**Human Population Notes**

**Vocabulary**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: All the members of a species living in the same place at the same time.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: Number of individuals per unit area per volume.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** Relative distribution or arrangement of its individuals within a given amount of space.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: Average number of children each woman has over her lifetime

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: A fertility rate that will *just* replace a women & her partner

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** Number of deaths (infant mortality – infant deaths per thousand live births)

**Population Explosion**

* Population growing at nearly 80 million people per year!
  + Beginning of human history to 1800s – slow population growth
  + 1830 – world population was 1 billion
  + 1930 – world population doubled - 2 billion
  + 1960 – world population at 3 billion
  + 1975 – world population at 4 billion
  + 1999 – world population at 5 billion
  + 2008 – 6.7 billion people
* Putting the numbers in perspective:
* Each time your heart beats, 3 more people are added to the world -OR- Each time a person dies, 2.8 babies are born

**Reasons for the Explosion**

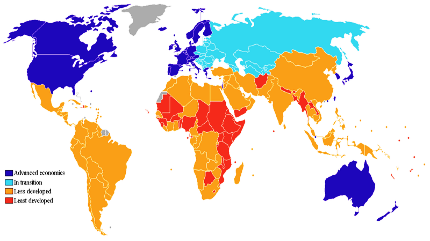
* Prior to 1800s populations were kept in check by
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (smallpox, measles, scarlet fever)
    - Infants/children died often
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of diseases (black plague, typhus, cholera)
* 1800s and on –
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ advances were made, discovery that diseases were caused by infectious agents (bacteria, viruses, parasites)
  + Improved hygiene
  + Technology
  + Medicines (penicillin – 1930 & other antibiotics)
  + Better sanitation
  + Knowledge of nutrition

Overall:

* Better recruitment resulted from declining infant mortality rates
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rates decline:
  + Improvement in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ increased production and better food distribution and storage
  + Public health measures \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sanitation practices, clean drinking water, mass inoculations

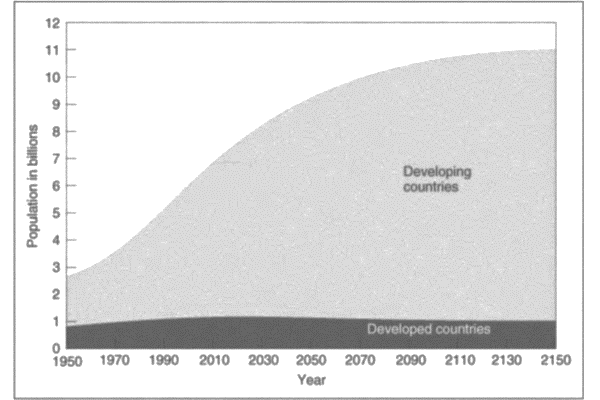
Note: Human populations may overshoot the earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because of our ever increasing use of technology. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is allowing us to change the environment, extend the average lifespan and help those that would have normally died live.

**Rich & Poor Nations (Developed vs. Developing)**

* 3 Classifications for Countries
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, highly developed, industrialized countries
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, moderately developed, countries
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries
* Developed Countries
  + High-income, highly developed, industrialized -globalized countries
  + 20% of world’s population / 80% of world’s wealth
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ birth rates
    - Low to negative growth rates
    - Increased \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rates per person
    - Negative environmental impact due not to numbers but affluence.
      * Consequences of affluence
        + Greater contribution per person to global pollutants, carbon dioxide, ozone depletion chemicals
        + Food consumption high on biomass pyramid - fewer people can be supported
        + Waste production high fuel inefficient transportation & throwaway consumer goods.
  + US, Canada, Japan, Australia, New Zealand, western Europe, Scandinavia, Israel, Singapore
* Developing Countries
  + Middle-income, moderately developed & low-income countries
  + 80% of world’s population, 20% of world’s wealth
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ birth rates (these rates have decreased in the last 20 years)
    - Moderate to high growth rates
    - Low consumption rates per person
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ environmental impact due to numbers not affluence
      * Consequences of population size:
        + Subdividing farms and intensifying cultivation
        + Opening up new lands for agriculture
        + Migration to cities
        + Illicit activities
        + Emigration and immigration
        + Impoverishment of women and children
  + [](http://upload.wikimedia.org/wikipedia/commons/3/38/Developed_and_developing_countries.PNG)Middle – Latin America, northern & southern Africa, eastern Asia, eastern Europe, former USSR, China & India are shifting
  + Low – eastern, western, central Africa, central Asia
* Compare & Contrast

|  |  |
| --- | --- |
| Developed Countries | Developing Countries |
|  |  |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **World Consumption Classes** | | | |
| Category of Consumption | Rich  (1.2 Billion) | Middle  (3.6 Billion) | Poor  (1.2 Billion) |
| Diet | Meat, packaged food, soft drinks | Grain, clean water | Insufficient grain, unsafe water |
| Transport | Private Cars | Bicycles, buses | Walking |
| Materials | Throwaways | Durables | Local biomass |

**Population Growth: Developed vs. Developing Countries**

* 99% of the world’s population growth is occurring in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries!
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rates dropping in developed and developing countries, *but* are still much higher in developing countries.
  + 2.1 in developed countries
  + 3.2 in developing countries (these countries populations will double in just 20-40 years at this rate)
* By 2075 it is expected that 90% of the world’s population will be in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries

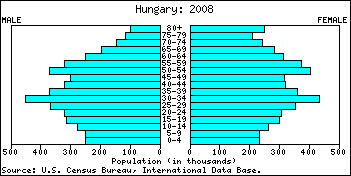
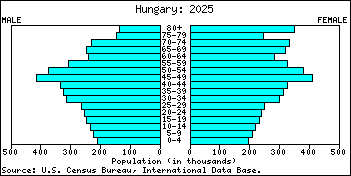
**Environmental Impacts: Developed vs. Developing**

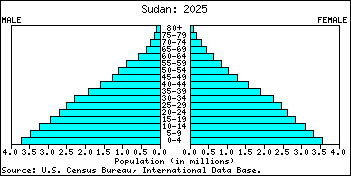
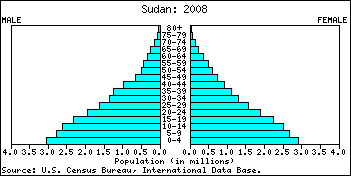
* The impact that each individual will make on the environment depends on the level of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ needed for consumption
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ impacts on the environment will increase as consumption increases
* Developing Countries
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the industrial revolution developing countries:
    - Relied on subsistence agriculture (grow only what is necessary to survive)
    - Families lived on the land
    - Natural forests provided energy, housing materials, and habitat for wild game (meat)
    - Agricultural practices were passed from one generation to the next
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Industrial Revolution developing countries:
    - Were introduced to modern medicine (vaccines & antibiotics)
    - Death rates dropped
    - Populations grew rapidly
  + 5 things happened as a result:
    1. Farms were subdivided among children
    2. New lands were opened up to farm
    3. People moved to cities for employment
    4. Illicit activities increased for income
    5. Emigration to other countries (legal & illegal)
* Impoverished Woman & Children
* Men take little to no responsibility for women they get pregnant or their children that are born (very few welfare systems)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forced to beg & steal
* 20 million “stray” \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the cities of developing countries
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ child labor, child prostitution, selling children for adoption
* Vicious cycle of illiteracy & inhospitable living conditions
* Consequences of a Population Explosion in Developing Countries
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:
* Clean drinking water, sanitary sewage systems, sewage treatment, collection & disposal of refuse
  + Results in: decreased pollution
* Affordable gas & electricity
  + Results in: not destroying woodlands for firewood
* Affordable/better agricultural practices
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Use large quantities of fossil fuels (coal, oil, natural gas)
  + Results in: U.S. producing ~25% of CO2 emissions (only 4.5% of world’s population)
* Use/Used large quantities of CFCs (chlorofluorocarbons) that degrade the ozone layer.
  + Results in: whole in ozone layer; more UV rays to earth
* Emissions of sulfur & nitrogen oxides
  + Results in: Acid Rain
* 86% of private consumption/80% of world trade
  + Results in: 11 of the 15 major fisheries are fully exploited or overexploited, old growth forests are clear cut for paper products/furniture/etc, oil spills/drips, illegal species trade
* Waste disposal at distant locations
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (not in my backyard)
* Obtaining resources from distant locations

**Dynamics of Population Growth**

* To determine population growth, look at:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Population Profiles/Histograms
  + Bar graph that shows the number or proportion of people at each age for a given population
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the proportion of people in each age group at a given date

**Histograms**

 Developed Countries = Slow to No Population Growth

Developing Countries = Fast or Very Fast Population Growth

**Population Projections**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Technique:
  + Estimating population growth/decline. Subtract deaths from births = absolute change in the size of the population
* Estimating \_\_\_\_\_\_\_\_\_\_\_\_:
  + Multiply the number of women of reproductive age by the percent who have babies.
* Estimating \_\_\_\_\_\_\_\_\_\_\_\_:
  + Use insurance companies life insurance data (not reliable in developing countries)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Low fertility rates
  + Less than 20% of population below 15
  + Population “Graying” – proportion of elderly people is increasing
  + Populations slow down & stabilize. Some countries are seeing a decline, what does this mean for their country?
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Fertility rates are generally dropping, but still well above replacement level (~3.2)
  + Histograms typically have a pyramid/triangle shape
  + Have very young populations
  + 40%-50% of population is below 15 years old
  + Massive population growth
    - More schools, housing, hospitals, roads, sewage collection, energy, etc
  + Example Iraq:
    - By 2025 population will increase from 23 to 40 million. Housing and all other facilities will have to be doubled in 25 years.

**Population Momentum**

* When a population continues to grow even after the total \_\_\_\_\_\_\_\_\_\_\_\_\_ rate is reduced to the replacement level.
* B/C there is a very small proportion of the population in the upper age groups where deaths occur, but a very high proportion of the population entering their reproductive years.
* Only a population at or below replacement level for many decades will achieve a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ population.

**The Demographic Transition**

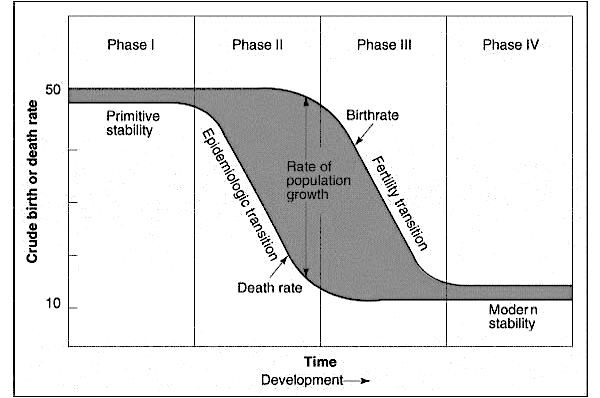
* As economic development occurs 🡪 society moves from primitive population stability (high birthrates & high infant mortality) to modern population stability (low birthrates & low infant mortality)
* *Modernization leads to a decline in birth & death rates!*

**Birth & Death Rates**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (CBR): number of births per 1,000 of the population per year
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (CDR): number of deaths per 1,000 of the population per year

* Divide this number by 10 and you have the percent rate of growth.
* Stabile population has equal CBR & CDR

**Doubling Time**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (# of years it takes to double the population)
* To determine – divide the percentage rate of growth into 70.
* Example:
  + World Population Data from 2000:
    - CBR = 22
    - CDR = 9

**Phases of Demographic Transition**

* 4 phases
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: primitive stability – high CBR offset by high CDR
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: declining CDR (epidemiologic transition), high CBR, population growth
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: declining CBR, still declining CDR, population still growing
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: modern stability, low CBR and low CDR