Analyzing Population and Migration

Parts taken from the 2012 AP Princeton Review Human Geography

Basic Population Statistics

- Birth Rate

- Death Rate

- Rate of Natural Increase(RNI)

- Total Fertility Rate

A Flaw in the 'Natural' Increase

- Does not account for immigration or emigration
  - A country with a high RNI can have a low long-term population if there is a large amount of emigration
  - A country with a low RNI could grow if there was high immigration
- Statistics state that migrant populations have much higher fertile rates than the general population already living in the country
  - EX: The United States; population growth isn't necessarily from immigrants crossing the border, but the fact that they will have children in the United States after they have settled

A Better Way to Estimate RNI

- A more accurate way to calculate would be by examining a country's position on the Demographic Transition Model
  - By multiplying each year's population by the RNI and add that to the next years growth would be a better approximation
    - (Population x RNI_1) x RNI_2 x RNI_3 … x RNI_n = Future Population
  - This is the same method used to estimate the value of a currency multiplied by annual inflation rates to find the real dollar value over time

The Demographic Transition Model
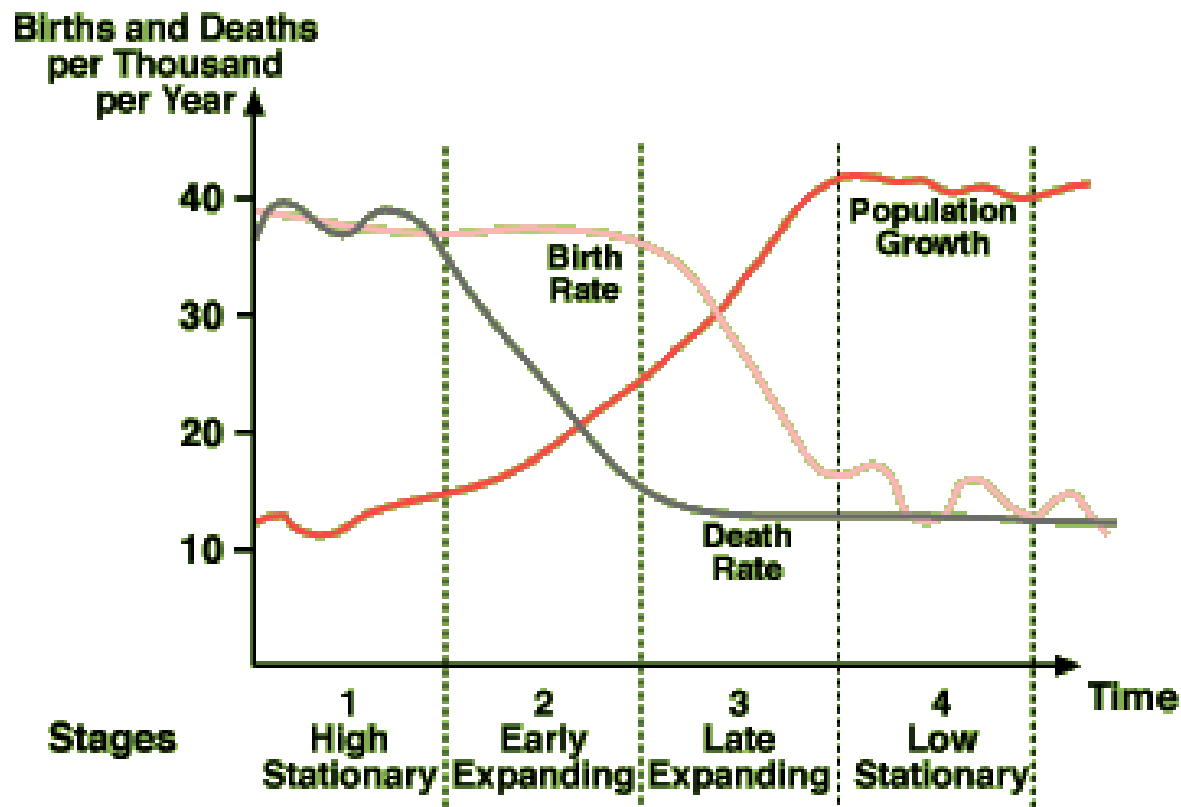
The Big Picture

	Birth Rates	Death Rates	Life Expectancy	RNI
Stage One	High(25-50)	High(25-40)	Low(33-50)	Low-Moderate (-.1-1.9%)
Stage Two	High(25-50)	Decreasing (8-25)	Increasing(<70)	Highest (1.5-3.5%)
NICs	Decreasing (12-30)	Lowering(5-18)	Increasing(<75)	Higher (1.1-2.7%)
Stage Three	Lowering (12-20)	Low(5-12)	Higher(<78)	Lowering (.5-1.2%)
Stage Four	Low(8-16)	Low(5-12)	Highest(<82)	Low to Negative (.8 to -.6%)

The Big Picture
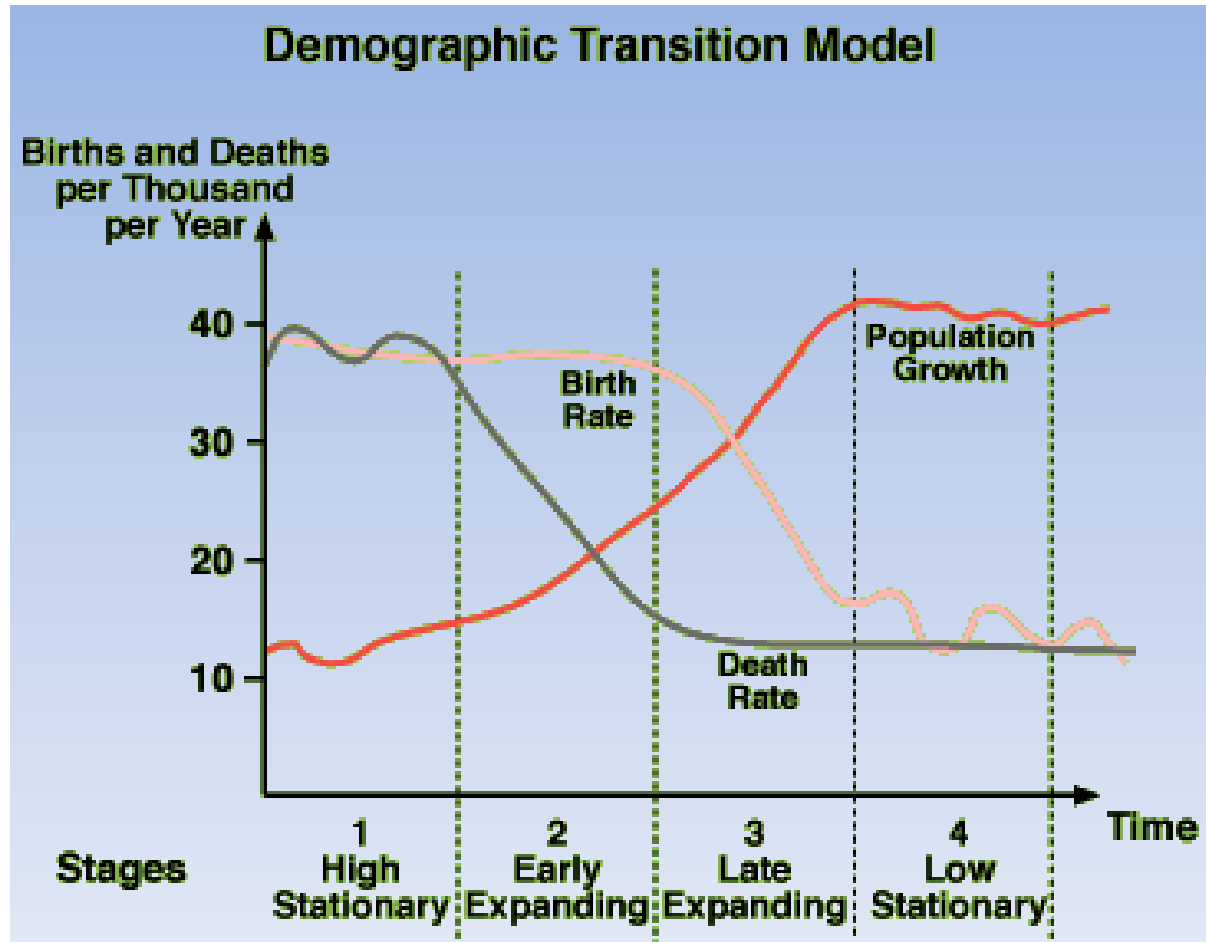
Malthusian Theory

- Thomas Malthus published *An Essay on the Principle of Population* in 1798
  - Predicted that the global population would one day expand to the point where it could not produce enough food to feed everyone
    - He predicted this would happen before 1900
- Why this idea?
  - UK was engaged in the Industrial Revolution and people were being born at a high rate
  - Britain was moving from stage two to stage three on the DTM
    - Malthus saw massive migration to the cities and enormous population growth
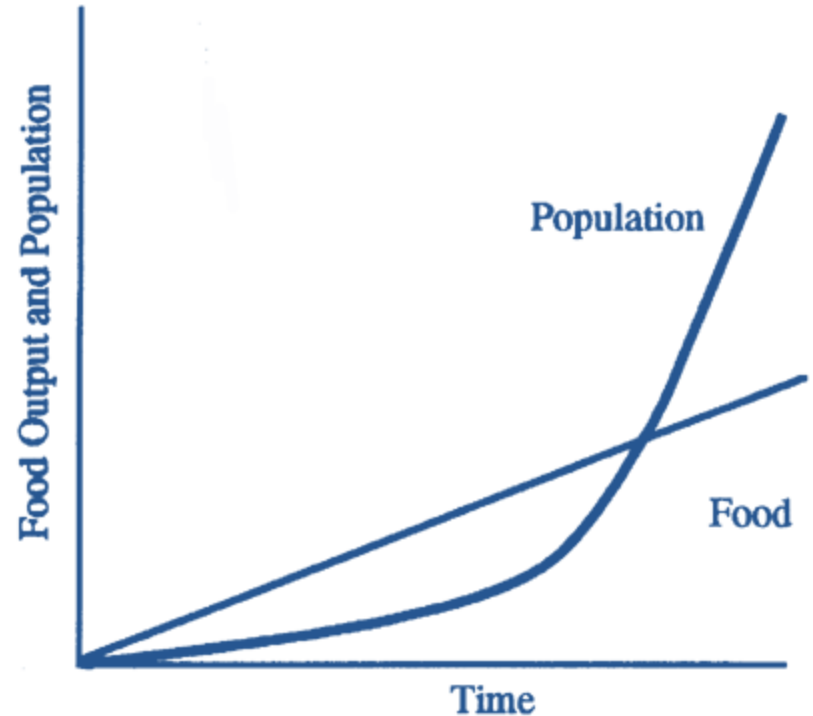
Mathematically

- Malthus saw that food production grew over time, but slowly linear
  - Meanwhile, human population grows exponentially
    - Population is the J-Curve of exponential population growth
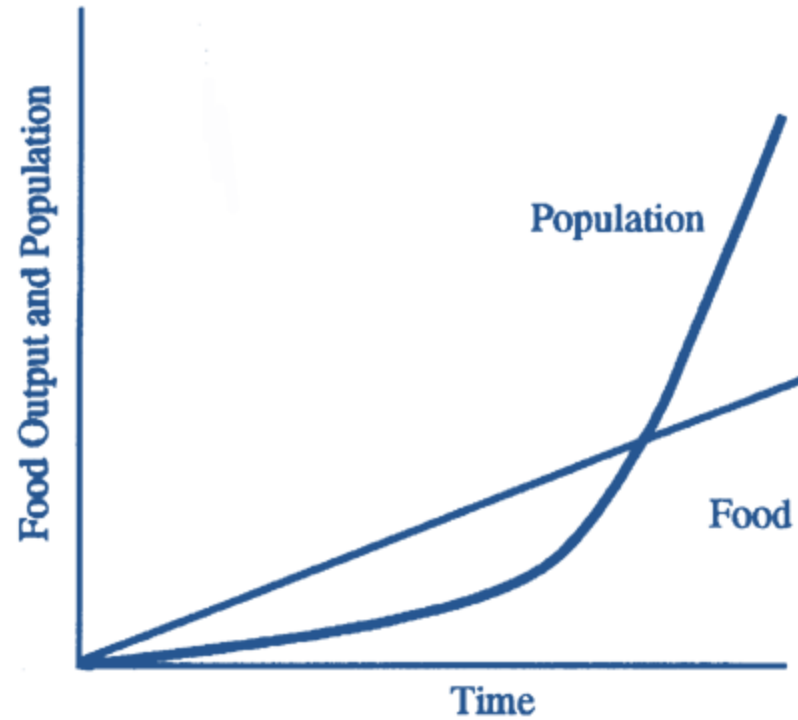
What Happened, Instead?

- Agricultural technology was going to boost food production in multiples in the 1800s
  - By 1900, inventions such as the internal combustion engine, artificial fertilizers, pesticides, irrigation pumps, the tin can, and the refrigerator would increase food production/storage
- A large volume of food would be added to global production and supply
  - Food production has continued to stay ahead of population growth

Genetics

- In the early 1800s, Gregor Mendel was the first to research/write about genes and plant reproduction
  - Genetics did not make an impact on global food production until the 1950s, and genetically modified food did not enter the markets until the 1980s
- When asked why Malthus was wrong, do not mention genetics, since that has only affected food production in the recent years

Neo-Malthusians

- Three Important Points
1. Sustainability- When the world does reach 10 billion people, there may be problems keeping up with food demand over the long-term
   - Many agricultural regions already have significant ecological problems
     - Soil erosion and soil nutrient loss and in arid regions, depletion of irrigation sources and soil salinization
2. Increasing Per Capita Demand- The amount of food consumed per person is increasing
   - First World consumers consume around eight times more the amount of food and resources that a Third World consumer consumes
     - As Third World countries develop, more food and resources are consumed
3. Natural Resource Depletion- Theorists like Paul Ehrlich have also warned about our over-consumption of other resources such as timber, minerals, energy, and other nonrenewable resources
   - We need to conserve and look for alternatives so that we can stretch out supplies over time
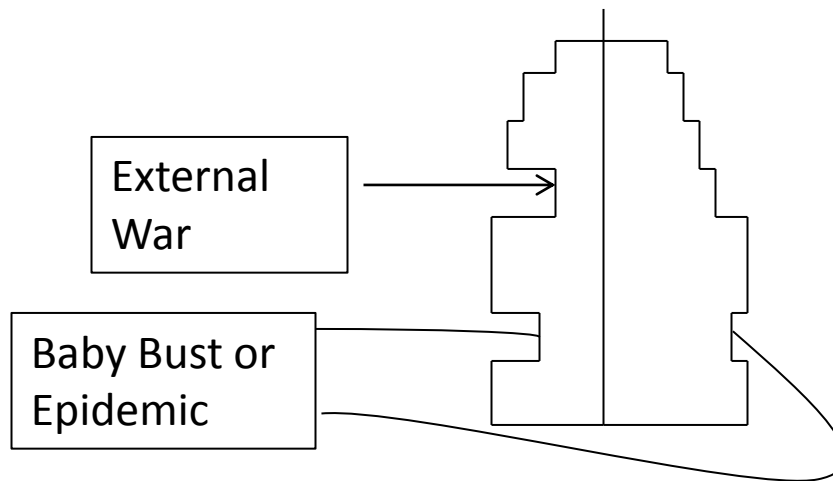
The Population Pyramid

- A graphical way to visualize the population structure of a country or place
- Show gender and age distribution of the population
- The shape of the pyramid can show a country's level of economic development

- General Principles
  - Males are on left side; females right
  - Each bar is an age cohort, made of five year sets
    - EX: 0-4,5-9,10-14
  - The origin of each graph is in the center and increases in value the further outwards from the center
  - The single colored bar right or left of the origin is an age-sex cohort, with one gender of that age group
  - A gap in the male cohort, but not in females of the same age group is usually the sign of a previous external war
  - A gap for both sexes means that there was a past war in the country, or epidemics, or famines
  - X-axis shows *percent* of entire population
  - Y-axis shows *number* of people in the age-sex cohort

Characteristics of Places with these common shapes of the Population Pyramid
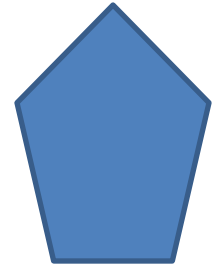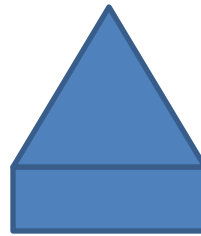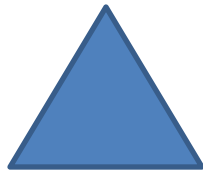
Shape:	Triangular	Extended Triangle	Column	Reduced Pentagon
Growth:	Fast-Growing	Moderate Growth	Slow Growth	Shrinking
Examples:	Laos, Mozambique	Mexico, Brazil	USA, Uruguay	Germany, Hungary

Gaps and Busts

The Top

- Elderly Citizens
- Increased mortality and old age cause a significant decline in elderly population
- Male side of the pyramid decreases quicker than the female side
  - Females live on average 4-5 years longer than males

Population Density

- Two main ways to calculate population density
  - Arithmetic density is the number of people per square unit of land
    - Most island nations and microstates have extremely high arithmetic densities
    - Other countries that are known for their high arithmetic densities are India, Bangladesh, Japan, and South Korea
  - Physiologic density is the number of people per square unit of farm land
    - More practical tool in understanding the sustainability of a population of a certain region or country
    - Limits can include overcrowding on farms or lack of abundant farming regions due to geography
      - Iraq, Egypt, Uzbekistan, and Pakistan are all arid countries that have narrow farming regions around rivers and deltas
      - In countries such as the US and China, arable land is in the eastern third of the country while the west contains mountains and desert regions
        » These physiologically dense farming regions have forced populations to be squeezed into cities or westward onto grasslands and arid regions to expand agriculture to new areas

Population and Sustainability

- Across the ecumene, the living space of humans on the earth's surface, there are certain limits to how many people an environment can support
  - Some regions support human settlement better than others
    - EX: Grasslands can support more people than deserts
  - More people are moving into arid regions
  - Dry regions will eventually lose sustainability, but we cannot predict when
- Overpopulation is a concern for all regions
  - Certain resources such as clean water, endangered plant and animal habitats, and nonrenewable energy sources like oil will be depleted unless conservation efforts and population control methods are not taken into effect
  - Many theorists have expressed a desire for large-scale family planning and contraceptive programs
    - These ideas are generally rejected based on religious beliefs
  - If there is overpopulation, personal space will decrease and this can cause social unrest and armed conflicts
    - Think of a zoo; animals don't like to be crowded. Neither do humans
- To achieve sustainable resources for use in the coming decades, global programs that enforce recycling, energy conservation, farming practices, and a reduction of personal consumption are believed to be necessary

Migration

- Many different types
- Inter-regional or internal migrants move from one region of the country to another
  - Rural-urban migrants
- Intraregional migrants move from one area to another within the same region
- Transnational migrants are people that move from one country to another
- Humans move for many reasons
  - Several theories to explain why
    - Internationally, human capital theory of migration implies that humans take their human capital(education, job skills, language skills, etc…) to a country where they can earn a higher profit
    - Higher levels of human capital increase the expected net gain from migration
      - This flow of human capital causes wages to fall in the destination country while increasing wages in the sending country
      - Migration between two countries stops when the expected net earnings and costs of migration are the same

Migration

- General voluntarily, but there are forced migrations
  - People that are forced to move by war, disasters, or fear of government repression are known as refugees
    - Some countries have programs to receive refugees from other countries and grant them asylum temporarily or even permanently
      - Host countries face economic burdens from supporting extra people
      - Basic nutritional and sanitation needs are barely met if the host nation is a developing nation struggling to provide for its own people
    - People seeking refuge that do not have government authorization are viewed as illegal immigrants
      - Some countries have amnesty programs allowing illegal immigrants the opportunity to apply for official citizenship without facing arrest or deportation

Various Migrations

- Step Migrations are when people move up in a hierarchy of locations, with each move to a more prosperous location
  - Intervening opportunities for work and economic improvement will increase the migrant's distance traveled
- Chain Migrations are when a pioneering individual or group settles to a new place, establishing a new migrant threshold
  - The migrant provides information on employment opportunities, access to markets or social networks, and encourages others to migrate to the location
  - More and more people move and a growing immigrant community is started

Cyclic Movements and Remittances

- Migrants who migrate purely for employment purposes have a cyclic movement from place to place
  - For transnational labor migrants, foreign employees work for a limited period of time before returning to their home country
    - This is sometimes called periodic movement if it is on an annual or seasonal basis
      - EX: agricultural workers coming from Mexico to the US for different harvest periods, then coming home to return to their harvest on family farms
    - The receiving country benefits from the inexpensive labor into their economy
      - Socio-economic cost of receiving this flow of immigrants includes crime, unemployment, the social welfare burden, and national security concerns
    - The loss of skilled workers in sending countries poses a problem
- The largest positive economic effect of migration is the sending of remittances
  - Remittances are monetary and other cash transfers sent from transnational migrants to their families and communities back home
    - Remittances create a positive impact in the migrant's home country

Push and Pull Factors

- NICs experience rapid internal rural-to-urban migrations
  - Employment at urban manufacturing locations seems to be the main intervening opportunity for internal immigrants
- Push Factors are things about the rural agricultural landscape and livelihood that force people out of the farms
- Pull Factors are things about cities that draw people to the urban landscape
- The opposite of a pull factor is NOT a push factor

Examples

- Push Factor: Armed Conflicts
  - When conflicts emerge in rural areas, many people flee and become refugees to the safety of cities
- Push Factor: Environmental Hazards
  - Over usage of agricultural chemicals can poison soils and water supplies
  - Improper use of pesticides can lead to birth defects in children
  - Natural Disasters are also push factors
- Push Factor: The High Cost of Land
  - In NICs, land prices increase
    - Farmers who have owned land may have the opportunity to sell their land for more money than several years of harvests
      - This money could be used for migration
- Pull Factors
  - Mainly employment related
  - Pull of Services such as medical care or education are also substantial pull factors
    - Media can even be used as a pull factor
  - Clean water is not considered as a pull factor since there are cases where the rural population has less contaminated water than the urban population