

LONGEVITY OF SPECIES
AND INDIVIDUALS WITHIN A SPECIES

Among the mammals man has the longest life span

Every species, including Homo sapiens, possess a "biologic time clock" which dictates within rather narrow limits its potential maximum longevity (life span). Furthermore, within each species (e.g. Homo sapiens) each individual, at the second he or she is biologically conceived, automatically draws his/her personal "hand of genetic cards" (genotype) from ones parents, grandparents, great-grandparents, etc., which sets the biological time clock and fixes his or her potential maximum longevity. The real maximum longevity (life span) of the individual, however, is the result of the interaction of the "hand of genetic cards", drawn at the second of conception, and the environment in which one lives and works. The environment in a large part is a function of the life style in which one lives and works. If one lives a life style conducive to good physical and mental health (e.g. with good nutrition, adequate exercise, sleep and recreation, pleasant work and home environment, and appropriate medical care and avoids the use of toxic substances e.g. drugs, alcohol and tobacco) one will live (barring accidents) to "enjoy" most of the potential maximum longevity one inherited.

The greatest authenticated human age achieved (longevity) up to now is 118 years. The average life expectancy at birth for the general population in the U.S.A. has increased from 47.3 years in 1900 to 74.7 years in 1985. It continues to increase. This is largely the result of improvements in the living and working environments (medical care, nutrition, etc.). As the average life expectancy of the population has increased, however, there has been an increase in different diseases and problems of the elderly.

Today there are a few highly vociferous and influential Cassandras (some of them scientists) who use the press and television to say that mankind is on the verge of being poisoned out of existence by toxic, carcinogenic, mutagenic and teratogenic chemical compounds in our food and environment. These claims are being made despite health and death statistics which show that people are living longer and more enjoyable lives than any previous generations; nevertheless, we must recognize that man, like all other biological species, has never been, is not, and never will be immortal.

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N. E. Borlaug

"HUMAN LONGEVITY"

In technologically developed countries, about one in 10,000 people lives beyond the age of 100. Actuarial statistics indicate that only one in 2.1 billion people can be expected to live beyond the age of 115. Since 2.1 billion is about half the population of the world, only a few individuals of such extremely advanced ages are likely to be living at any one time.

The greatest authenticated human age is 118. This record is held by Mr. Shigechiyo Izumi of Japan, who celebrated his history-making birthday in 1983. The U.S. record (second highest in the world) was set by Miss Fannie Thomas, who died in San Gabriel, California in 1981 at the authenticated age of 113 years, 273 days. Canada's record holder, Mr. Pierre Joubert, made it to the ripe old age of 113 years, 124 days.

Elsewhere in the world, the pattern is similar. Where good documentation exists, centenarians are rare. Where documentation is poor, many are reported. (The correlation between the density of centenarians in an area and the illiteracy rate has been reported to be 0.83.)

In Sweden, where record-keeping is thorough, not one person over the age of 109 has been identified. A study of the birth and death records of the British peerage and baronetage, whose vital statistics have been documented for centuries, has disclosed only one instance of survival beyond the age of 100. (Some observers have attributed this poor showing to the draftiness of the residences of the British nobility.)

K. A. M.

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LONGEVITY

Source of data National Geographic, Book of Animals, 1981

Animal	Life Span	Animal	Life Span
Man U.S.A.	Max.-118 yrs.	Lemming	<2 yrs in wild
	Male Female Both	Lemurs spp.	Up to 20 yrs. in captivity
*1900 U.S.A.	46.3 48.3 47.3	Leopard	Up to 21 yrs. in captivity
*1985 U.S.A.	71.2 78.2 74.7	Lion	Up to 15 yrs. in captivity
Antelope spp.	3-25 yrs. in captivity	Llamas	Up to 28 yrs. in captivity
Ass (wild)	10-25 yrs. in wild	Lynx	10 yrs. in wild
Bats spp.	Up to 30 yrs. in wild	Manatee	40 yrs. in wild
Bear spp.	Up to 35 yrs. in wild	Marmots	20 yrs. in captivity
Bison	12-15 yrs. (in parks)	(incl. Woodchuck)	
Buffalo	15-20 yrs. in wild	Mink	8-10 yrs. in captivity
(Africa)		Monkey spp.	Up to 45 yrs. in captivity
Camel	25-30 yrs. in captivity	Moose	15-20 yrs. in wild
Caribou	15 yrs. in wild	Musk-ox	12-20 yrs. in wild
Cats - ssp.	12-15 yrs. in captivity	Muskrat	4 yrs. in wild
Cheetah	10-12 yrs. in wild	Opossum	3 yrs. in wild
Chimpanzee	30-40 yrs. in wild	Orangutan	>50 yrs. in captivity
Cow spp.	12-26 yrs. in captivity	Otter spp.	22 yrs. in captivity
Coyote	5-6 yrs. in wild	Panda	13 yrs. in captivity
Deer spp.	8-16 yrs. in wild	Peccary	7 yrs. in wild
Dog spp.	15-20 yrs. in captivity	(Javelina)	
Echidna**	+50 yrs. in captivity	Platypus**	17 yrs. in captivity
Elephant	70 yrs. in wild	Porcupine spp.	Up to 20 yrs. in captivity
Elk	8-12 yrs. in wild	Porpoise spp.	Up to 50 yrs. in wild
Fox spp.	Up to 13 yrs. captivity	Prairie dog	8 yrs. in captivity
Gazelle spp.	Up to 17 yrs. captivity	Rabbits spp.	< 1 yr. in wild
Gibbon (ape)	Up to 34 yrs. captivity	Raccoon	6 yrs. in wild
Giraffe	25 yrs. in wild	Rat spp.	< 1 yr. in wild
Goat	9-12 yrs. in wild	Rhinoceros spp.	40 yrs. in captivity
Gorilla	35 yrs. in captivity	Sea Lion spp.	17-46 yrs. in wild
Guinea pig	8 yrs. in captivity	Sheep spp.	Up to 25 yrs. in wild
(cavy)		Skunk	10 yrs. in captivity
Hamster	2-3 yrs. in captivity	Sloth	30 yrs. in captivity
Hare spp.	Up to 7 yrs. in captivity	Squirrel spp.	15 yrs. in captivity
Hippopotamus	+40 yrs. in wild	Tapir spp.	25 yrs. in captivity
Hog spp.	15-20 yrs. in wild	Tiger	20 yrs. in captivity
Horse	25-35 yrs. in captivity	Walrus	40 yrs. in wild
Hyanas spp.	Up to 25 yrs. in wild	Whale spp.	8 to 80 yrs.
Impala	Up to 17 yrs. in captivity	Wildebeest	21 yrs. in captivity
Jackal	Up to 16yrs. in captivity	Wolf	16 yrs. in captivity
Jaguar	Up to 20 yrs. in captivity	Wolverine	16 yrs. in captivity
Kangaroos spp.	Up to 23 yrs. in wild	Yak	20 yrs. in captivity
Koala	Up to 20 yrs. in wild	Zebra spp.	25 yrs. in captivity

* -Life expectancy at birth

**=Egg laying animals

spp=species

OLD TESTAMENT (GENESIS) CHAPTERS 5 THROUGH 25

	LIFE SPAN IN YEARS *
Adam	930 years
Seth (Son of Adam)	912 years
Enosh (Son of Seth)	905 years
Kenan (Son of Enash)	910 years
Mahalalel (Son of Kenan)	895 years
Jared (Son of Muholel)	962 years
Enoch (Son of Jared)	365 years
Methuselah (Son of Enoch)	969 years
Lamech (Son of Methuselah)	777 years
Noah (Son of Lamech)	950 years
Shem (Son of Noah)	600 years
Arpachshad (son of Shem)	438 years
Shelah (Son of Arpochshad)	433 years
Eber (Son of Shelah)	464 years
Peleg (Son of Eber)	239 years
Rev (Son of Peleg)	239 years
Serug (Son of Rev)	230 years
Nahor (Son of Serug)	148 years
Terah (Son of Nahor)	205 years
Abram (Son of Terah)	175 years
Sarah (Wife of Abram)	127 years

* Obviously these were years that were shorter in days than the Gregorian Calender in use today.

CHANGES IN LIFE EXPECTANCY AT
BIRTH IN THE USA

Year	Total Population (Years)	Male Years	Female Years
1900	47.3	46.3	48.3
1910	50.0	48.4	51.8
1920	54.1	53.6	54.6
1940	62.9	60.8	65.2
1981	74.1	70.3	77.9
1985	74.7	71.2	78.2

LIFE EXPECTANCY IN THE U.S.

Year	@ Birth	@ 45	@ 65
1900	47.3	24.8	11.9
1910	51.5	24.5	11.6
1920	56.4	26.3	12.5
1930	59.2	25.8	12.2
1940	63.6	26.9	12.8
1950	68.2	28.5	13.9
1960	69.7	29.5	14.3
1970	70.9	30.1	15.2
1980	73.7	32.1	16.4
1985	74.7	32.7	16.7

SOURCES: McGinnis, J. M.: "Recent Health Gains for Adults," New Engl. J. Med. 306:671, 1982.
 National Center for Health Statistics, Health United States, 1987; National Center for Health Statistics, Vital Statistics of the United States, 1980, 1985.

VARIATION IN POPULATION GROWTH IN
DIFFERENT COUNTRIES

Country	Per 1000 Population		Annual Natural Increase %	Population Mid 1986 Million	Years to Double at present % Increase
	Crude Birth	Crude Death			
Kenya	54	12	4.2	21.0	17
Nigeria	48	18	3.0	105.4	23
India	35	13	2.3	785.0	31
China	18	8	1.0	1050.0	72
USSR	20	11	0.9	280.0	79
Sweden	11	11	0.0	8.4	1690
Mexico	32	6	2.6	81.7	27
Brasil	31	8	2.3	143.3	30
Canada	15	7	0.8	25.6	87
USA	16	9	0.7	241.0	99

* World Population DATA Sheet (1986)

GROWTH IN HUMAN NUMBERS

Year Reached	Population Growth To:	Number of Years To Reach
1850	First Billion	1 to 2 Million
1930	Second Billion	80
1960	Third Billion	30
1975	Fourth Billion	15
1986	Fifth Billion	11
1999?	Sixth Billion	11 or 12 Years ^{Years}

World Population, July 1, 1986, Estimated** at 5,026,000,000
 World Crude Birth Rate 27 (per 1000 of Population)
 World Crude Death Rate 11
 World Natural Annual Increase in % - 1.7%
 World Annual Increase (1.7%) = 85,442,000
 World Growth in Human Numbers per Minute 163
 Years For World Population to double at present rate of Growth 41 years.

**World Population Data Sheet
 Population Reference Bureau
 Washington, D.C.