

APES Tutoring Review



Day 3- Human Populations

Population Growth

- Natural Rate (NR) = birth rate (b) – death rate (d)
- Population Change = $(b/1000 + \text{Immigration}) - (d/1000 + \text{emigration})$
- Natural rate of population change = $b-d/1000 \times 100$ OR $b-d/10$
- ***Doubling Time = 70/rate of growth***
- ***Crude birth rate*** = number of live births per 1,000 people in a population in a given year.
- ***Crude death rate*** – number of deaths per 1,000 people in a population in a given year.

Fertility Rate

- ***Total Fertility Rate*** (TFR) – estimate of the average number of children a female will have during reproductive years (15-45).
- **Why Are TFR's So High In Africa?**
 - No government supported family planning.
 - Low literacy rate among woman.
 - Few economic roles for woman.
 - Woman's rights
 - Poor health care for mothers/mothers-to-be.
 - AIDS rampant.
 - Need many children for labor.
 - High infant mortality due to poor quality of life.
 - Abortions are not necessarily performed legally or safely

Factors That Affect Birth/Fertility Rates

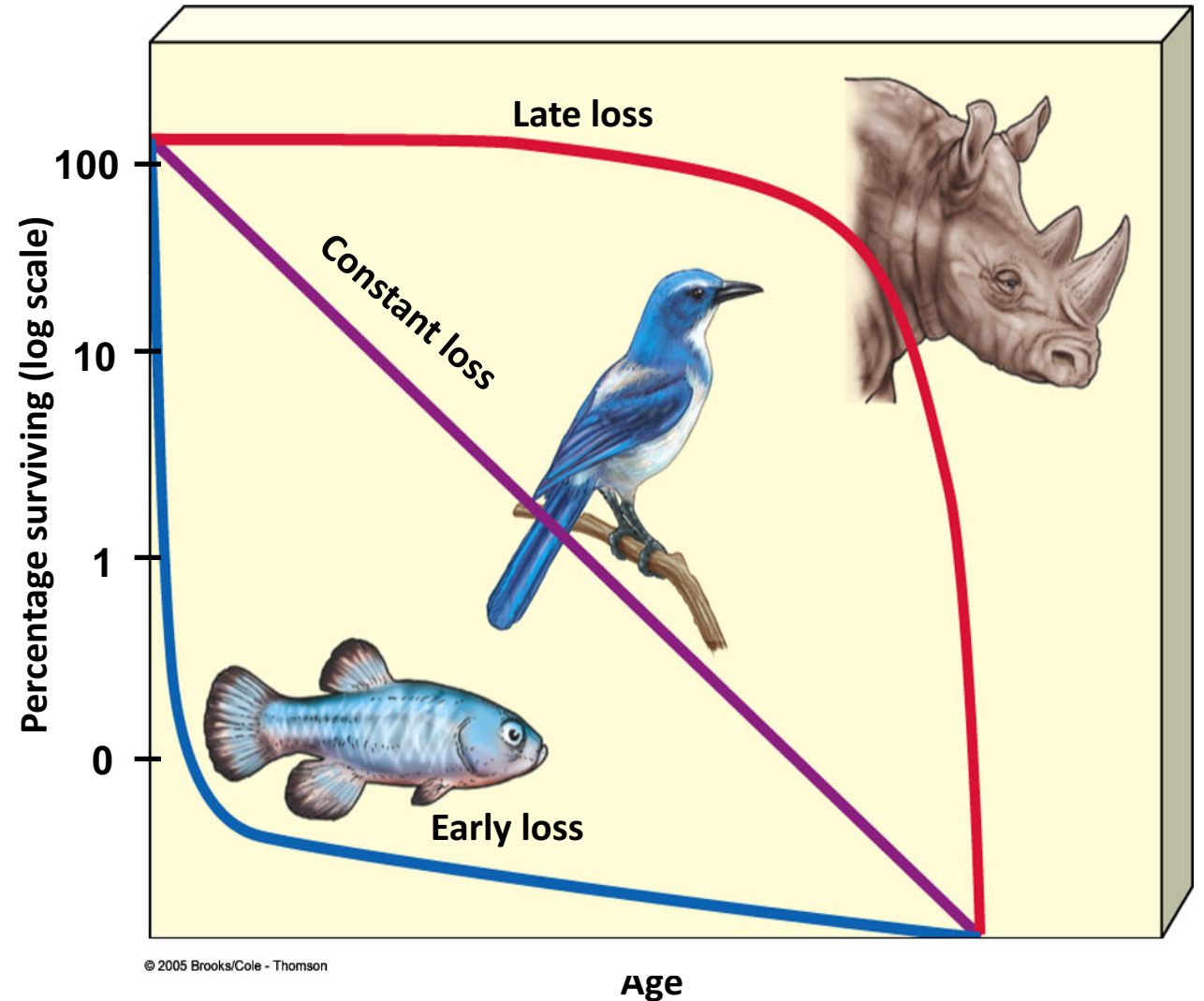
- Average level of education and affluence
- Importance of children in the labor force
- Cost of raising and educating children
- Education and employment opportunities for woman
- Infant mortality rates related to access to health care and medicine
- Availability of legal abortions
- Access to contraceptives and family planning education

Factors That Lower Death Rates

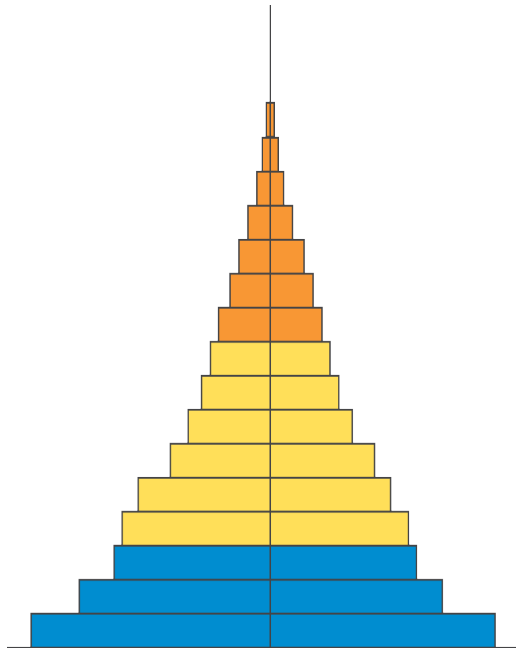
- Increased distribution and supply of food resources
- Higher living standards
- Better nutrition (food/vitamins)
- Improvements in medical and public health technology
- Improvements in sanitation and personal hygiene
- Safer water supplies (Waterborne diseases can be VERY dangerous, cholera)
- NOTE: Infant mortality rate (IMR) is a good indicator of quality of life because it reflects the general level of nutrition and health care for a geographic region.

Survivorship Curves

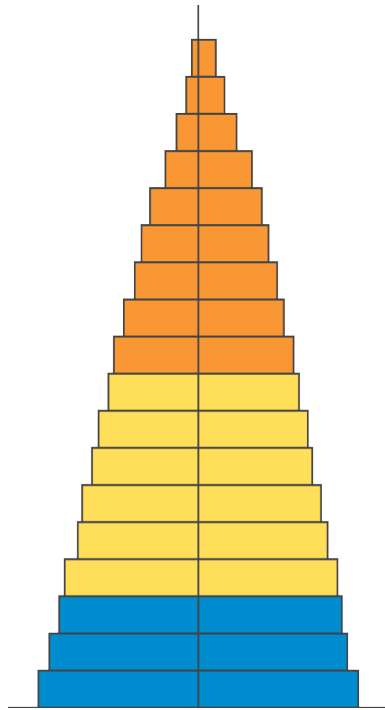
- Survivorship curves indicate life expectancies for organisms. This is a way to represent the age structure of the population.
- The curve represents the number of survivors of each age group for a particular species.



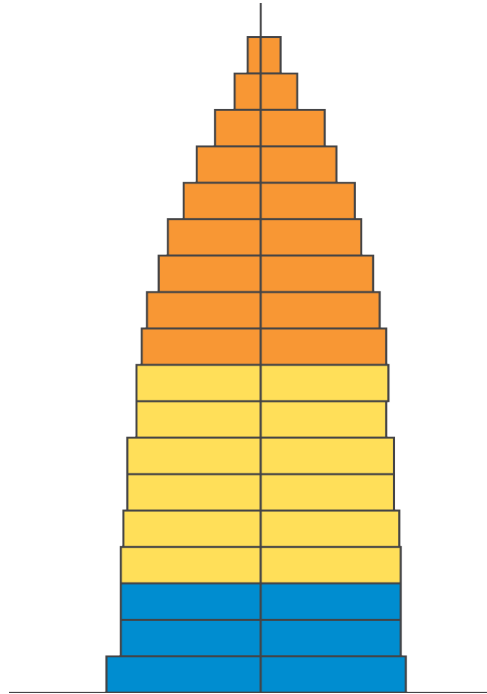
Age Structure Diagrams



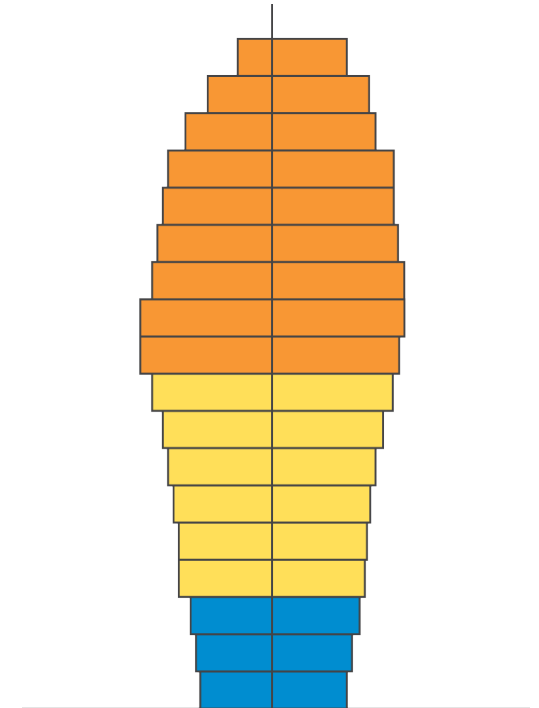
**Rapid
Growth**



Slow Growth



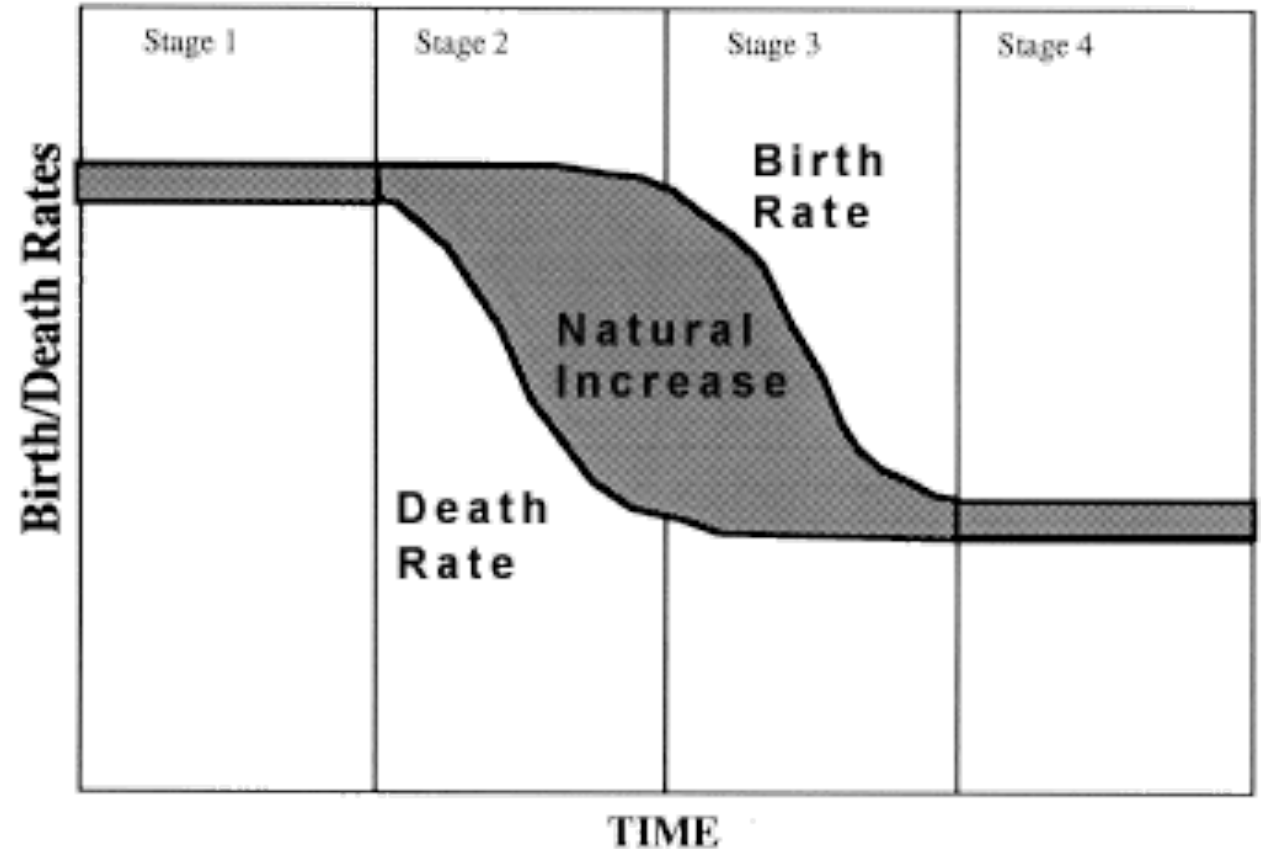
Zero Growth



Negative Growth

Demographic Transition

- **Demographic Transition** – A hypothesis of population change that states as countries become industrialized, first their death rates decrease followed by declines in birth rates.
- There are four stages: Pre-industrial, Transitional, Industrial, Post-industrial.



Rapid Population Growth Leads to...

- Rapid and wasteful use of resources with too little emphasis on pollution prevention and waste reduction.
- Degradation to Earth's life-support systems.
- Poverty which can drive poor people to use potentially renewable resources unsustainably for short-term survival.
- Failure of economic and political systems to encourage sustainable economic development.
- **Population x Affluence x Technology = Environmental Degradation**

Food Security

- **Food Security**: all or most of the people in a country have daily access to enough nutritious food to live active, healthy lives
- Enough food is produced daily to meet the needs of everyone on the planet
- **Food Insecurity**: Unequal access to food has resulted in 1 in 6 people in less-developed countries not getting enough to eat
- Poverty is considered the root cause of food insecurity