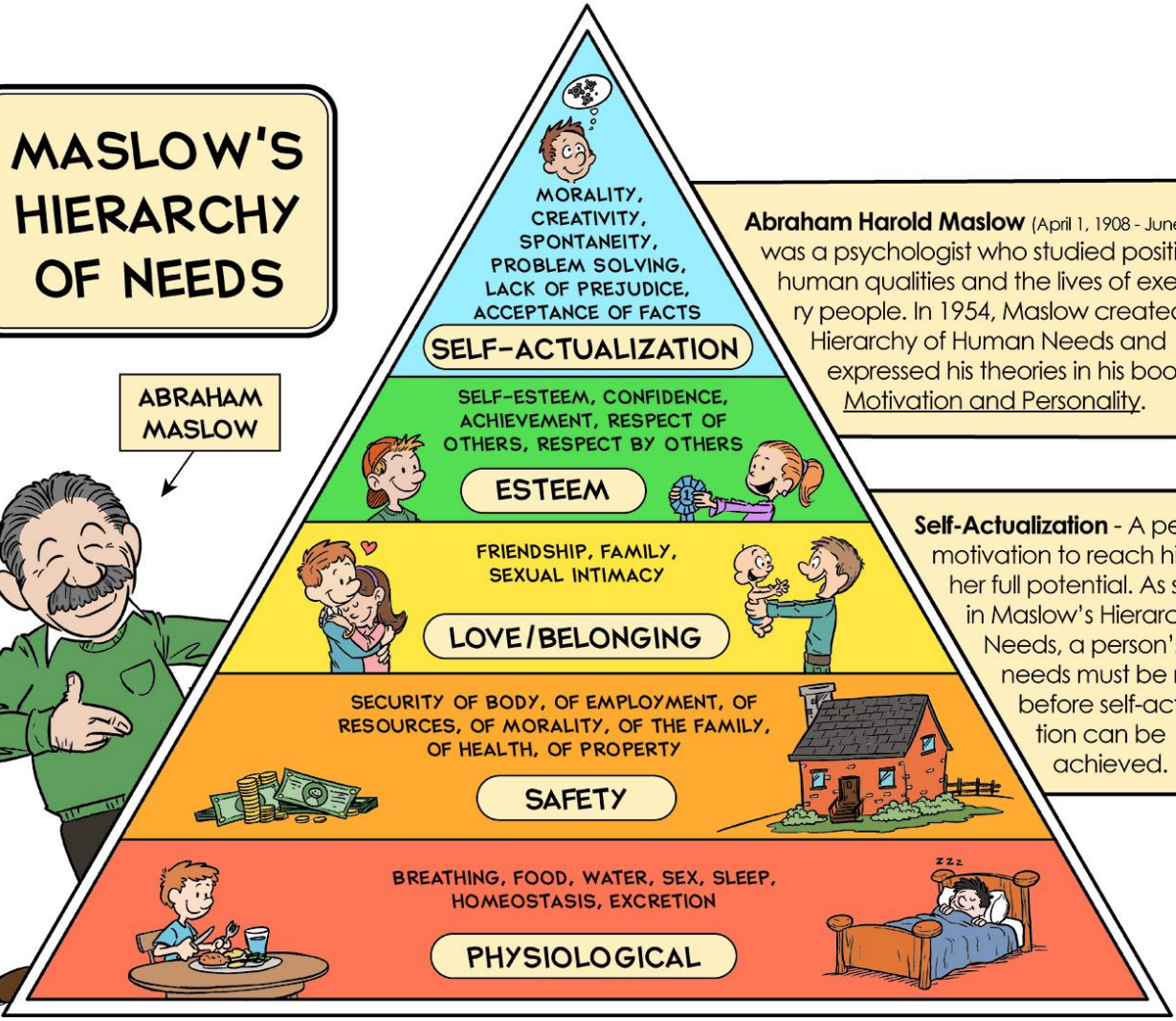


MASLOW'S HIERARCHY OF NEEDS

ABRAHAM MASLOW



Abraham Harold Maslow (April 1, 1908 - June 8, 1970) was a psychologist who studied positive human qualities and the lives of exemplary people. In 1954, Maslow created the Hierarchy of Human Needs and expressed his theories in his book, *Motivation and Personality*.

Self-Actualization - A person's motivation to reach his or her full potential. As shown in Maslow's Hierarchy of Needs, a person's basic needs must be met before self-actualization can be achieved.

History of Agricultural Technology: From Domestication Through Today



Agriculture broadly defined is the ability to grow plants and animals for food.

Horticulture is the branch of agriculture that deals with the art, science, technology, and business of plant cultivation.

What have you eaten today?

- Fruit
- Coffee/Tea
- Grains



Center of Origins

North America

- Seeds

- 1. Sunflower
- 2. Acorns



- Fruits

- 1. Blueberries
- 2. Strawberries



Center of Origins

South America

- Root Tubers
 - 1. Andean potato, *Solanum andigenum* (96 chromosomes)
 - 2. Other endemic cultivated potato species.
- Grains and Legumes
 - 1. Starchy maize, *Zea mays amyloacea*
 - 2. Lima bean, *Phaseolus lunatus* (secondary center)
 - 3. Common bean, *Phaseolus vulgaris* (secondary center)
- Vegetable Crops
 - 1. Pepino, *Solanum muricatum*
 - 2. Tomato, *Lycopersicon esculentum*
 - 3. Pumpkin, *Cucurbita maxima*
 - 4. Pepper, *Capsicum frutescens*

Center of Origins

India

- Cereals and Legumes

- 1. Rice, *Oryza sativa*
- 2. Chickpea or gram, *Cicer arietinum*
- 3. Pigeon pea, *Cajanus indicus*
- 4. Urd bean, *Phaseolus mungo*
- 5. Mung bean, *Phaseolus aureus*
- 6. Rice bean, *Phaseolus calcaratus*
- 7. Cowpea, *Vigna sinensis*

- Vegetables and Tubers

- 1. Eggplant, *Solanum melongena*
- 2. Cucumber, *Cucumis sativus*
- 3. Radish, *Raphanus caudatus* (pods eaten)
- 4. Taro, *Colocasia antiquorum*
- 5. Yam, *Dioscorea alata*

- Fruits

- 1. Mango, *Mangifera indica*
- 2. Orange, *Citrus sinensis*
- 3. Tangerine, *Citrus nobilis*
- 4. Citron, *Citrus medica*
- 5. Tamarind, *Tamarindus indica*

- Sugar, Oil, and Fiber Plants

- 1. Sugar cane, *Saccharum officinarum*
- 2. Coconut palm, *Cocos nucifera*
- 3. Sesame, *Sesamum indicum*
- 4. Safflower, *Carthamus tinctorius*
- 5. Tree cotton, *Gossypium arboreum*
- 6. Oriental cotton, *Gossypium nanking*
- 7. Jute, *Corchorus capsularis*
- 8. Crotalaria, *Crotalaria juncea*
- 9. Kenaf, *Hibiscus cannabinus*

- Spices, Stimulants, Dyes, and Miscellaneous

- 1. Hemp, *Cannabis indica*
- 2. Black pepper, *Piper nigrum*
- 3. Gum arabic, *Acacia arabica*
- 4. Sandalwood, *Santalum album*
- 5. Indigo, *Indigofera tinctoria*
- 6. Cinnamon tree, *Cinnamomum zeylanticum*
- 7. Croton, *Croton tiglium*
- 8. Bamboo, *Bambusa tulda*

Center of Origins

Middle-East:

• Grains and Legumes

- 1. Einkorn wheat, *Triticum monococcum* (14 chromosomes)
- 2. Durum wheat, *Triticum durum* (28 chromosomes)
- 3. Poulard wheat, *Triticum turgidum* (28 chromosomes)
- 4. Common wheat, *Triticum vulgare* (42 chromosomes)
- 5. Oriental wheat, *Triticum orientale*
- 6. Persian wheat, *Triticum persicum* (28 chromosomes)
- 7. *Triticum timopheevi* (28 chromosomes)
- 8. *Triticum macha* (42 chromosomes)
- 9. *Triticum vavilovianum*, branched (42 chromosomes)
- 10. Two-row barley, *Hordeum distichum*, *H. nutans*
- 11. Rye, *Secale cereale*
- 12. Mediterranean oats, *Avena byzantina*
- 13. Common oats, *Avena sativa*
- 14. Lentil, *Lens esculenta*
- 15. Lupine, *Lupinus pilosus*, *L. albus*

• Forage Plants

- 1. Alfalfa, *Medicago sativa*
- 2. Persian clover, *Trifolium resupinatum*
- 3. Fenugreek, *Trigonella foenum graecum*
- 4. Vetch, *Vicia sativa*
- 5. Hairy vetch, *Vicia villosa*

• Fruits

- 1. Fig, *Ficus carica*
- 2. Pomegranate, *Punica granatum*
- 3. Apple, *Malus pumilo* (one of the centers)
- 4. Pear, *Pyrus communis* and others
- 5. Quince, *Cydonia oblonga*
- 6. Cherry, *Prunus cerasus*
- 7. Hawthorn, *Crataegus azarolus*

The Value of Food

- A ratio that links the number of calories per obtained per serving to the amount of energy required in the production.

- Wheat
- Rice
- Corn
- Potato

Calorific Value

- **A calorie is a unit of energy.**
- A calorie is the amount of energy, or heat, it takes to raise the temperature of 1 gram of water 1 degree Celsius (1.8 degrees Fahrenheit).
- Humans need energy to survive -- to breathe, move, pump blood, think -- and they get this energy from food.
- The number of calories in a food is a measure of how much potential energy that food has.

Distribution of the global population

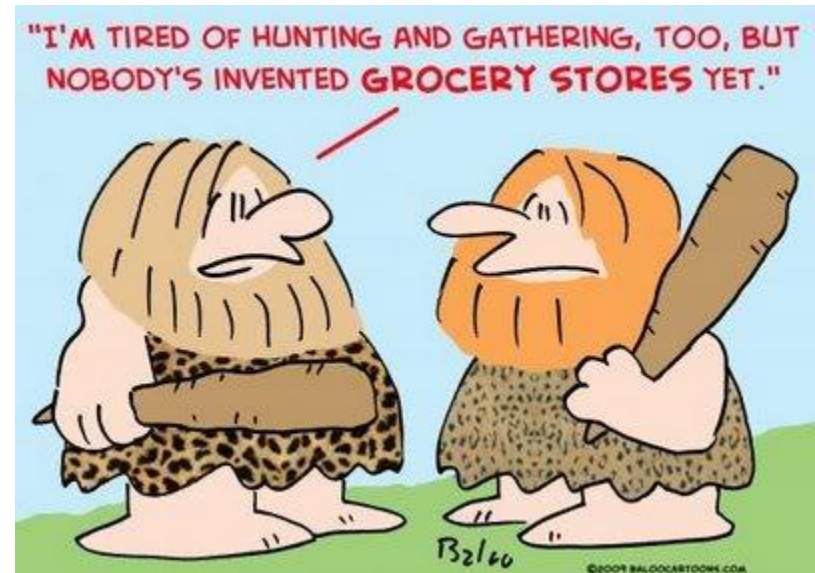
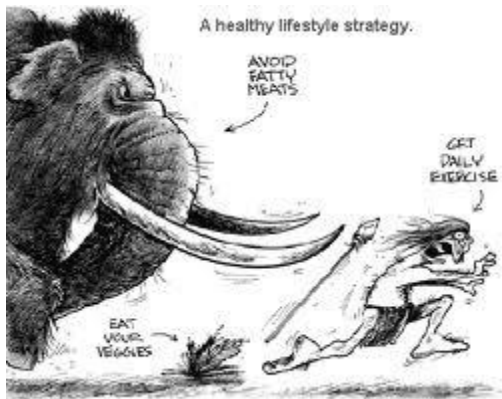
- How does this influence population density?
 - North vs. South America
 - Middle East vs. Europe
 - Western vs. Eastern Hemisphere



History of Food

- Transition from hunter-gatherer to agrarian, agriculture specialization, population increases, culture, etc....

These early farmers unknowingly changed the plants they grew.

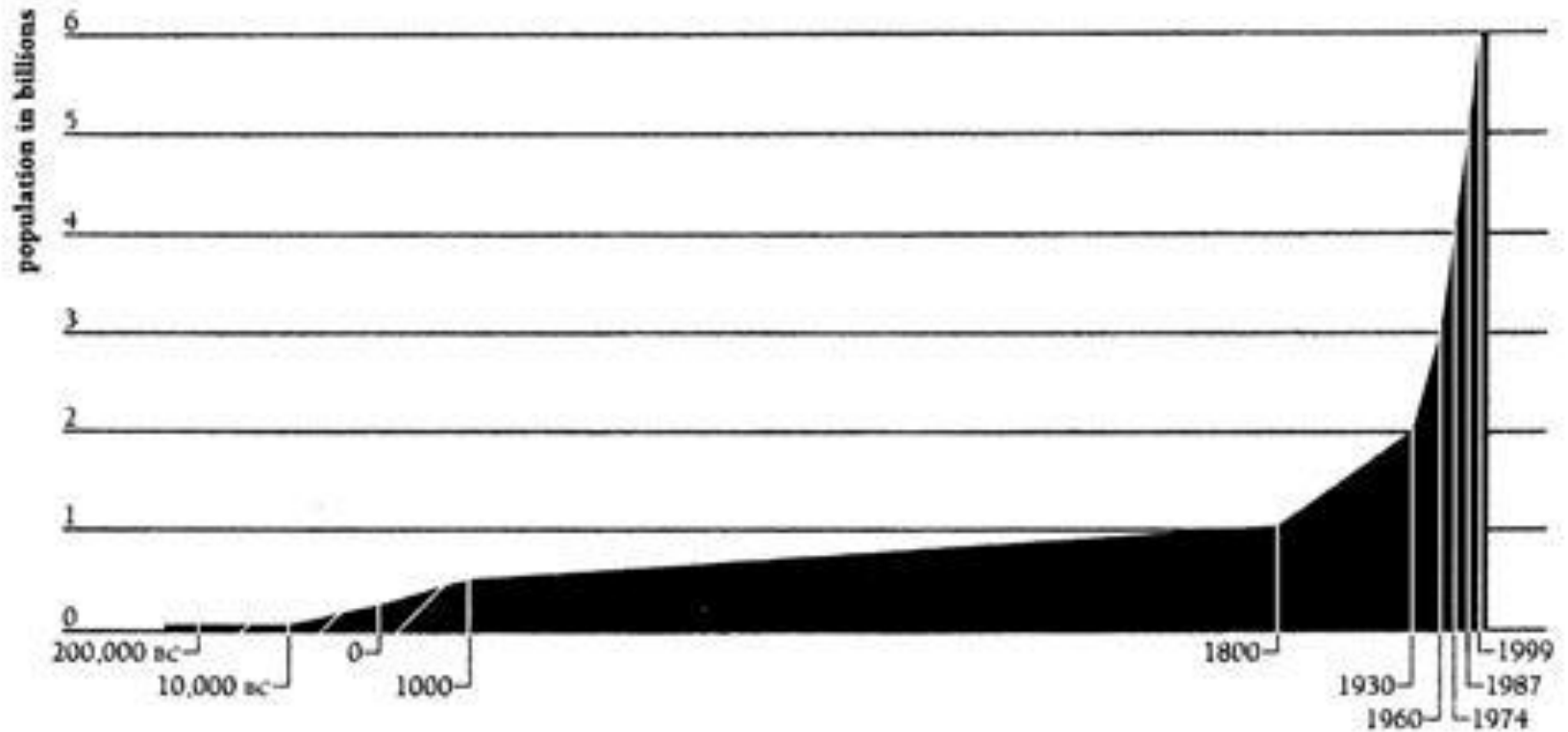


Agricultural Improvements

- Irrigation
- Domestication of animals.
- Plows
- Mechanization
- Diesel engine
- Fertilizer



Human Population Growth



Source: U.S. Census Bureau

Unintended Consequences

- Irish Potato Famine
 - 2 million starved
 - 2 million emigrated to the US
- Dust Bowl
 - Deep soil tilling
 - Residents migrated west



Modern Agriculture

- Organic vs. Conventional production
 - Cost
 - Environmental Concerns
 - Regulation
 - Popular
- Current Agricultural Practices
 - big seed companies
 - global market
- Gene Revolution
 - GM foods
 - Patent laws

Modern Agriculture

- Gene Revolution
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 - patent laws



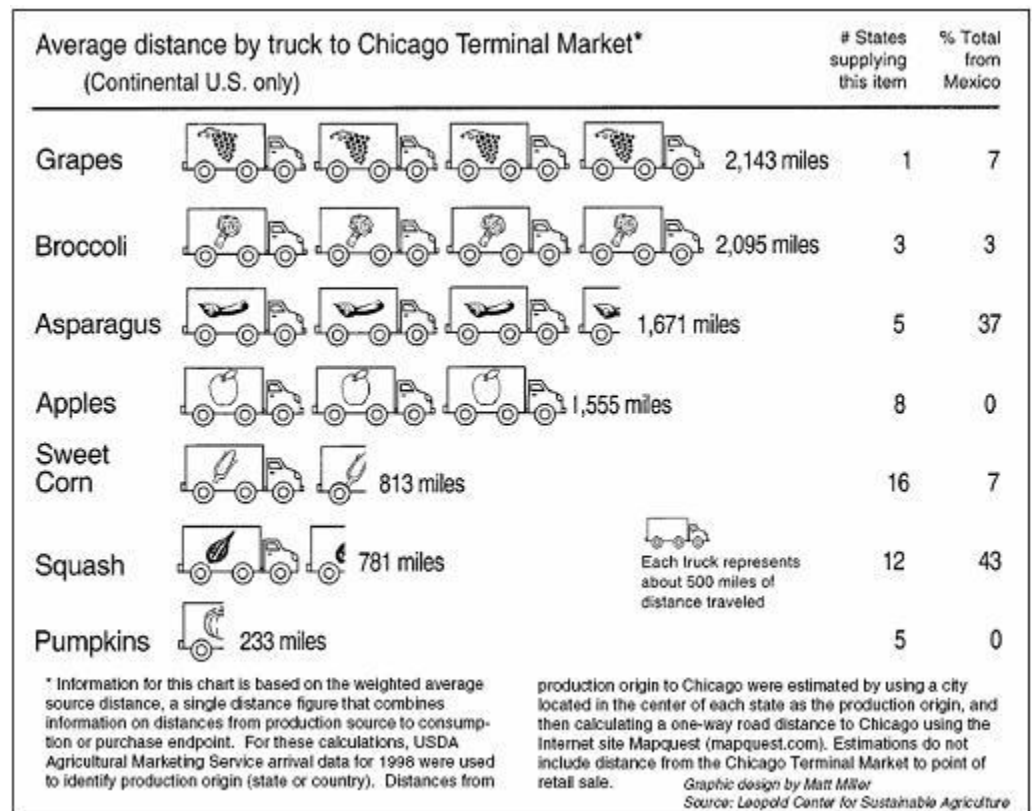


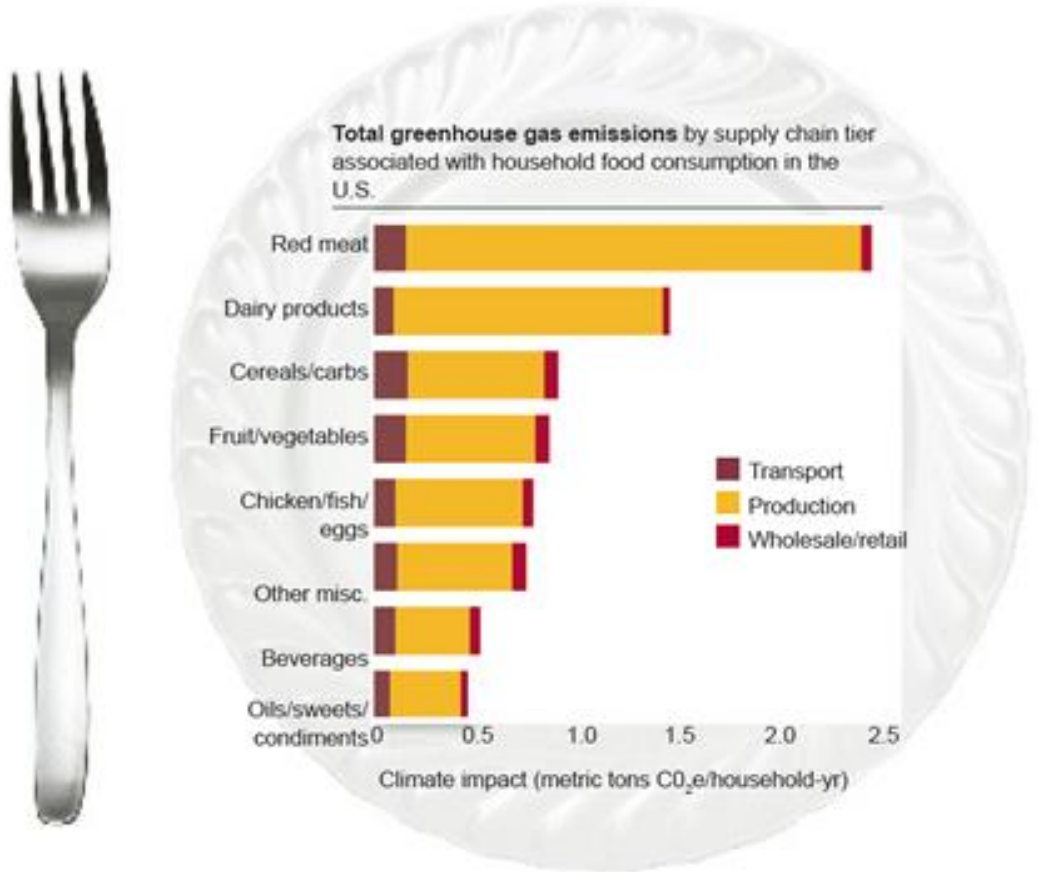




Modern Agriculture

- Food miles
- Urbanization

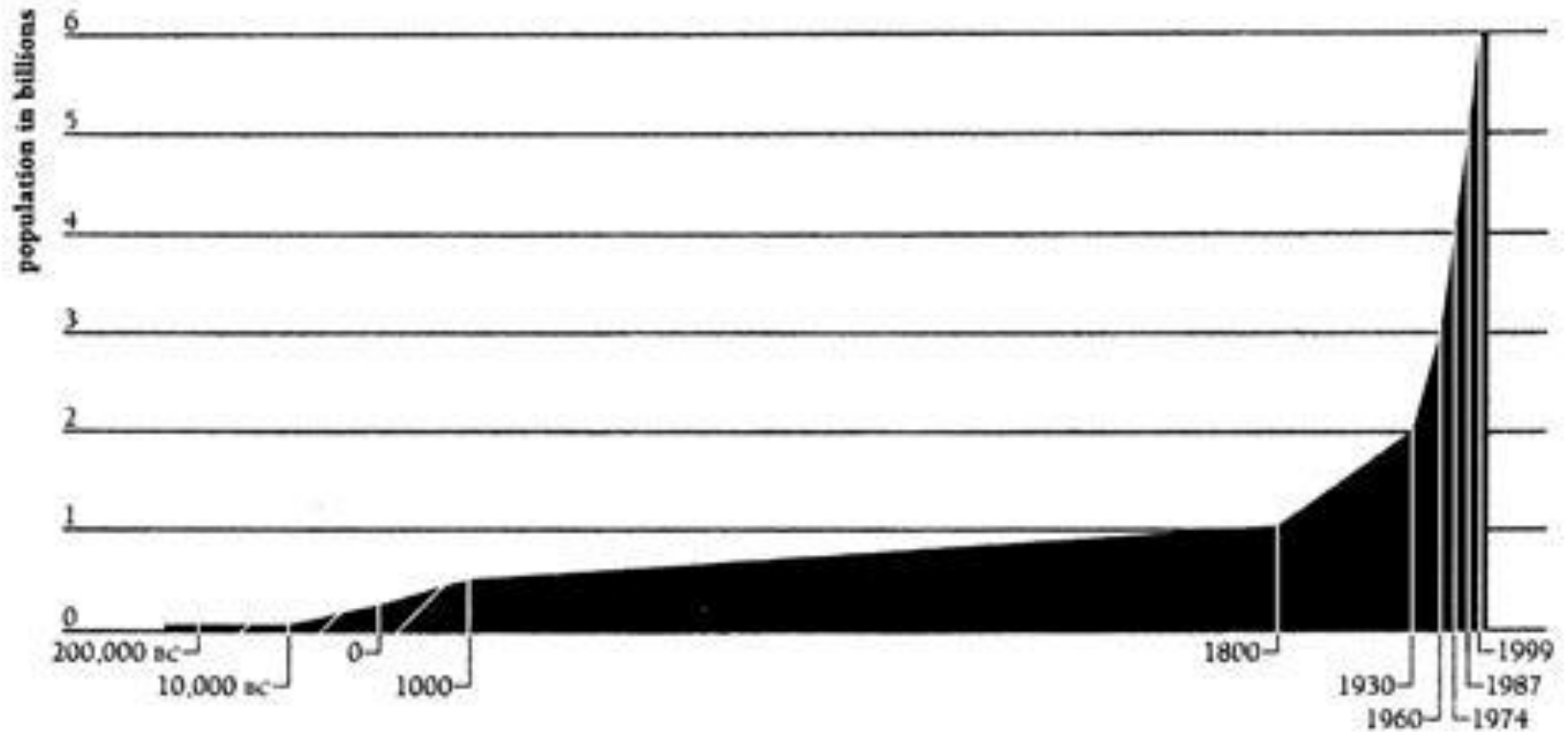




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Human Population Growth



Source: U.S. Census Bureau