

## ACTIVITY 2B :STUDENT HANDOUT SURVIVAL CURVES

$$(number\ alive/number\ of\ births \times 100 = \% \text{ survival})$$

The teacher may select from two versions of a graph in which percent survival is plotted against age. The principal conclusion drawn from graphs such as these is that, although median length of life has increased over the centuries, maximum length of life has not.

One version (Graph 1 — page 5–16) has four survival curves with the earliest depicting the survival of people born 25,000 years ago. People who lived during this time had a death rate throughout life that was equal to the high neonatal death rate. It is believed people die at this rate when they have no protection from factors which cause a premature death, such as predators. Living in caves provides protection from predation and it is surmised that people who lived in the caves of what is now France had a longer median life span because of this protection. The citizens of Rome had additional protection beyond living in caves; they had a rudimentary system of sanitation and an excellent water system, hence, their median life span was still greater than simply living in caves afforded people. The curve with the greatest median life span is the near-equivalent to the curve for people born today where protection is provided by such factors as modern housing, sanitation, antibiotics, etc.

The other version (Graph 2 — page 5–16 of this figure is based on United States census data. It shows the progressive increase in median life span in this country since 1840. The curve with the shortest median life span is labeled “stone age” and compares with the “Europe 15,000 years age” of the other version of this graph. The curves from 1840 to 1980 are based on census and projected census data and show that, the more recent your birth date, the longer your median length of life will be. As with the other version of the family of survival curves, the reason for this increase in median life span is due to increasing protection from factors which shorten our life. For example, proper sanitation allows us to avoid infectious diseases which may shorten our lives. Antibiotics, on the other hand, allow us to survive the infectious disease by killing the infectious organism after we have contracted it.

The jargon attached to either of these family of curves is the “rectangularization” of survival curves. The final piece of information that may be gained from these curves is life expectancy at birth which is identical to median length of life of each birth cohort shown in the two versions of the graphs depicting a family of survival curves. This information is obtained by drawing a horizontal line at 50% survival and dropping a vertical line from the point of intersection with the curve of interest to the horizontal axis. The age at which the vertical line hits the horizontal axis is the life expectancy of someone born in the “year” of interest.

*-Helen Bertrand, Ph.D.*

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