

# Population Biology

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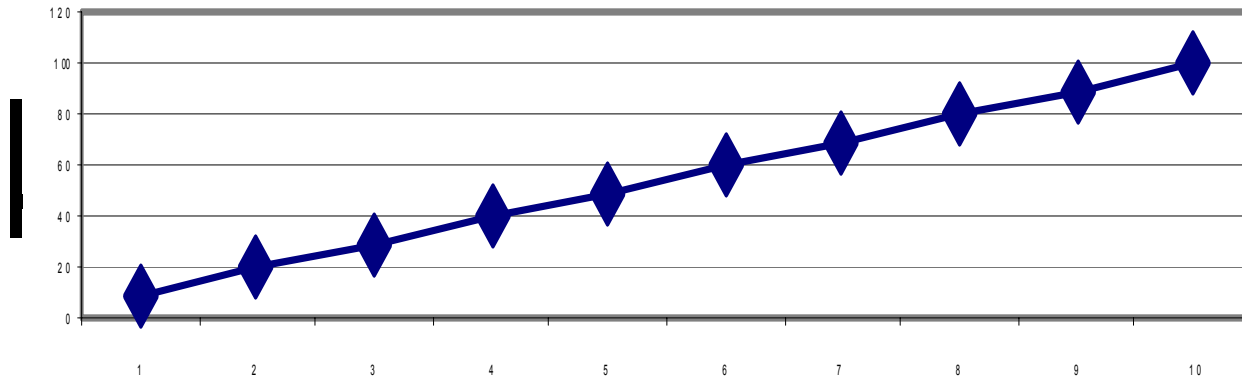


# Populations

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- Population growth is defined as an increase in size of a population over time...

However, populations grow at different rates.

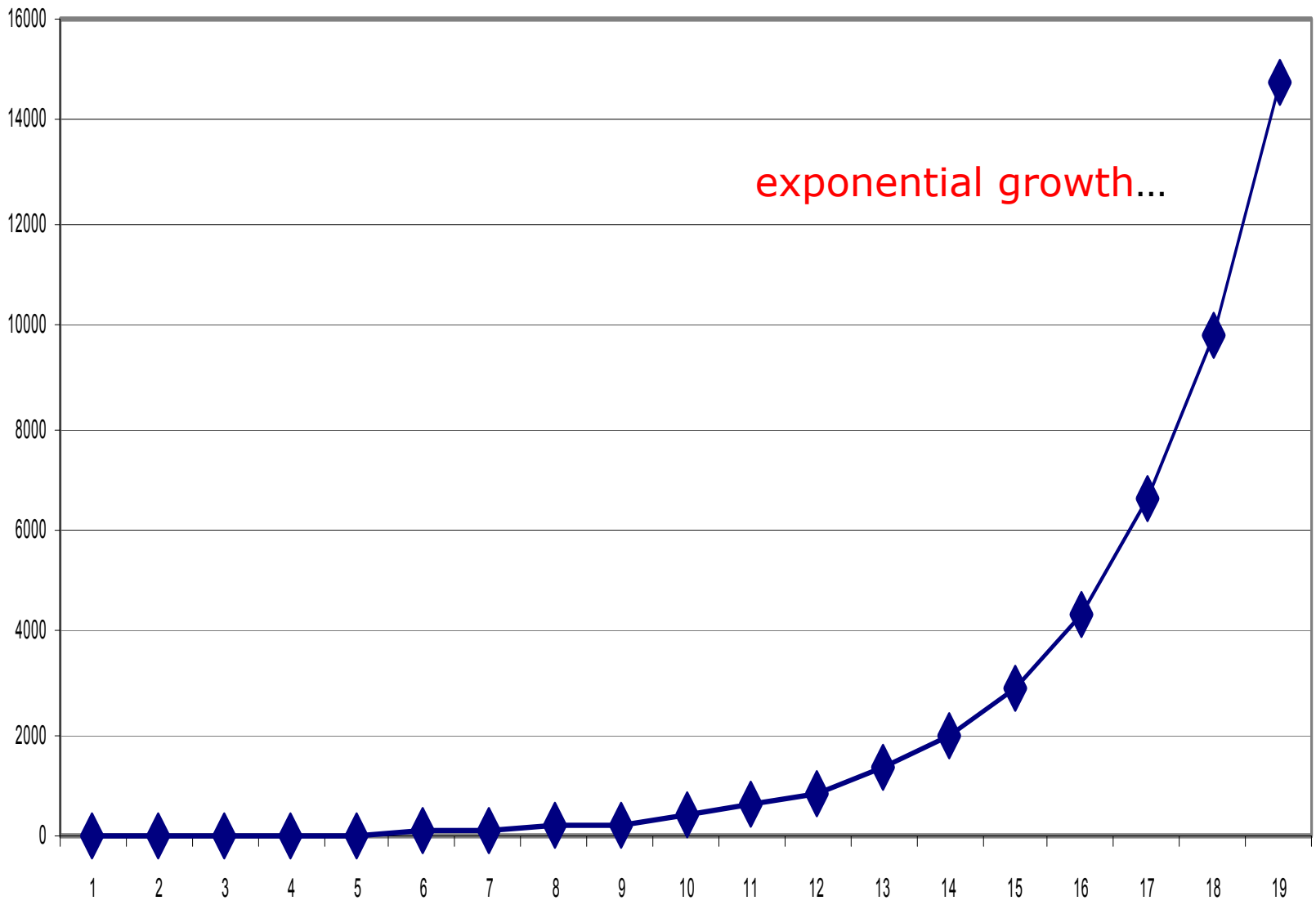


If a population grew at a set amount each year, say by 10 organisms per year, then the population has **LINEAR GROWTH**


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- However, populations normally do not have linear growth.

A population that is growing without any limits, would have **exponential growth**...

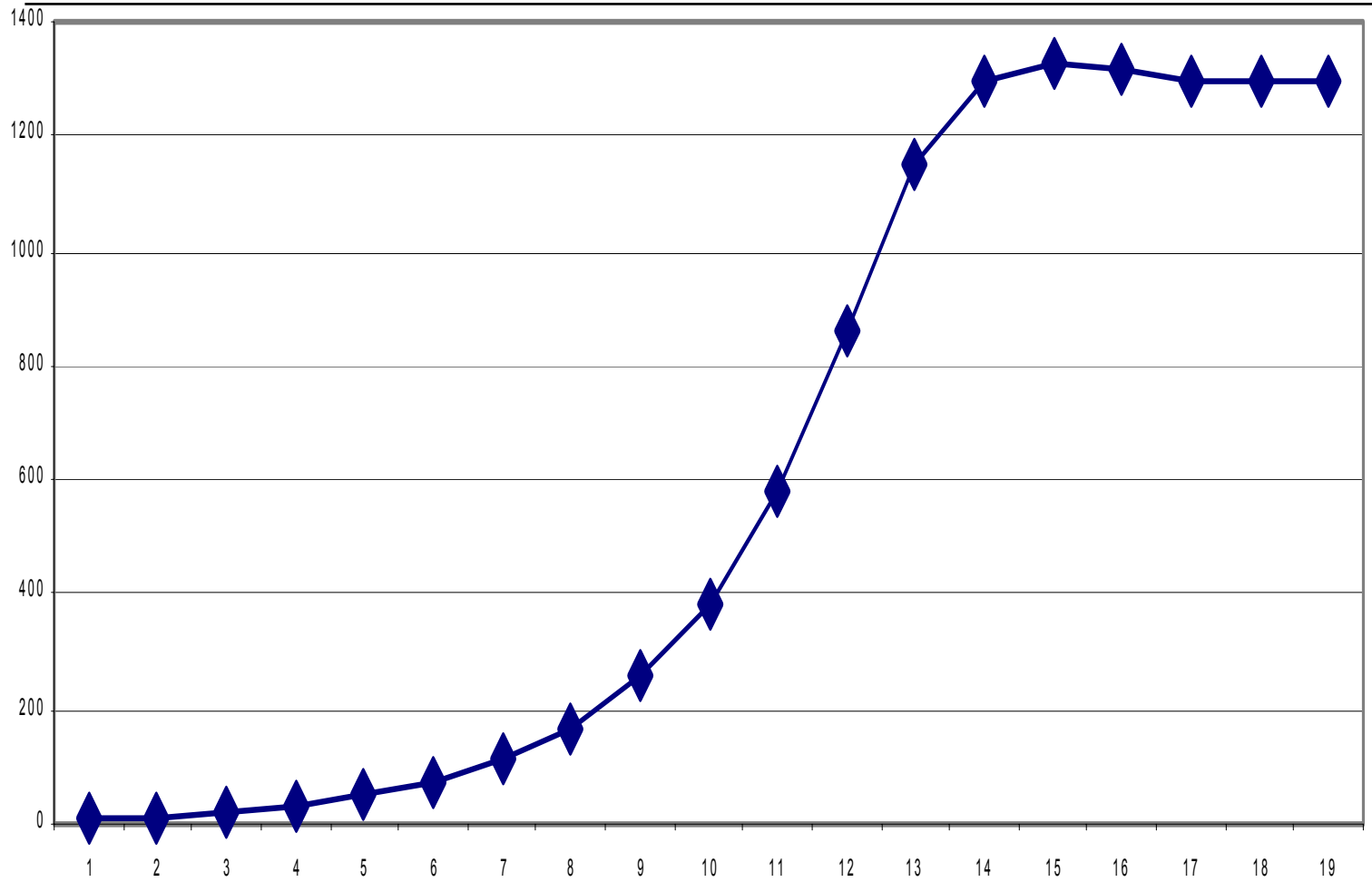
Meaning that as the population gets bigger, it also will grow faster...




exponential growth...

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- But...Populations cannot keep  
exponential growth for very long,  
because the environment would not be  
able to support it.
  - The environment has a **CARRYING  
CAPACITY** for each population...
  - Carrying capacity is the number of  
organisms that an environment can  
support.
  - Once a population reaches its capacity,  
its growth stops.

# Carrying Capacity




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- Different sizes of populations will also have different factors affecting them...
  - **Density Dependent Factors** will affect larger populations.
    - Examples: Disease, Competition, Parasites.
  - These types of factors spread more quickly in larger populations.
  - **Density Independent Factors** affect any population, regardless of size.
    - Examples: Temperature, Storms, Floods, and other natural disasters.



# Human Population Growth

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- Demography:
- The study of human population growth
  - Growth Rate
  - Age Structure
  - Geographic Distribution
- To determine the growth rate, the birth rate is compared to the death rate.
- As more people are born, an equal number must pass on in order for the growth rate to remain level.
- However, humans are living longer lives... our life expectancy (the age that a healthy person would normally live is getting older all the time.

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- In the U.S. however, the population is having fewer children...
  - Fertility rate is the number of children that each woman has on average...
  - While birthrate is just the number of births per 1000 people...woman or man
  - Also the age of a country will tell a lot about its future growth.

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- Demographers study **Age Structures** of countries... This tells how many people are in each age group...
    - A younger aged population will grow more rapidly than an older population.
    - Immigration vs. Emigration
      - **Immigration** is the movement into a country.
      - **Emigration** is the movement out of a country.