

Population density research paper

[Sociology](#), [Population](#)



Human population is the total number of people who occupy a particular area. According to the latest data from the world population clock, the current human population in the world is around 6.9 billion people and this number keeps growing each day. The population across the world has experienced continuous growth since the early times with some time periods low growths while others experienced high growth as result of changing economic and social conditions (Ehrlich, 1999). Development in the health sector has greatly reduced infant and child mortality across the world and also improvement in food production techniques have boosted food security and led to an exponential increase in population. With the above current world population living on earth's total surface area which is about 500 million square kilometers, then the total population density is 13.3 people per square kilometer. However, this figure encompasses the total land area including water bodies and deserts and hence the density is much higher if these are excluded.

Across the world, almost all populations tend to grow exponentially by following various population growth curves. The human growth curves are determined by the availability of resources which makes rate to be exponential since reproduction is a process that goes through multiplication (Ehrlich, 1999). The rate of population growth is usually affected by the births and death rates of a particular country. The Exponential growth curve, which is also known as the J-curve takes place when the size of the population does not have any limit. On the other hand, the logistic curve, which is also known as the S-curve occurs when there are limiting factors are present. These limiting factors are the carrying capacity of the environment

and thus reduced or increased carrying capacity would lead to an S-curve type of population growth.

Current US and World Population Growth Rates.

Currently, the overall human population growth rate across the world is about 1.14 percent per year, which means the populations will double every 61 years. Thus, it is expected that at the current rate of growth, there will be 13 billion people in the world in 2072. The rate of growth was at the highest during the 1960s where it grew at 2% with a doubling time of 34 years.

When it comes to the United States, its overall population growth rate is 0.9% (US Bureau of Census, 2010). Current update from the US population clock shows that the US has a population of 310 million people.

The graphs below estimate the time it will take for the US population to reach 400 million people and also double.

Source: US Bureau of Statistics.

From the graph, it can be seen that the current US population is just slightly above 300 million people and it will take approximately 20 years for the population to grow to 400 million people and another 40 years from now for the population to double to around 600 million people (US Census Bureau (2010)).

The calculation below illustrates the time it will take for the world population to double from its current 6.9 billion people. The formula for population growth is, $dN = rN dt$.

When a population has doubled, $N = N_0 \times 2$. Whereby N_0 is the starting population and N is the population after. r is the rate of natural increase and t is the time interval. e is the constant 2.71828, which is the base of natural logarithms.

Putting it in the exponential growth equation, $2N_0 = N_0 e^{rt}$ $e^{rt} = 2$ $rt = \ln$ (natural logarithm) of 2 = 0.69 doubling time, $t = 0.69 / r$ Thus the world population with an r of 2% (0.02) has a doubling time $t = 0.69 / 0.02 = 34.5$. Therefore, in 34.5 years period it is expected that the world's population would have doubled to around 13 billion people.

Population burden in Mexico City, Mexico

Mexico City is one of the most densely populated cities in the world and also home to very large slums and informal settlements with very high populations. The city is home to almost 20 million people with nearly 40% living below the poverty line (Population Reference Bureau (2010)). As a result of this, the city has a very high crime rate, homeless people and pollution. The high population has led to the degradation of the environment leading to problems like poor water supply, contamination of water points and diseases. It has also proved impossible for the government to provide the necessary services and infrastructural development due to poor planning in the slums. The biggest threat to the environment in the slums is the overflowing waste which cannot be properly disposed due to lack of sewerage systems.

References

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US Census Bureau (2010). U. S. & World Population Clocks. Retrieved from <http://www.census.gov/main/www/popclock.html>

Population Reference Bureau (2010). 2010 World Population Data Sheet.