Description of files

All files are available in pdf format for printing, Excel and text. Some data are lacking for certain *départements* at certain dates, if the *département* did not exist or was not part of France at that time

Life tables by département, 1806-10 to 1901-05

Column 1 contains the year of the census *t*, column 2 the name of the *département*, column 3 the age *x*, column 4 the probability of dying $q(x)$ from age *x* to $x+4$, from year *t* to $t+4$, column 5 the survival value $S(x)$ related to the quotients in column 4 (for 1,000 births at age 0). The data are classified by *département*, year and age (from 0 to 85 in five-year groups). The total for France as a whole is given at the end of the document.

The first three lines of the file, reproduced below, may be read as follows: in the *département* of Ain, the probability of a child born in 1806 dying before his or her fifth birthday in 1811 was 0.4626 (46.3%). A child reaching age of five in 1806 had a probability of dying before his or her tenth birthday of 0.0648 (6.5%). On the basis of these quotients, for 1,000 births at age 0 there were 535 survivors by age 5, and 503 by age 10

t		x	q(x)	S(x)
1806	AIN	0	0,4626	1000
1806	AIN	5	0,0648	537
1806	AIN	10	0,0395	503

The tables may be “closed” by assuming a probability of dying after 95 years, or by extending the rates beyond 95 years.

Life expectancy at birth by département, 1806-10 to 1901-05

This file provides the life expectancies at birth deduced from the tables in the previous one. It updates Table C7 in Bonneuil (1997). The life table for Ain in 1806-10 corresponds to a life expectancy at birth of 27.1 years.

	1806-10	1811-15	1816-20	1821-25	etc.
AIN	27,1	31,6	29	33,9	etc.

Calculating the life expectancy consists of calculating the area under the survival function $S(x)$. This is generally done using the trapezium rule, which is only approximate, especially between 0 and 5 years, when the probability of dying varies widely. The method used here avoids a direct computation of the area under the five-year $S(x)$ line. Given the $q(x)$ values, a single-parameter Ledermann table is found that minimises the least-square distance,

$$\sum_{x=0,5,\ldots,95}(q_x(e_L)-q(x))^2$$

where $q_x(e_L)$ with variant *x* is the model Ledermann table associated with the value e_L. Once this input e_L is obtained, the associated life expectancy, generally close to e_L is deduced by a programme that calculates the area under the survival functions associated with *q x*(*e L*) but annually, thus reducing the error involved in using the trapezium rule for quinquennial periods.

In the results table, the life expectancy value is replaced by a dot where the *département* did not belong to France and its data were not included in the censuses (such as the Meurthe after 1871, or Savoie before 1861).

Net migration rates by age group, département and period

For each *département* and age group, this file contains the net migration rates for the age group [*x*, *x+4*] in year *t* to age [*x+5*, *x+9*] in year *t+4*, for the census years from 1856 to 1901

		1856-60	61-65	66-70	etc.
AIN	nais --> 0-4	0,166	0,009	0,058	etc.

These rates *r* [*x, x+4*] are obtained using the Greville formula, and are therefore to be multiplied by the numbers in an age group at the start. The number *p* [*x+5, x+9*](*t+5*) in age group [*x+4, x+9*] at date *t+5* is obtained from the number *p* [*x, x+4*](*t*) in age group [*x*, *x+4*] subjected to a probability of dying within a calendar period *5q persp* [*x, x+4*] as follows:

$$p_{[x+5,x+9]}(t+5) = p_{[x,x+4]} ((1-{}_5q^{persp}_{[x,x+4]}) (1-r_{[x,x+4]}) .$$

An approximation of the net number of migrants is

$$p_{[x,x+4]}(t)\ (1-{}_5q^{persp}_{[x,x+4]} / 2)\ r_{[x,x+4]} .$$