**Chapter 5 Notes - Population Dynamics**

The total number of a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** found in an area at a particular time is called a population. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the study of how populations change over time.

**Characteristics of Populations**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the range or area that a particular population inhabits
  + Ranges can vary from a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** for a population of bacteria, to the millions of square kilometers occupied by **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in the Pacific Ocean
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the number of individuals per **\_\_\_\_\_\_\_\_\_\_\_\_\_**.
  + Let’s think about human population density
    - In **\_\_\_\_\_\_\_\_\_\_\_\_\_** in Northern Canada, humans are very sparsely (thinly) distributed. There are 31900 people living in an area of 2,038,722 km2 (this is roughly the size of Western Europe). This works out to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** per square kilometre!
    - The Greater **\_\_\_\_\_\_\_\_\_\_\_** Area (GTA) is the largest metropolitan area in Canada, with 6,054,191 people living in 7,124.15km2. This works out to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** per square kilometre.
    - **\_\_\_\_\_\_\_\_\_**, in the Philippines, is the densest city in the world, with 1,652,171 people living in only 38.55 km2. This is a density of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** per square kilometre!
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** refers to whether the population grows, shrinks, or stays roughly the same over time. The growth rate of a population is affected by **\_\_\_\_\_\_\_\_** factors.

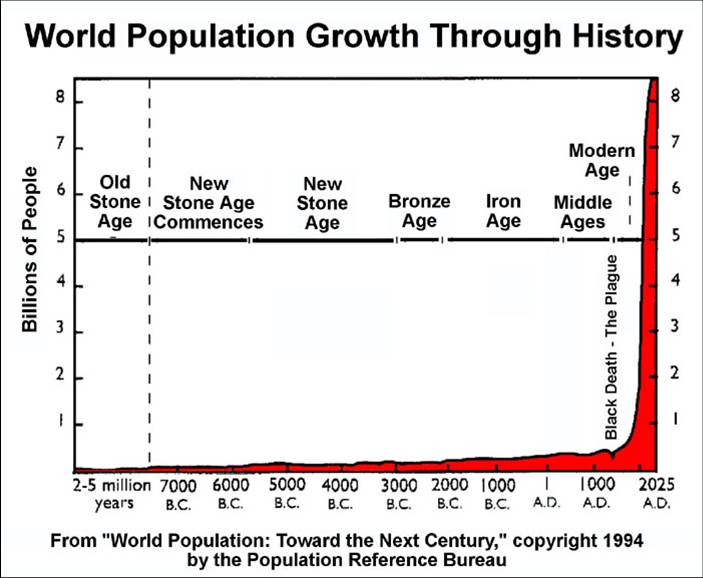
**Four Population Growth Factors**

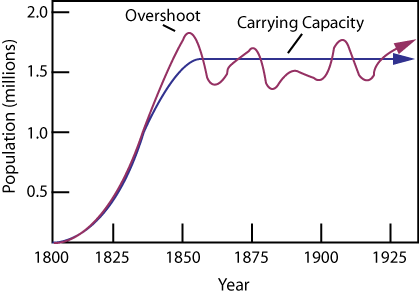
The number of individuals in a population is affected by four major factors:

* **\_\_\_\_\_\_\_\_\_\_\_** – number of births in a year
  + Impacted by the **\_\_\_\_\_\_\_\_\_\_** of offspring per birth, number of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and the length of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + For humans, access to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** have a huge impact on natality
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – number of deaths in a year
  + Impacted by the average **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of an organism’s life, as well as its likelihood of   
    **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to adulthood
  + Also impacted by the availability of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and the effects of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – number of individuals **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** from outside in a year
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – number of individuals **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the population in a year

**Open and Closed Populations**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are affected by all of the four factors above
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** populations are open populations – organisms can come and go as they please
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** are populations where no one leaves or moves in. Closed populations are only affected by the number of **\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_**
  + An isolated **\_\_\_\_\_\_\_\_\_** population
  + A population in a **\_\_\_\_\_\_\_\_** or other preserve
  + The global **\_\_\_\_\_\_\_\_\_\_\_\_** population

**Types of Growth**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ growth (J-curve):** When a population increases at a constant rate, with no slowing or levelling off.
* The **\_\_\_\_\_\_\_\_\_\_** population of Earth has been showing exponential growth throughout the modern age
* Can this kind of growth continue forever?
  + - **\_\_\_\_\_\_\_\_\_.** Populations will always **\_\_\_\_\_\_\_\_** when they run out of resources
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ growth (S-curve)**: When a population increases quickly and then the growth rate slows and the population stabilizes around the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the environment.
  + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Capacity:** the maximum number of individuals of a species that can be supported indefinitely by an ecosystem.
  + An **\_\_\_\_\_\_\_\_\_\_\_** shows a population that is limited by factors such as disease, space, competition for resources, and famine.
  + Theoretically the “S-curve” is **\_\_\_\_\_\_\_\_\_\_\_**, but in reality the population tends to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** somewhat around the carrying capacity.

**David Suzuki Speaks About Overpopulation**What **analogy** does David Suzuki use to represent the human population of planet earth?

Summarize the situation he describes:

What type of growth is occurring in the analogy, and among humans on planet earth?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
When is the test tube half full? \_\_\_\_\_\_\_\_\_\_\_\_\_

Why is simply producing more food & resources not going to solve the problem in the long run?

What minute does Suzuki say we have already passed now? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Limits to Population Growth**

Populations don’t grow in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. The world around them impacts their ability to grow and survive. There are different ways to break down the factors that affect the size of populations. The first is Abiotic vs Biotic.

* **\_\_\_\_\_\_\_\_\_\_\_\_\_ Factors:** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** factors that impact the size of a population
  + light, temperature, chemical environment (nutrient levels, toxin levels), water availability, weather
    - Remember limiting nutrients in aquatic ecosystems, and what happens when we add a bunch of extra nutrients by over-fertilization.
* **\_\_\_\_\_\_\_\_\_\_\_ Factors: \_\_\_\_\_\_\_\_\_\_\_\_\_** factors that impact the size of a population
  + food, predators, diseases, parasites, competition for resources

Another way to break down these limiting factors, is by whether the factor is affected by the **\_\_\_\_\_\_\_\_\_\_\_\_\_** of individuals of the population, or whether it has the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** no matterhow many individuals there are. We call these Density Dependent and Density Independent factors.

**Density \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Factors:** affect members of a population **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of population\_\_\_\_\_\_\_\_\_\_\_\_\_

* Examples: Fire, **\_\_\_\_\_\_\_\_\_**, drought, other **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, climate change, destruction of habitat

**Density Dependent Factors:** affect a population **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the **\_\_\_\_\_\_\_\_\_\_\_\_** of the population

* Examples: **\_\_\_\_\_\_\_** supply, water quality, sunlight, **\_\_\_\_\_\_\_\_\_\_\_\_**, territory (space), predation, invasive species

**Major Density-Dependent Factors:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** When populations are **\_\_\_\_\_\_\_\_\_\_\_\_\_,** the competition with one another for **\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_**, space**, \_\_\_\_\_\_\_\_\_\_\_\_\_,** and essential **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** becomes much more intense.

These resources get used up or blocked out more quickly when there is a large population, whereas when a population is **\_\_\_\_\_\_\_\_**, there is generally **\_\_\_\_\_\_\_\_\_\_\_** of these resources to go around.

* Remember that the populations of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** can also impact the availability of these resources, which can act as a selection pressure for evolutionary change (**\_\_\_\_\_\_\_\_\_\_**), and the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of niches to reduce this competition.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:** Populations in nature are often controlled largely by their major **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. This is known as a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  relationship.

* When the population of a **\_\_\_\_\_\_**species**\_\_\_\_\_\_\_\_\_\_\_\_\_**, then the predators have more food available to them, so their populations can **\_\_\_\_\_\_\_\_\_\_\_\_** as well. When the predator population becomes too large though, they **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the prey population sharply, and then suddenly there aren’t enough prey to sustain the large predator population, and the predators start **\_\_\_\_\_\_\_\_\_\_\_**. At this point the prey species can start to increase again, and the **\_\_\_\_\_\_\_\_\_\_** starts over.

**Parasites & Disease:**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** take their nourishment at the expense of their hosts, which weakens them and can cause death over time. **\_\_\_\_\_\_\_\_\_\_\_\_\_** caused by **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_** have similar effects on the host.
* In **\_\_\_\_\_\_\_\_\_\_\_** populations of hosts, parasites and diseases are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** between hosts more quickly and effectively, but they also **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the hosts’ ability to **\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, which limits the growth of the host population. This in turn **\_\_\_\_\_\_\_\_\_\_\_\_** the populations of parasites and bacteria or viruses.

**Crash Course Ecology: Population Ecology & The Texas Mosquito Mystery**(Take your own notes here)

List 3 examples of **Density Independent factors** from the video:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List 3 examples of **Density Dependent factors** from the video: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What type of growth lead to West Nile problem in Texas?: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the formula for **growth rate** from the video?

**Human Population Growth**

**Historical Human Population Size**

For most of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, populations grew **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. Our populations were limited just like the populations of all other species, by major **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* **\_\_\_\_\_\_\_\_\_** was scarce and required time and energy (and danger from predators) to acquire, and it was very difficult to store food for very long
* Incurable **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** were common, and accidental **\_\_\_\_\_\_\_\_\_\_\_\_\_** were often fatal
* Only about **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** born would survive to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + as a result, people had **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to try to ensure that some would make it

**Reducing the Limits on our Population Growth**

**Agriculture**

* First started **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, which allowed populations to grow somewhat larger, and allowed some specialization in society, but we were still **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** by other factors
* More **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in agriculture over the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, including **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of agriculture, synthetic **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and more intensive **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (and now even genetic modification), have provided even more food, and freed up more people to specialize in other areas of life (not everyone has to spend their lives growing food)
* Being able to **\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  food more effectively has also allowed the global population to grow.

**Sanitation**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (the idea that microbes cause disease), and improvements in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** systems to remove **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** before drinking it to prevent water-borne **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**) have had huge impacts on **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** many types of disease. This has allowed the population to stay healthier, and made **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** drop dramatically

**Medical Advances**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** such as emergency **\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to cure infections, have meant that an accidental injury or infection would **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** be a death sentence
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** have helped to curb the spread of many disease that used to decimate populations, such as smallpox, polio, tuberculosis, measles…
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ healthcare** has also helped to ensure that more people remain healthy for most of their lives.

**Ecological Footprint**

The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a measure of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** on the Earth’s ecosystems. It represents the amount of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** land and ocean area required to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** for a human population, and to deal with the **\_\_\_\_\_\_\_\_\_\_\_** produced by that population.

* Our **\_\_\_\_\_\_\_\_**, **\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_\_\_** consumption, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_** habits, and the amount of **\_\_\_\_\_\_\_\_\_\_**  we produce, all impact our ecological footprint.
  + The **\_\_\_\_\_\_\_\_\_\_\_\_\_** average Ecological Footprint in 2007 was **\_\_\_\_\_\_\_** hectares per person
  + The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** average Ecological Footprint in 2007 was **\_\_\_\_\_\_\_\_\_\_\_** hectares per person
* Scientists can use the ecological footprint of a small population to predict **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** would be required if **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** lived in that way.
  + If everyone on Earth lived like a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** we would need **\_\_\_\_\_\_ Planet Earths** to sustain us!

**Crash Course Ecology: Human Population Growth**Today there are 80 year olds who have watched the population of our species \_\_\_\_\_\_\_\_\_\_\_\_\_\_

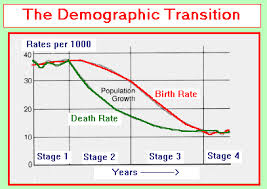
**R vs K Selection Theory**  
Describe R selected species: Describe K selected species:

Describe how we (humans) eliminated some of the obstacles in our way and raised our carrying capacity:

What are some factors that affect how much space we need to survive (ecological footprint)?

If the human population increased to 1 trillion, how much space would they get to use?  
  
  
What are some reasons that the human population rate is decreasing (in some parts of the world)

**Patterns of Population Growth**

The human population **\_\_\_\_\_\_\_\_\_\_\_\_** continue to grow **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** forever, because Earth and its resources are limited. The question is, when and how will our human population growth slow? **Thomas \_\_\_\_\_\_\_\_\_\_\_\_\_** predicted (over 200 years ago) that **\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_** would limit the human population. Today, scientists have identified other **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** factors that can affect human populations as well. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is the study of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and it examines various characteristics of populations and explains **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** over time. Two major factors that demographers look at are the demographic transition, and the age structure of a population.

**Demographic Transition** – a dramatic change in birth and death rates

* While we have **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the impact of these limiting factors, causing the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to drop, in most parts of the world, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** remain relatively high.
* Over time though, the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** leads to the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
  + As levels of **\_\_\_\_\_\_\_\_\_\_\_\_** increase and the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** rises, families begin to have **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – as the birth rate drops, the number of births no longer exceed the deaths, and the population **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** slows or even stops.
* **Population growth** in the US, **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, Japan, and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** has decreased **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** over the past century
  + These countries have already gone through the demographic transition
  + Most countries in the world have **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the demographic transition, which is why the global population is still growing so rapidly.
    - Increases in access to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** will be required for people in most parts of the world to complete the demographic transition

**Age Structure**

* Population growth also depends greatly on the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the population – how many people in the population fall into each **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* Demographers use **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ diagrams** (also called population histograms) to analyze the structure of a population
  + These diagrams show the population of a country broken down by **\_\_\_\_\_\_\_** and by **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + A fairly **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** diagram means that the population is fairly **\_\_\_\_\_\_\_\_\_\_\_\_\_**
  + A diagram shaped like a pyramid with a wide **\_\_\_\_\_\_\_\_\_\_** means that the population is **\_\_\_\_\_\_\_\_\_\_** rapidly
    - * There are many children and teenagers, most of whom can be expected to have **\_\_\_\_\_\_\_\_\_\_\_\_\_** of their own in a few years
  + A diagram with a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** than the top means that the population is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
    - * There are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** children and teenagers to reproduce in a few years, so they won’t be able to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the older adults who will die over that time period

**Future Population Growth**

To predict how the world’s population with grow in the future; demographers must consider the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of each country, their stage in the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and the prevalence of life-threatening **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** such as **\_\_\_\_\_\_\_\_**, Malaria, and Cholera.

We must also ask whether the human population will continue to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or whether it will level off into a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and become more **\_\_\_\_\_\_\_\_\_\_\_\_\_**. This depends on whether **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** move though the demographic transition quickly enough to prevent a population crash.