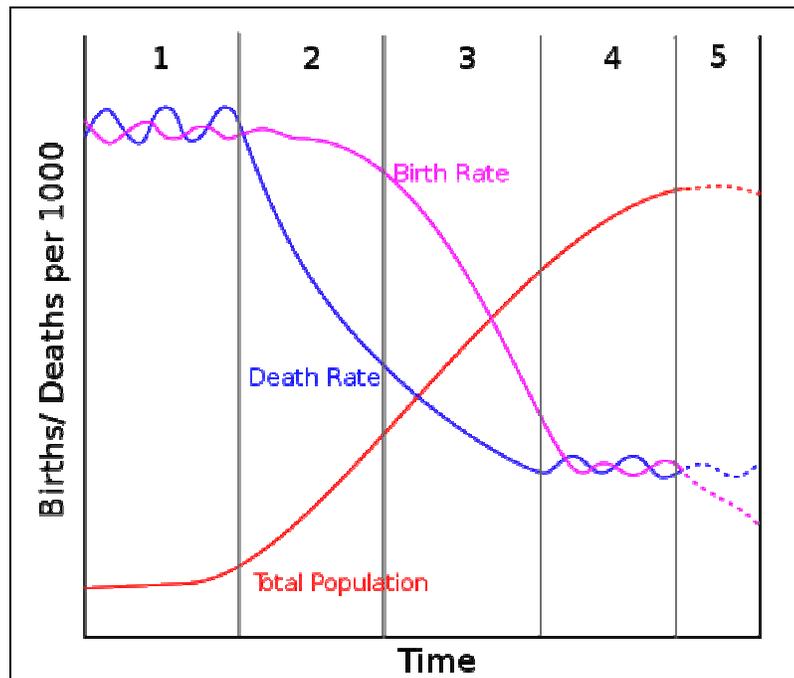
Currently, Asia and Africa are moving from an agrarian society to an industrial/urbanized society.

The UN does address HIV, making the population not grow as rapidly as would otherwise be the case.

Demographic Transition

Deaths drop while births stay high, followed later by a decline in births

Chart



Infant Mortality Rates decline

general indicator of social well being

rural and war

mass migrations

destabilization results in increased migration - distance decay - some make their way to Canada

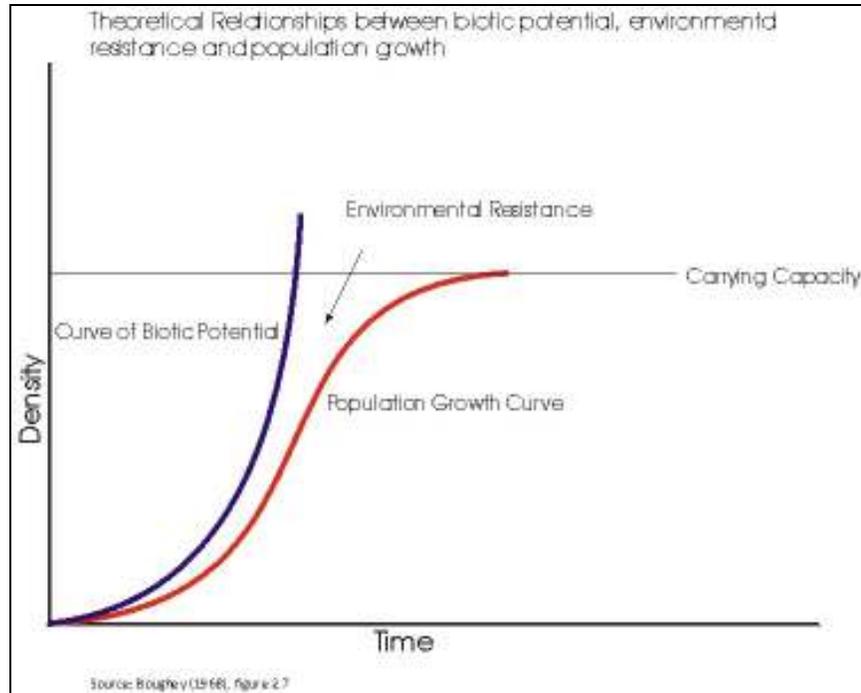
Births decline later

Pop increase

Biotic growth

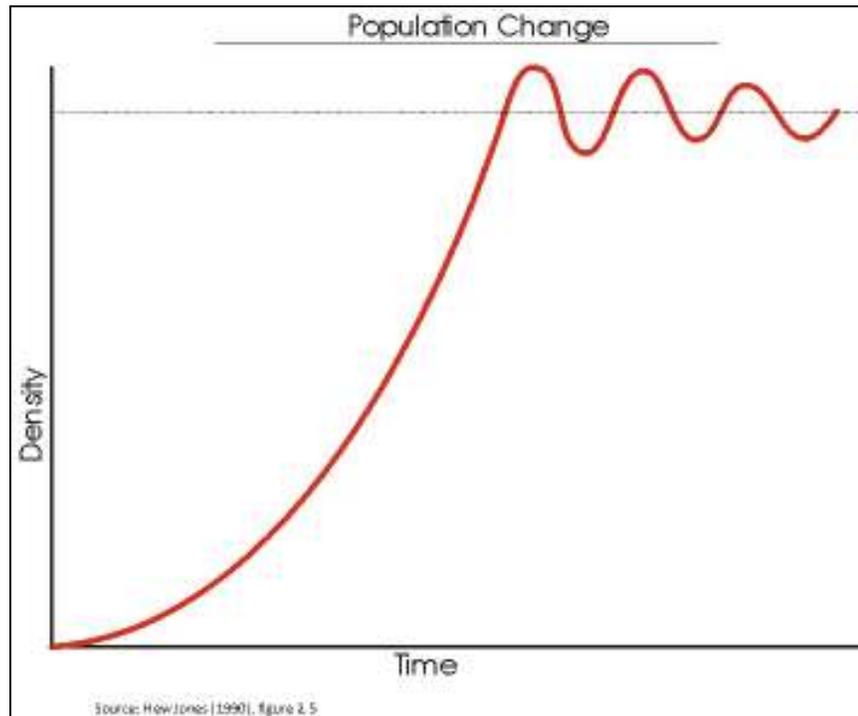
Reproduction

Chart



Environmental resistance

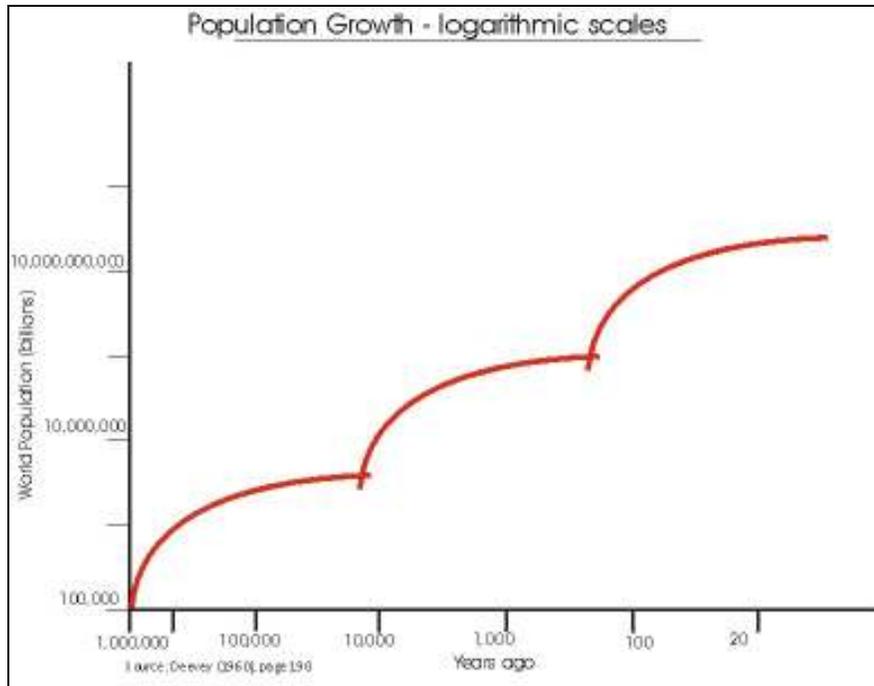
Carrying capacity hunting



Reasons for Population Growth

populations increase to meet the carrying capacity of the environment and are thought to stabilize in around the carrying capacity

human's population has grown when ability to access resources has increased.



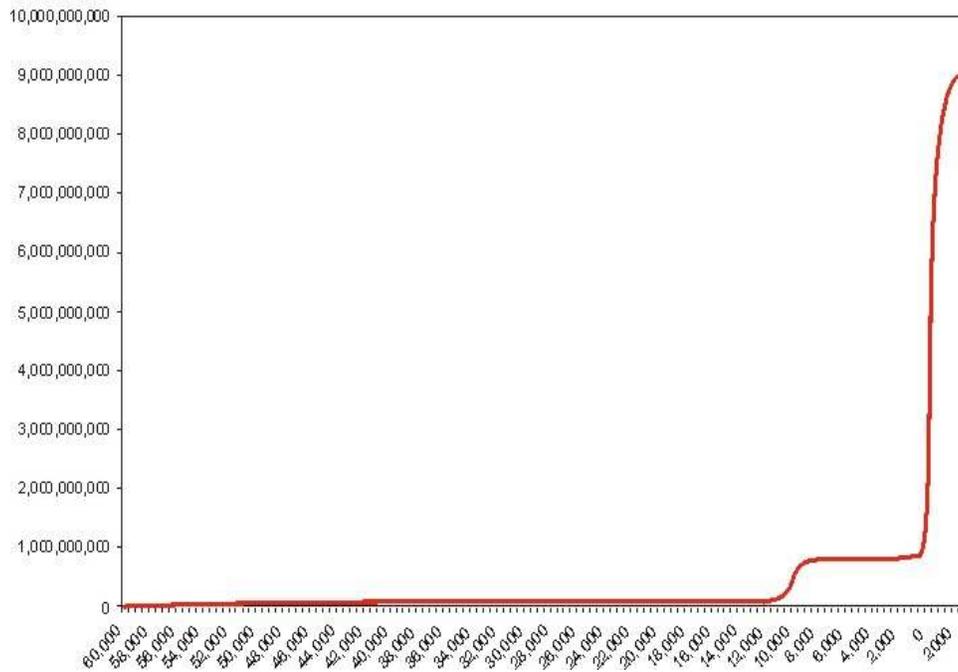
tools and techniques are refined to gain more inputs and therefore numbers increase

refined /improved hunting and gathering tools allowed the population to grow from ~10,000 people 60,000 ya to 10,000,000 people 10,000 ya

Then when flora and fauna were domesticated, the population grew again to an estimated 800,000,000 people, 500 ya

Recently, the industrial revolution has allowed greater access to resources and intensification of agricultural activity, resulting in an increase of population to 7,000,000,000 by 2013

Human Population Growth 60,000 years to 2500 years into the Future



UN forecasts 9 billion people by 2300.

Urbanization

Growth explained by refinements in tools and techniques

Growth to stability around carrying capacity

Recent growth dwarves previous growth surges

Rapid growth with industrialization

Death drops – imr, births stay high then drop

Refinement of raw resources for human use

Distribution, access routes

Specializations health care education utilities agriculture manufacturing

Waste

Human Impacts on the Environment

CO2

Acid rain, mineralization of water bodies

impacts nitrogen plumes growth death oxygen fixes to carbon removing oxygen from the water

Industrialization

First began in Europe, and North America,

75% agriculture to >25% since the second world war

Agriculture large scale, mechanized, intense, major large important impacts

Now transition occurring in Asia

Rural to urban

UN - The global proportion of urban population rose from 13% (220 million) in 1900, to 29% (732 million) in 1950, to 49% (3.2 billion) in 2005. The figure is likely to rise to 60% (4.9 billion) by 2030.[4].

middle of 2007, the majority of people worldwide will be living in towns or cities, for the first time in history; this is referred to as the arrival of the "Urban Millennium" or the 'tipping point'.

Future

It is estimated 93% of urban growth will occur in developing nations, with 80% of urban growth occurring in Asia and Africa.[6][7]

<http://en.wikipedia.org/wiki/Urbanization>

Fossil fuels

Spheres of influence:

MIZ

proximity to the core

spheres of influence

urban / rural / fringe

Policy making

Policies and actions to address issues

CFC

Carbon trading

conditions for life may vary

Population Forecasts

Add your own scenarios

interruptions in fossil fuels

mass extinctions

cascading, domino, collapse through agriculture

biotic potential, environmental resistance.

Were there mass extinctions. When why?

Before looking at Earth and life and population change, let's look at how we know including what is science, perspective, proportion, and weighting.