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France 2004: Life expectancy tops 80 years

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Length of life is continuing to increase in France. It made a leap forward in 2004 compared with 2003, the year of the heatwave, but also compared with 2002, a normal year. By setting the advances of the past few years against a long-term trend starting in the mid-eighteenth century, Gilles Pison explains the reasons for the impressive extension of life expectancy in two centuries and the specific increase in 2004.

The population of France on 1 January 2005 was estimated at 62.4 million, breaking down as 60.6 million in metropolitan France and 1.8 million in the overseas departments and territories [1]. In metropolitan France, the population increased by 361,000 in 2004 (+0.6%), the highest annual increase in 30 years. This rise can be attributed to a substantial drop in the number of deaths, combined with a steady number of births and a slight increase in net migration (Table page 3). The population figures are based on the results of the 2004 census, which prompted INSEE to revise the population upward slightly. The correction for 2003 is +0.5% with respect to last year's estimate (1).

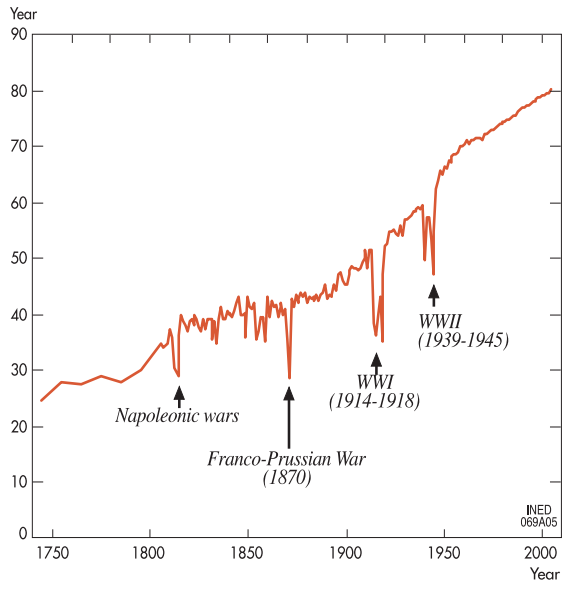
As many births in 2004 as in 2003

The total fertility rate for 2004 –1.90 children per woman– is very close to that for 2003 (1.88). The slight increase in the fertility rate offset the slightly lower number of women of child-bearing age, resulting in a stable number of births: 765,000 in 2004 in metropolitan France, compared with 762,000 in 2003.

Women are continuing to postpone childbearing until a later and later age, a trend which has been observed for more than 25 years. The average age of women who gave birth in 2004 was 29.6 years. This age has risen steadily from 26.5 years in 1977. While women's fertility after age 30 has been rising since the 1970s, fertility before 30 has been stable for about 10 years.

An examination of fertility by birth cohort shows that women born in 1954, who turned 50 in 2004 and

Figure 1 - Life expectancy at birth in France: 1740-2004



Sources: Blayo [4]; Vallin and Meslé [3];Richet-Mastain et al. *[1].*

* *Institut national d'études démographiques*

(1) The population adjustments made by INSEE on the basis of the census will be examined in the next issue of *Population & Societies.*

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whose childbearing years are now over, had an average of 2.12 children. Women born in 1964, who turned 40 in 2004, already have 2.00 children, and the total will probably rise to 2.1 children by the time they turn 50, the same number as for women 10 years their senior. For younger cohorts, who still have many childbearing years ahead of them, any estimate of their final number of children is risky, but it could be slightly below 2.1.

Significant drop in mortality in 2004

The number of deaths recorded in 2004 –509,000– is 7.5% lower than the 550,000 deaths in 2003, which included 15,000 excess deaths due to the heatwave in August 2003. It is therefore more enlightening to compare the 2004 figure with the 534,000 deaths in 2002. But even then, 2004 still appears highly favourable, with 4.5% fewer deaths despite a 1.2% increase in the population and a higher proportion of elderly people.

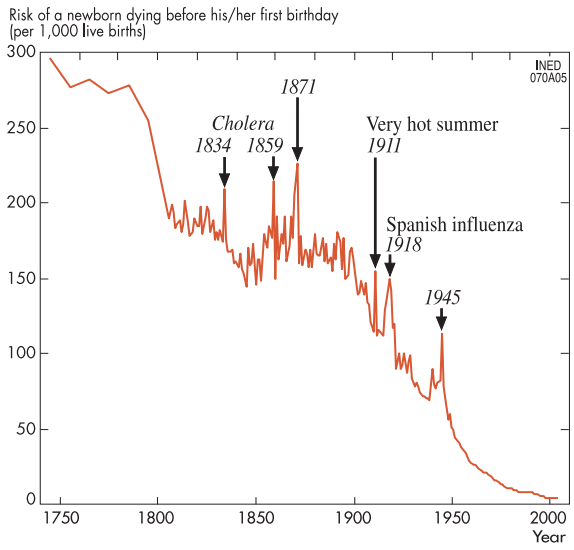
The calculation of life expectancy factors out variations in population size and age distribution, so as to include only changes in the risks of death. For the first time, life expectancy at birth for both sexes exceeds 80 years (80.2). It was 76.7 for men and 83.8 for women in 2004, compared with 75.9 and 82.9 respectively in 2003. Life expectancy stagnated in 2003 because of the exceptional mortality caused by the heatwave. Compared with 2002, life expectancy increased by 10 months in two years. That is significantly more than the trend of the past 50 years, which is three months a year, i.e. six months in two years.

Two-and-a-half centuries of life expectancy gains

Now that the threshold of 80 years life expectancy for both sexes combined has been crossed, it is interesting to set this point against a long-term trend, starting in the mid-eighteenth century, using data from the historical demography survey launched by Louis Henry at INED in the late 1950s [2] and the French life tables for the nineteenth and twentieth centuries reconstituted by Jacques Vallin and France Meslé [3] (Figure 1). In the mid-eighteenth century, with a population less than half the size of today's, the kingdom of France recorded more births than the Republic today: one million, compared with 765,000. However, half of all children died before the age of 10, which explains the extremely low life expectancy at that time: 25 years [4]. Life expectancy has therefore more than tripled in two-and-a-half centuries.

Life expectancy has not increased uniformly over those 250 years, however. It was interrupted by wars (the Napoleonic wars, the Franco-Prussian War of 1870, and World Wars I and II), which caused sharp declines in life expectancy. But those declines lasted only for the duration of the conflict, and growth returned to its fundamental trend afterwards. Life expectancy rose in some periods, such as at the turn of the eighteenth and nineteenth centuries, and receded in others, such as between 1850 and 1870. These variations reflect trends in infant mortality, which was still very high at those times, and which had a strong impact on the mean length of life (Figure 2). The steep rise in life expectancy around 1800 is linked to the sharp decline in infant mortality, partly as a result of vaccination against smallpox: the risk of a newborn dying in his/her first year fell from almost 275 per 1,000 live births to 185 per 1,000 live births in the space of two decades. The stagnation of life expectancy in the mid-nineteenth century was concomitant with an increase in infant mortality related to industrialization and urbanization, a period when children's living conditions worsened, particularly in cities. Conversely, the strong increase in life expectancy at the end of the nineteenth century coincided with advances in hygiene and medicine linked to Pasteur's revolution, of which children were the primary beneficiaries, and with the implementation of the first policies to protect young children [5].

Figure 2 - Infant mortality in France: 1740-2004



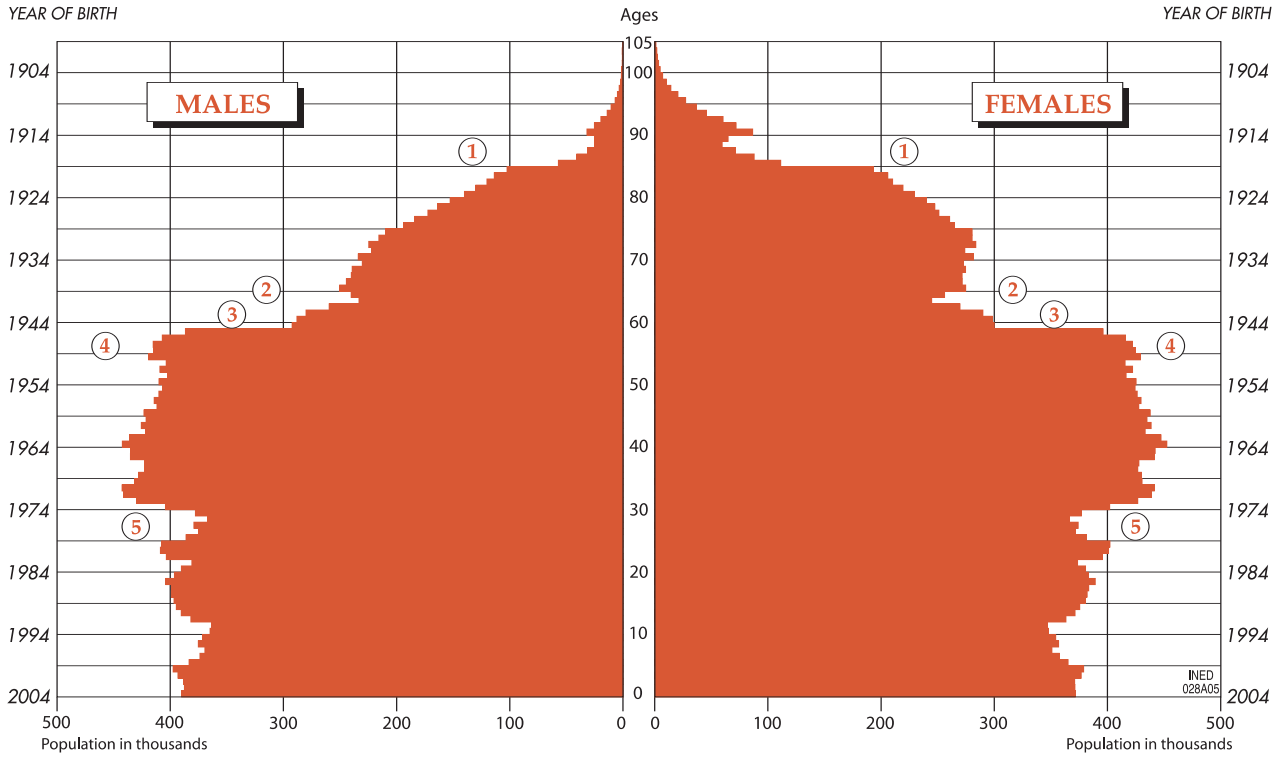
Sources: Blayo [4]; Vallin [8]; Vallin and Meslé [3]; Richet-Mastain et al. *[1].*

From the survival of children to the survival of adults

Over the twentieth century, infant mortality declined to extremely low levels, reaching 3.9 per 1,000 live births in 2004. Child mortality now accounts for only a tiny fraction of total mortality, and although it continues to fall, its effect on life expectancy is negligible. Life expectancy gains now stem entirely from reductions in adult mortality, particularly during old age, when more and more of all deaths occur. Progress in this area is relatively recent, as the trend in life expectancy at age 60 shows (Figure 3). In the mid-twentieth century, it

POPULATION OF FRANCE

PROVISIONAL ESTIMATE ON 1 JANUARY 2005



(1) Birth deficit due to World War I (depleted cohorts)

(2) Depleted cohorts reach reproductive age

(3) Birth deficit due to World War II

(4) Baby boom

(5) End of baby boom

Source : INSEE.

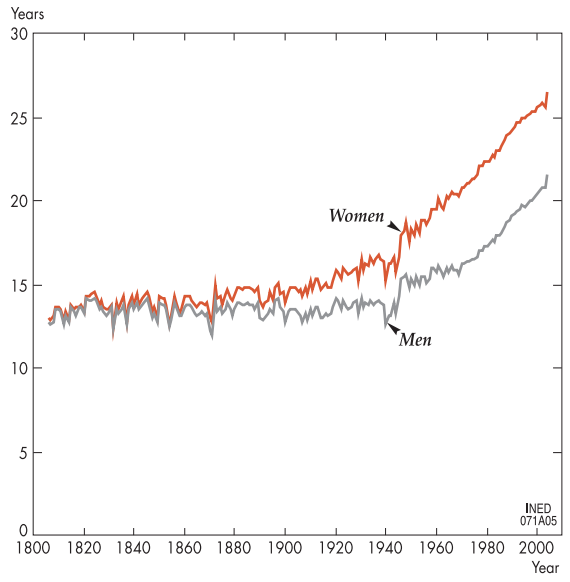
Table - Population indicators from 1950 to 2004, metropolitan France

	1950	1960	1970	1980	1990	1995	1996	1997	1998	1999	2000	2001	2002(p)	2003(p)	2004(p)
Births (m)	858	816	848	800	762	730	734	727	738	745	775	771	762	762	765
Deaths (m)	530	517	540	547	526	532	536	530	534	538	531	531	534	550	509
Natural increase (m)	328	299	308	253	236	198	199	196	204	207	244	240	227	211	256
Net migration (m)	35	140	180	44	80	40	35	40	45	60	70	85	95	100	105
Total growth (m)	363	439	488	297	316	238	234	236	249	267	314	325	322	311	361
Ajustment (1) (m)	-	-	-	-	-	-53	-53	-53	-53	33	33	33	33	33	-
Birth rate (t)	20.5	17.9	16.7	14.9	13.4	12.6	12.7	12.5	12.6	12.7	13.1	13.0	12.8	12.7	12.7
Death rate (t)	12.7	11.3	10.6	10.2	9.3	9.2	9.2	9.1	9.1	9.2	9.0	9.0	9.0	9.2	8.4
Infant mortality rate (r)	51.9	27.4	18.2	10.0	7.3	4.9	4.8	4.7	4.6	4.3	4.4	4.5	4.1	4.0	3.9
Total fertility rate (e)	2.93	2.73	2.47	1.94	1.78	1.71	1.73	1.73	1.76	1.79	1.88	1.88	1.87	1.88	1.90
Life expectancy:															
male (a)	63.4	67.0	68.4	70.2	72.7	73.9	74.1	74.6	74.8	75.0	75.3	75.5	75.8	75.9	76.7
female (a)	69.2	73.6	75.9	78.4	80.9	81.9	82.0	82.3	82.4	82.5	82.8	82.9	83.0	82.9	83.8
Marriages (m)	331	320	394	334	287	255	280	284	271	286	297	288	279	276	259
Marriage rate (t)	7.9	7.0	7.8	6.2	5.1	4.4	4.8	4.9	4.6	4.9	5.1	4.9	4.7	4.6	4.3
Population (2) (m)	42010	45904	51016	54029	56893	57936	58116	58299	58497	58796	59143	59501	59856	60200	60561
Under 20(2) (m)	12556	14665	16748	16419	15632	15058	15056	15027	15018	15029	15026	15020	15017	15060	15086
65 and above (2) (m)	4727	5288	6174	7541	8036	8858	9011	9164	9285	9415	9528	9643	9745	9829	9947
Under 20 (2) %	29.9	31.9	32.8	30.4	27.5	26.0	25.9	25.8	25.7	25.6	25.4	25.2	25.1	25.0	24.9
65 and above (2) %	11.3	11.5	12.1	14.0	14.1	15.3	15.5	15.7	15.9	16.0	16.1	16.2	16.3	16.3	16.4

(a) in years - (e) children per woman - (m) in thousands - (p) provisional - (r) per 1,000 live births - (t) per 1,000 population - (1) the population estimates for the period 1990-2003 were adjusted to establish consistency between the censuses of 1990 and 1999 and the census survey of 2004 (see next issue of *Population & Societies*) - (2) at year-end.

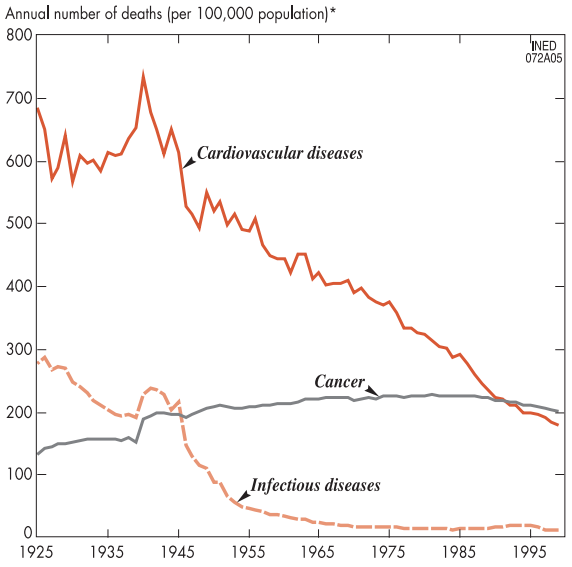
Source: INSEE.

Figure 3 - Life expectancy at age 60 in France: 1806-2004



Sources: Vallin and Meslé [3]; Richet-Mastain et al. *[1].*

Figure 4 - Mortality by cause of death in France: 1925-1999



** standardized mortality rate.*
Sources: INSERM; Vallin and Meslé [6].

was still close to its nineteenth-century level, particularly for men: a man aged 60 could expect to live for another 13 or 14 years. It was not until after World War II that life expectancy at age 60 started to increase for men, rising to 21.5 years in 2004, i.e. six years more than in 1954. Life expectancy started increasing earlier for women –in the very first decades of the twentieth century– and also accelerated after 1945, to reach 26.5 years at age 60 in 2004, i.e. 7.7 years more than in 1954. In the mid-twentieth century, a large proportion of adult and elderly deaths were still caused by infectious diseases. The decline in those diseases resulted in a significant increase in life expectancy at 60. However, as for child mortality, the share of infectious diseases in total mortality has fallen substantially (Figure 4) and expected gains from their continuing decline are only small. Cardiovascular diseases and cancer are now the main causes of death at those ages. It is successes in the battle against those diseases that have pushed adult and elderly mortality down and life expectancy up since the 1970s [7]. Mortality from cardiovascular diseases has strongly decreased over the past half-century thanks to advances in prevention and treatment (Figure 4). Mortality from cancer, which had increased, is now falling because of earlier diagnosis and a decline in risk factors such as smoking and alcohol consumption.

Deaths from the heatwave were more than offset in 2004

Mortality in 2004 appears exceptionally low. The number of road deaths fell thanks to more effective enforcement of speed limits through the use of automatic speed radars. There was virtually no influenza epidemic. The heatwave also precipitated deaths in 2003 that would otherwise have occurred in 2004. But the fact remains that the decline in deaths in 2004 more than compensated for the excess of 2003. Moreover, the regions that reported the strongest decreases in mortality were not those that suffered the most from the heatwave [1]. Radars, flu and the heatwave do not explain everything. Beyond its immediate effect, the heatwave changed our behaviour towards elderly people, with significant benefits from the very next year. It remains to be seen whether 2005 will confirm this progress.

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