

I. Life Expectancy

1. Since 1700, life expectancy has increased from 30 to 77 years. This is a 157 percent increase.

2. Why has life expectancy increased?

A. Improved nutrition

B. Sanitation

C. Medical technology

D. Better working conditions

3. It was originally believed that life expectancy increased because we had overcome “crisis” mortality.

Crisis mortalities (epidemics) result from fast moving diseases that move through a population and kills persons who lack sufficient resistance.

Examples:

Plague, Cholera, Influenza

Epidemic diseases come periodically but have very large psychic consequences.

4. We now believe that it was the endemic diseases that led to greater mortality rates.

Endemic- regional diseases that persist over time.

Examples:

Tuberculosis, Diarrhea, Hook worm

II. Stature

Height is the *cumulative* measure of nutritional status less the “insults” less and work expenditures.

We consider *average* height over time, which gives us an idea about what historical living conditions were like.

Five “Facts” Regarding Stature

1. European Americans were taller than their counterparts in Europe. This suggests that even the most disadvantaged members of the American society benefited from American resource abundance and its favorable disease environment.
2. There were cycles in 19th century stature. These cycles coincided with economic shocks, such as urbanization and food shortages.

3. Rural farmers were taller than their non-farmer urban counterparts. This may suggest that rural areas were more healthy than urban areas.
4. There was nearly a perfect positive correlation between social class and stature.
5. There was a substantial stature gap between males and females. This may be the result of the inner family distribution of calories.

III. Body Mass Index

BMI is a *current* measure of nutritional status.

Definition:

$$\text{Body Mass Index (BMI)} = \frac{\text{Weight in Kilograms}}{(\text{Height in Meters})^2}$$

Example: Abraham Lincoln

Lincoln's Height, 6'4" => # Meters

Lincoln's weight, 185 lbs => # Kilograms

Calculate Lincoln's BMI

How and where body fat is distributed over the body greatly influences mortality.

Thus . . .

Abdominal fat is a better measure of health than the BMI.

However . . .

It is extraordinarily hard to find historical abdominal fat samples.

Therefore . . .

We use BMI as an approximation for abdominal fat.

Some Medical Facts

1. High concentrations of abdominal fat, possibly BMI, are associated with cardiovascular disease, hypertension, diabetes, possibly stroke.
2. Too low of BMI is associated with nutrition related diseases, and certain cancers.

So, what is the “best” BMI?

25 for both males and females.

However, the likelihood of mortality increases more rapidly the farther you get from 25 for females relative to males.

Where we go from here . . .

Backbone of History

Rick Steckel and Jerome Rose combine economics and physical anthropology to assess Paleolithic living standards in the Western Hemisphere.

RS and JR collect 12,520 skeletal remains of indigenous and immigrants groups over a long history of the Western Hemisphere's history.

RS and JR then proceed to compare biological living standards among historical populations.

Measurements

1. Stature (from bone lengths)
2. Dental health (diets)
3. Degenerative joint disease (work intensity)
4. Anemia (diets and disease)
5. Linear enamel hypoplasias (indicates severe biological stress during childhood)
6. Trauma (military conflict and violence)
7. Skeletal infections (disease)

Results

1. Brazilian and other South Americans fared quite well.
2. South Carolinians, Californians and nomadic Plains indigenous groups did the best among North Americans.
3. Indigenous groups in America's South West were the most disadvantaged among all groups in the Western Hemisphere.

Technophysio Evolution

Findings between body measurements (anthropology) and mortality risks have led Fogel and others to think in terms of the relationship between the human organism (physio) and technology (techno).

Technophysio Evolution

Technophysio Evolution is the synergisms between the human organism and the technological environment that are not genetic, rapid, culturally transferred and not necessarily stable.

This process has and will continue to be continuous.

Technophysio Evolution indicates that we are living longer because we have gained such dramatic control over our physical environment. This allows us to live longer and also . . . better.

Technophysio Evolution may have an influence on stature.