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A Short Note on Longevity

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by

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Certainly man will not become immortal, but will not the interval between
the first breath that he draws and the time when in the natural course of
events, without disease or accident, he expires, increase indefinitely?

Marquis de Condorcet
Sketch for a Historical Picture
Of the Human Mind (1795)

Marie-Jean-Antoine-Nicholas de Caritat, Marquis de Condorcet, was an eighteenth century French mathematician and philosopher. He also had an interest in politics, a passion that led, on the dark side, to his death in prison because he happened to be on an unsung side in the French Revolution. Yet on the brighter side, he was a leading figure in the French Enlightenment who was symbolically interred, sans lost bones, in the Panthéon in 1989. And then, to our present interest, his highly optimistic view of the progress of the sciences and education expressed in his *Sketch* was the foundation for his expectation that the human lifespan might "increase indefinitely."

Recently I came into possession of the genealogical record of some of my ancestors, the Karstensson and Smith clans. The Karstensson line, that of my father, Hans, was provided by Lennart Nilsson of Borgeby, Skåne, Sweden. The Smith lineage was found

in the genealogy papers of my mother, Iris Almeda Smith Karstensson. These records afford

some data pertinent to the matter of longevity in the Karstensson-Smith clans, and may also

shed a bit of light on Condorcet's lengthening lifespan hypothesis.
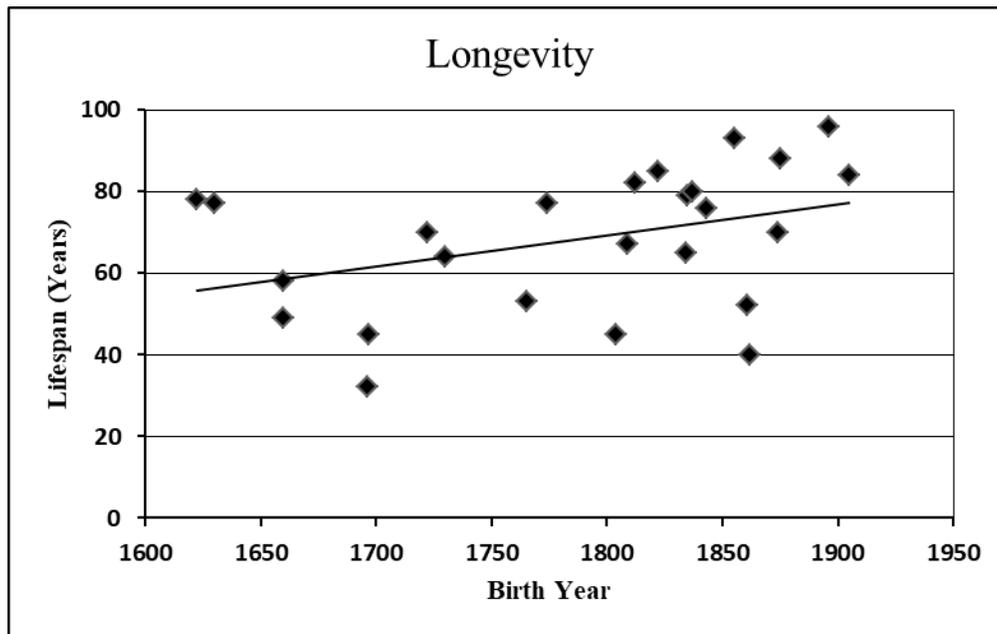
I. The Data.

The Karstensson ancestors resided in Skåne, Sweden; my father alone migrated to

California in 1924, eventually taking up residence in Yreka in Siskiyou County. The Smiths

resided in Scott Valley, Siskiyou County, California. My mother and father met in Gazelle at

the Edson Foulke Ranch where they both worked, and were married on May 13, 1933. When

the Edson Foulke Company went bankrupt in 1937, in the Great Depression, the Karstensson

family moved to Yreka and resided there for most of the remainder of their lives.

The acquired genealogical records yielded a data set consisting of 25 ancestors.

The Karstensson line contained 17 forerunners over 9 generations having combined lives

spanning the period from 1622 to 1992. Then the Smith lineage consisted of 8 bloods in 4

generations whose collective lives stretched from 1812 to 1989. The sample is arrayed in the

Data Set on page 5 of this note. Presented there, in each row, is the name of the ancestor, his

or her birth year, death year, and lifespan in years.

II. The Analysis and Results.

The birth years ranged from 1622 to 1905 with a mean birth year of 1787.20, a

standard deviation of 86.18 years, and a median birth year of 1812. The death years ranged

from 1700 to 1992 with a mean death year of 1855.40, a standard deviation of 94.11 years,

and a median death year of 1894. And the lifespans ranged from 32 years to 96 years with a

mean lifespan of 68.20 years, a standard deviation of 17.39 years, and a median of 70 years.

The data are rendered graphically in the scatter plot shown below. The 25 diamonds in the graph represent the 25 ancestors in the sample. Each diamond shows a given ancestor's birth year, plotted from the horizontal axis, and lifespan, measured on the vertical axis. The straight line drawn through the diamonds is the least-squares regression line, the line that fits the data best in that it minimizes the sum of the vertical deviations of

the diamonds from the fit line. The observed property of this line is its positive slope suggesting a direct relationship between birth year and lifespan, an increasing lifespan over time.

The data were then fit to a simple linear regression equation to test the statistical significance of this direct relationship. The regression equation took the following form:

$$L_i = b_0 + b_1 B_i + e_i$$

where L_i is the lifespan in years of the *i*th ancestor, and B_i is the birth year of that predecessor. Then b_0 is the intercept term, b_1 the slope coefficient, and e_i the random error term. A positive and statistically significant slope coefficient, b_1, in the estimated equation will suggest the increased lifespan over the examined period.

The estimated regression equation is as follows with *t*-statistics in parentheses:

$$L_i = -67.484 + 0.076 \, B_i \quad R^2 = 0.142 \quad \text{Adj. } R^2 = .104$$
$$(-0.968) \quad (1.948)$$

The slope coefficient of 0.076 is positive and statistically significant at the 10 percent level using a two-tail test since $t_{\alpha = .10/2, \, 23 \, df} = \pm 1.714$. And yet the coefficient of determination, the adjusted R^2 of .104, suggests that just ten percent of the variation in L, lifespan, is attributable to the variation in B, the birth year; some ninety percent of the variation in lifespan is thus attributable to factors not in the equation.

III. Conclusion.

The lifespan within the Karstensson-Smith clans was found to have increased significantly over the examined time period. And Condorcet's lengthening life hypothesis is, thus, supported in our analysis. The statistically significant slope coefficient of +0.076 is the fraction of a year, about 27.74 days, that is added to a given lifespan for each more recent year of birth. Using our estimated equation to calculate point estimates for the lifespan of hypothetical ancestors born in 1600 and 1900, we find them to have been 54.116 years and 76.916 years, respectively. The lifespan over this 300 year period can then be seen to have increased by some 22.8 years. *Vive l'homme!*

Data Set

	Name	Birth Year	Death Year	Lifespan
	The Karstensson Line:			
1	Carsten Clow	1622	1700	78
2	Maria Gerdes	1630	1707	77
3	Christopher Carstensson Clow	1660	1709	49
4	Adela Pedersdotter	1660	1718	58
5	Mathias Christoffersson Clow	1696	1728	32
6	Metta Knutsdotter	1697	1742	45
7	Knut Mathiasson Clow	1722	1792	70
8	Elna Jönsdotter	1730	1794	64
9	Mathias Knutsson	1765	1818	53
10	Sissa Andesdotter	1774	1851	77
11	Carsten Mathiasson	1804	1849	45
12	Margareta Nilsdotter	1809	1876	67
13	Jöns Carstensson	1834	1899	65
14	Bengta Hansdotter	1837	1917	80
15	Hans Jönsson	1862	1902	40
16	Karna Svensdotter	1861	1913	52
17	Hans Carstensson Karstensson	1896	1992	96
	The Smith Line:			
18	Nancy Cummings	1812	1894	82
19	Lewis Edgar Hughes	1822	1907	85
20	James Milton Smith	1835	1914	79
21	Christina Eller	1843	1919	76
22	Lucinda Davis	1855	1948	93
23	Lucius Milton Smith	1874	1944	70
24	Suzie Hughes	1875	1963	88
25	Iris Almeda Smith	1905	1989	84

Sources

1. Marquis de Condorcet, *Sketch for a Historical Picture of the Human Mind* (1795); from selection reprinted in Isaac Kramnick (Ed.), *The Portable Enlightenment Reader* (New York: Penguin Books, 1995), p. 37.

2. Iris Smith Karstensson, "Early Residents of Scott Valley, Siskiyou County, California" (Yreka, California: May 8, 1973, unpublished paper).

3. Lewis Karstensson, *Levity* (Pittsburgh, Pennsylvania: Dorrance Publishing Co., 2017), pp. 1-7.

4. Lennart Nilsson, "The relations between the cousins Ida and Hans and the Clow family" (Borgeby, Skåne, Sweden: April 19, 2016, unpublished correspondence).

5. "Personakt, Åbo Hans Jönsson" (December 16, 2015).

6. "Personakt, Hans Karstensson f. Carstensson" (January 2, 2016).

7. "Personakt, Åbo Jöns Carstensson" (February 2, 2016).

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