

ENV SCIENCE 120 - LESSON 17

HOW POPULATIONS GROW

Env Science 120

STUDENT LEARNING TARGET

WHAT AM I GOING TO LEARN?	HOW WILL I SHOW WHAT I KNOW?	HOW WILL I KNOW HOW WELL I AM DOING – WHAT ARE MY LOOK-FORS?
<p>I AM GOING TO LEARN ABOUT:</p> <p>1. HOW POPULATIONS GROW</p> <p><u>WHY:</u></p> <p>1. TO HAVE AN UNDERSTANDING OF HOW THE GROWTH OF POPULATION AFFECTS THE ENVIRONMENT</p>	<p>I WILL USE A PENCIL AND PAPER TO COMPLETE ANSWERS TO THE QUESTIONS ASKED AND /OR RESPOND ORALLY TO THE TEACHER</p>	<p>1. I HAVE ANSWERED THE QUESTIONS IN ASSIGNMENT 17 - HOW POPULATIONS GROW</p>

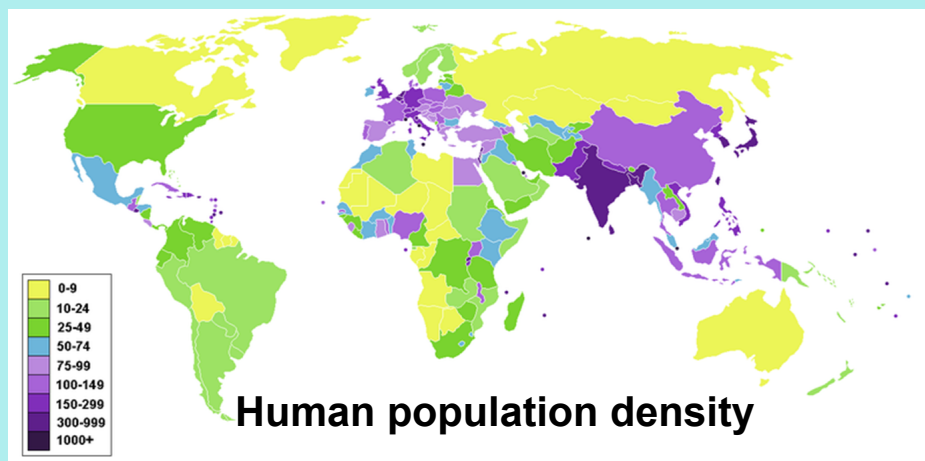
HOW POPULATIONS GROW

Population Growth Terms

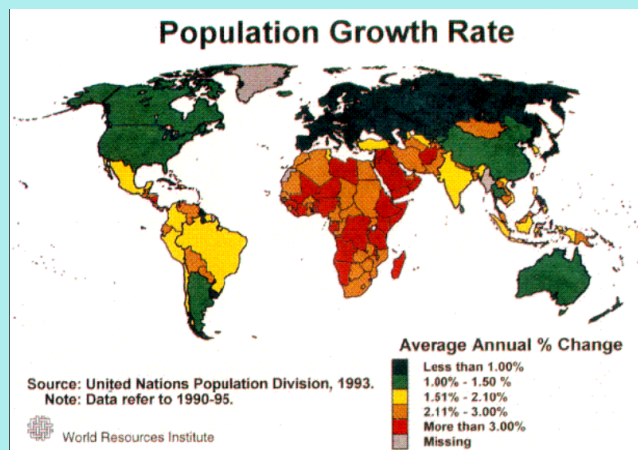
- **Geographic Range** - area in which a population lives



- **Population Density** - the number of individuals per unit area



- **Growth Rate** - the pace at which a population grows or shrinks or stays the same



HOW POPULATIONS GROW

Population Growth Terms

- Immigration - the movement of individuals into an area



- Emigration - the movement of individuals out of an area



HOW POPULATIONS GROW

Population Growth Terms

- **Carrying Capacity** - the maximum number of individuals of a given species that an environment can support



HOW POPULATIONS GROW



What is Population Growth ?


- Population growth is the increase in the number of individuals in a population.
- Global human population growth amounts to around 83 million annually, or 1.1% per year.
- The global population has grown from 1 billion in 1800 to 7.616 billion in 2018.
- It is expected to keep growing, and estimates have put the total population at:
 - » 8.6 billion by mid-2030
 - » 9.8 billion by mid-2050
 - » 11.2 billion by 2100.
- Many nations with rapid population growth have low standards of living, whereas
- Many nations with low rates of population growth have high standards of living.

HOW POPULATIONS GROW

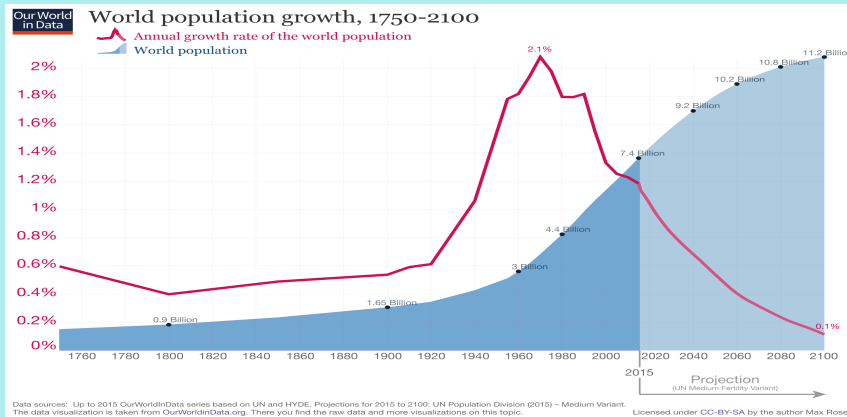
Population Milestones (by billions)

Population in Billions	1	2	3	4	5	6	7	8	9
Year	1804	1927	1960	1974	1987	1999	2011	2025	2045



 World Population Clock

HOW POPULATIONS GROW

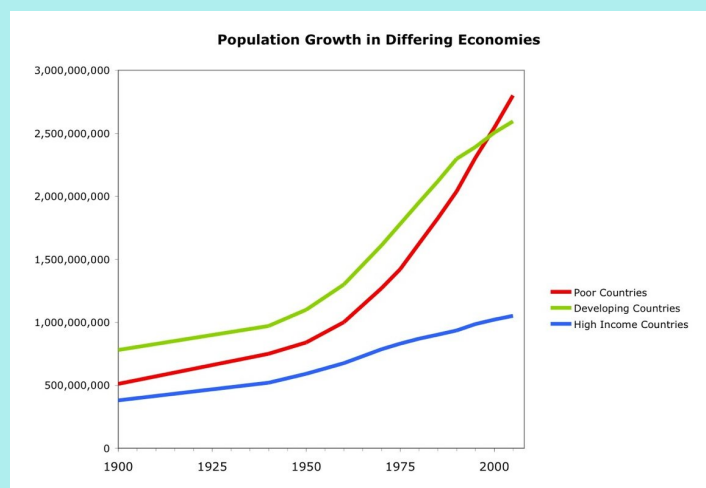


Factors that effect Growth rate

- **Growth Rate determines whether a population grows, shrinks or stays the same.**
- **The growth rate of a population can be shown with the formula:**

$$\text{Growth} = (\text{birth} + \text{immigration}) - (\text{death} + \text{emigration})$$

- **In general civilizations start with high birth rates and high death rates and move towards low birth rates and low death rates with increases in medical technology, health, food availability etc.**



HOW POPULATIONS GROW

Salary Option

- You have just been offered a temporary part-time job.
- The job will last one month, and your boss has given you two salary options.
- You can either receive \$10 a week with a \$5 per week raise every week until the end of the month
- Or you can receive one penny for the first day on the job, and double the previous day's pay for each of the remaining 30 days of the month.

HOW POPULATIONS GROW

Salary Option

	OPTION B	OPTION A
First Day	0.01	
1	0.02	
2	0.04	
3	0.08	
4	0.16	
5	0.32	
6	0.64	
7	1.28	10
8	2.56	
9	5.12	
10	10.24	
11	20.48	
12	40.96	
13	81.92	
14	163.84	15
15	327.68	
16	655.36	
17	1310.72	
18	2621.44	
19	5242.88	
20	10485.76	
21	20971.52	20
22	41943.04	
23	83886.08	
24	167,772.16	
25	335,544.32	
26	671088.64	
27	1342177.28	
28	2684354.56	25
29	5368709.12	
30	10737408.43	
TOTAL	\$10,737,408.43	\$70

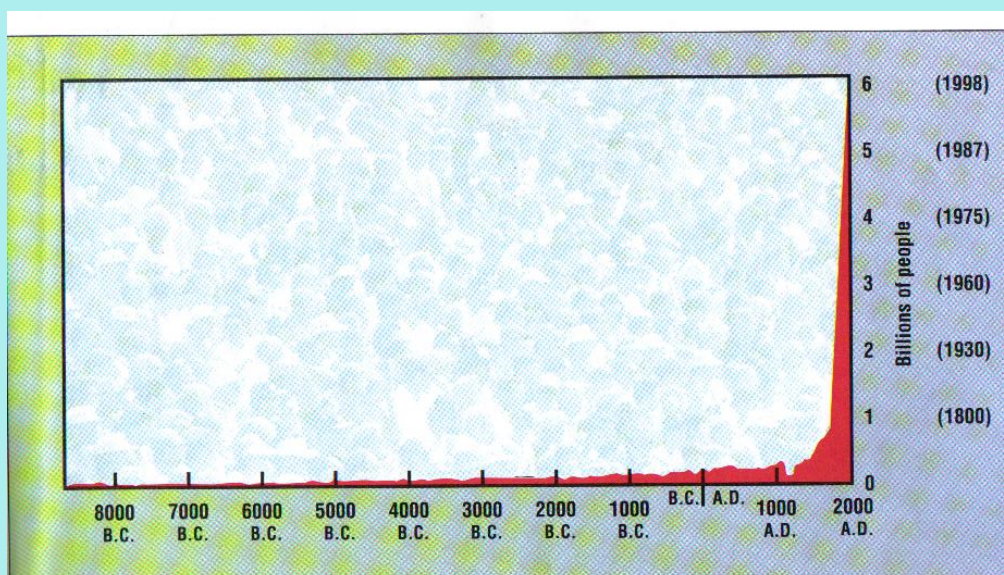
HOW POPULATIONS GROW

Exponential Growth

- **1,2,3,4,5,6... a series of numbers increasing at a slow a steady pace, by one numeral at a time**
- **1,2 4 8 16 32....the same number of steps, each series has grown at a different rate.**
- **The second example illustrates exponential growth which characterizes human population growth today.**

HOW POPULATIONS GROW

Population growth between 10,000 BC and 2000 AD



Env Sc 120 Assignment 17 - How Populations Grow

- Answer the following questions in complete sentences on looseleaf .
 - Ensure the title of this assignment (Assignment 17 - How Populations Grow" is on your answer sheet.
1. Name an animal that has a specific geographic range and describe where it is.
 2. Give an example of a country that has a very high population density.
 3. In which part of the world is human population growing the fastest?
 4. What is the difference between immigration and emigration?
 5. _____ is the maximum number of individuals of a species that an environment can support.
 6. You have just been offered a temporary part-time job. The job will last one month, and your boss has given you two salary options. You can either receive \$10 a week with a \$5 per week raise every week until the end of the month, or you can receive one penny for the first day on the job, and double the previous day's pay for each of the remaining 30 days of the month. Which payment option is a better reflection of human population growth and why?
 7. Go to the internet and link to the World Population Clock.
 - a) What is the current population of the world?
 - b) Which 5 countries have the highest populations?

Attachments



World Population Clock