

Online appendix

Is France still the demographic exception in Europe?

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This appendix describes in detail the “2023” projection, based on a scenario which extends recent trends in fertility and net migration by examining the consequences of the population trends estimated for 2023 if they remain constant, with the mortality trend returning to the baseline assumption of the latest INSEE projections.

Projection scenarios

In 2021, INSEE published a series of scenarios based on baseline, high and low assumptions for the three components of population dynamics: fertility, mortality and migration. These assumptions were the result of discussions between experts and reflected the trends most likely to meet with a consensus among users of the projections (baseline scenario), surrounded by alternative scenarios (high and low scenarios) [1]. These assumptions were not necessarily considered the most likely, but reflected the demographic conditions at the end of the 2010s, which were disrupted by the Covid-19 epidemic. In 2023, we can compare population movements with those of the assumptions used, and **construct a new scenario, called “2023”**, which takes account of recent demographic trends in its assumptions. These assumptions serve as the basis for an alternative projection to 2070.

Regarding **fertility**, the baseline scenario of 2021 forecast a fall to a level of 1.8 children per woman for the total fertility rate (TFR) from 2022, and the low scenario a continuous fall to 1.6 children per woman in 2030, followed by stabilization at this level. In the 2023 scenario, fertility is set at the 2023 level of 1.68 and remains constant¹.

For **mortality**, the baseline scenario of 2021 forecasts progress leading to an increase in life expectancy at birth to 90.0 years for women and 87.5 years for men in 2070. The 2021 baseline scenario predicted a life expectancy of 85.9 years for women and 80.3 years for men by 2023. The years 2020 to 2022 saw very high mortality, but life expectancy rose sharply in 2023, reaching 85.7 and 80.0 years for women and men respectively, an increase of more than half a year on 2022, leading to levels very close to the baseline scenario. We have therefore retained the INSEE baseline scenario of 2021 for mortality.

¹ In practice, the rates by age are obtained as the average of the rates for the low and baseline scenarios, weighted by the coefficients 0.62 and 0.38, leading to a TFR of 1.676.

In terms of *net migration*, on the other hand, INSEE's provisional estimate for 2022 and 2023, calculated as the average of the estimated net migration figures² for 2019, 2020 and 2021, is a long way from the baseline scenario: 183,000 compared with 70,000. The high scenario, of 120,000 entries exceeding exits per year, remains well below this provisional estimate, and below the definitive estimate for 2021 (173,000). In the absence of precise information on the sex ratio of migrants, we have not retained the gender distribution of the INSEE projections (2 women for 1 man, 80,000 women and 40,000 men in the high scenario) and set net migration at 90,000 per year for each gender (i.e. a sex ratio of 1 woman for 1 man). In practice, we have multiplied the net migration rates in the 2021 high scenario by a factor of 1.125 for women and 2.5 for men.

The results

The main result is that the 2023 conditions in terms of fertility and net migration lead to a population in 2070 of 72.1 million inhabitants, higher than the baseline scenario of 2021, with uninterrupted growth over the period (figure 3 in the main text). The number of births by 2070 is practically the same as in the baseline scenario (650,000 compared with 660,000), and the trend in deaths is very similar. The higher net migration more than compensates for the lower fertility rate. The population in 2070 is larger in the new projection.

Trends in the number of births and deaths are similar in the two projections, with deaths outnumbering births from 2030 in the 2023 scenario, compared with 2035 in the baseline scenario of 2021 (Figure A1). The increase in the number of deaths at the start of the projection is due to the arrival of the large baby-boom generations at older ages, which will feed them until they die out. In both projections, the positive net migration offsets the negative natural increase, which decreases until 2060 (-138,000 in the baseline scenario and -166,000 in the 2023 scenario), before rising slightly as the wave of baby-boomer deaths comes to an end. The additional migrants have children, which compensates for the lower fertility rate from 2040 onwards, before contributing to an increase in the number of deaths from 2050 onwards. In the 2023 scenario, the higher net migration contributes in total to stabilizing the population in the 2050s, which then continues to increase slightly until 2070, while in the baseline scenario the population peaks around 2045 and declines slightly thereafter (Figure 3 in the main text).

² According to INSEE, the "assessed" net migration is based on the apparent net inflow-outflow, which is the difference between the number of people entering a given territory and the number leaving it, by taking the difference between the total change in population over the period in question and the natural increase. For the years 2015 to 2022, a statistical adjustment has been added to take account of the change in the definition of inhabitants in the census dwelling sheet in 2018. For these years, the statistical adjustment is subtracted from the apparent net inflow-outflow to estimate the "assessed" net migration.

Figure A1: Births and deaths from 1970 to 2023, and projected for 2024 to 2070 according to two scenarios

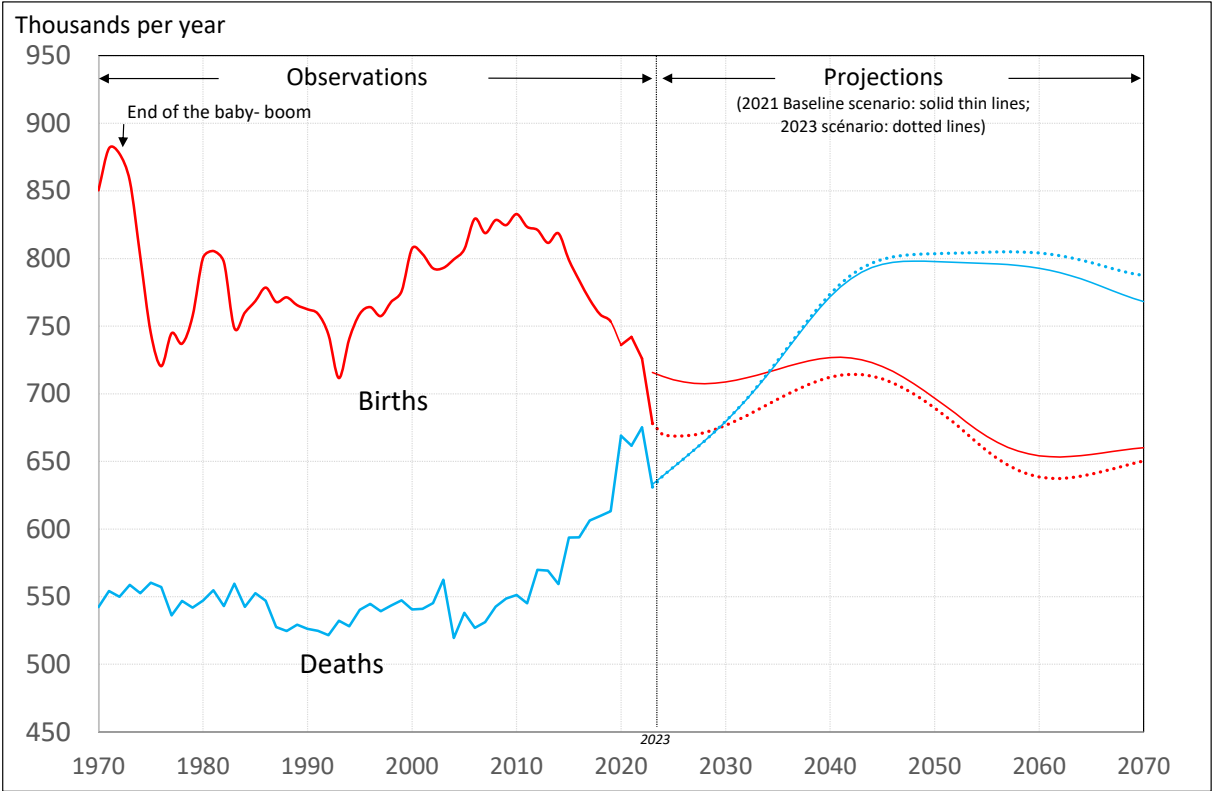


Figure A2 and table A1 show the numbers and distributions by major age group: in the 2023 scenario, the proportion of the population aged 65 and over is 28.7% instead of 28.9% in 2070 (compared with 21.5% in 2023, see table in the main text). The increase is particularly marked for the population aged 78 and over, as the generations born before 1946 are replaced after 2024 by the larger baby-boom generations. The ageing of the population is significant in all the projections; the two projections lead to similar results, but with more adults of working age thanks to the influx of migrants in the 2023 scenario (Table A1 and Figure A3). With an unbalanced net migration sex ratio of 1 man to 2 women (as in the INSEE scenarios), the projected population would include more women and more children, and would therefore be younger and more numerous.

In the longer term, if fertility and net migration remain at their 2023 levels, the population could decline or continue to grow depending on mortality trends. If the decline in mortality were to stop after 2070, the population would decline very slowly.

Table A1: Population (in thousands) and distribution by sex and age group (in %) in 2024 and 2070, according to two scenarios: INSEE’s 2021 Baseline scenario, and our “2023” scenario

Thous- ands	Women			Men			Both sexes		
	Population at 1/1/2024	Population at 1/1/2070		Population at 1/1/2024	Population at 1/1/2070		Population at 1/1/2024	Population at 1/1/2070	
		Baseline scenario	2023 Scenario		Baseline scenario	2023 Scenario		Baseline scenario	2023 Scenario
0-19	7 760	6 714	6 715	8 168	7 076	7 403	15 928	13 790	14 119
20-64	19 159	17 213	18 376	18 561	17 420	18 945	37 720	34 633	37 321
65+	8 335	10 653	11 037	6 386	9 021	9 625	14 721	19 674	20 662
75+	4 247	6 772	6 922	2 856	5 346	5 622	7 103	12 118	12 544
0-110	35 254	34 580	36 128	33 115	33 518	35 974	68 369	68 098	72 102

Percent	Women			Men			Both sexes		
	Population at 1/1/2024	Population at 1/1/2070		Population at 1/1/2024	Population at 1/1/2070		Population at 1/1/2024	Population at 1/1/2070	
		Baseline scenario	2023 Scenario		Baseline scenario	2023 Scenario		Baseline scenario	2023 Scenario
0-19	22.0	19.4	18.6	24.7	21.1	20.6	23.3	20.3	19.6
20-64	54.3	49.8	50.9	56.1	52.0	52.7	55.2	50.9	51.8
65+	23.6	30.8	30.5	19.3	26.9	26.8	21.5	28.9	28.7
75+	12.0	19.6	19.2	8.6	15.9	15.6	10.4	17.8	17.4
0-110	100	100	100	100	100	100	100	100	100

Figure A2: Age Pyramid in 2024 and 2070 (2023 Scenario)

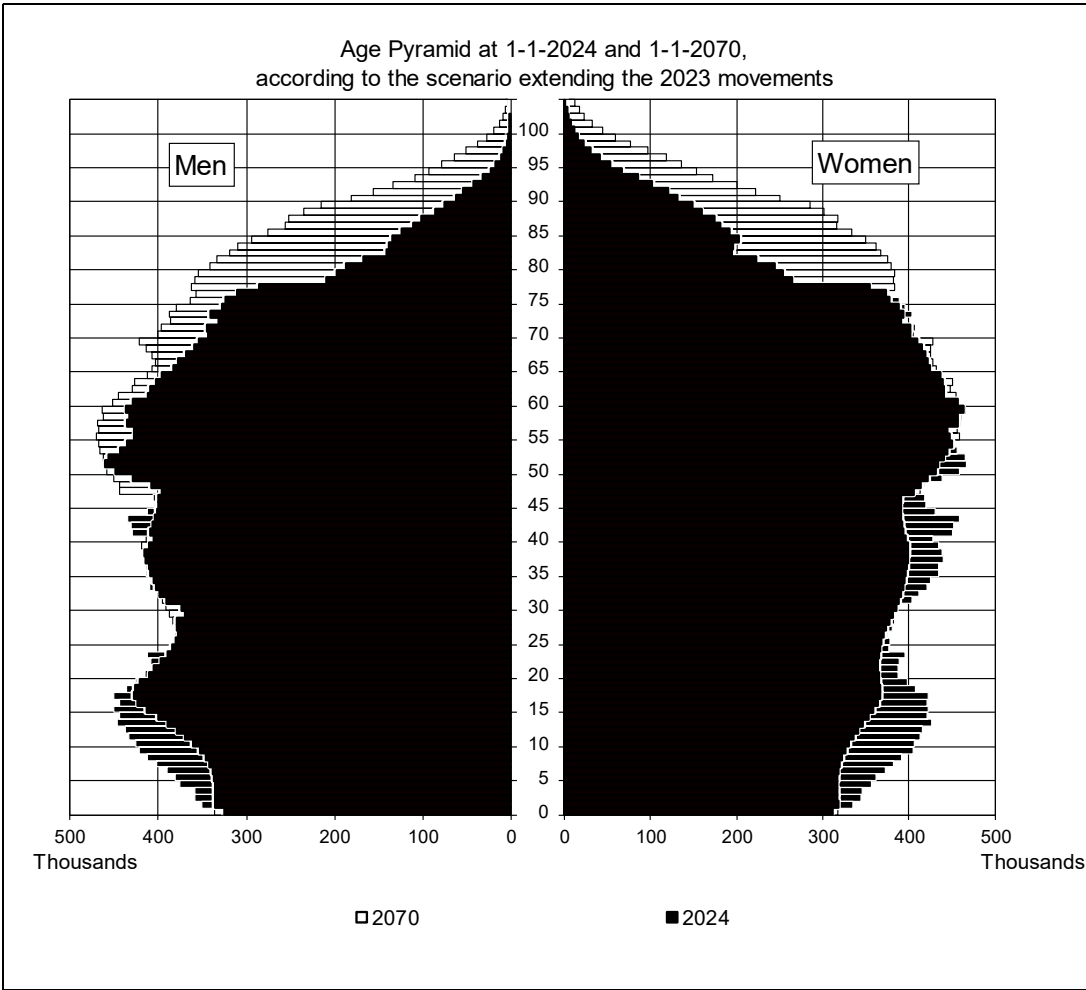
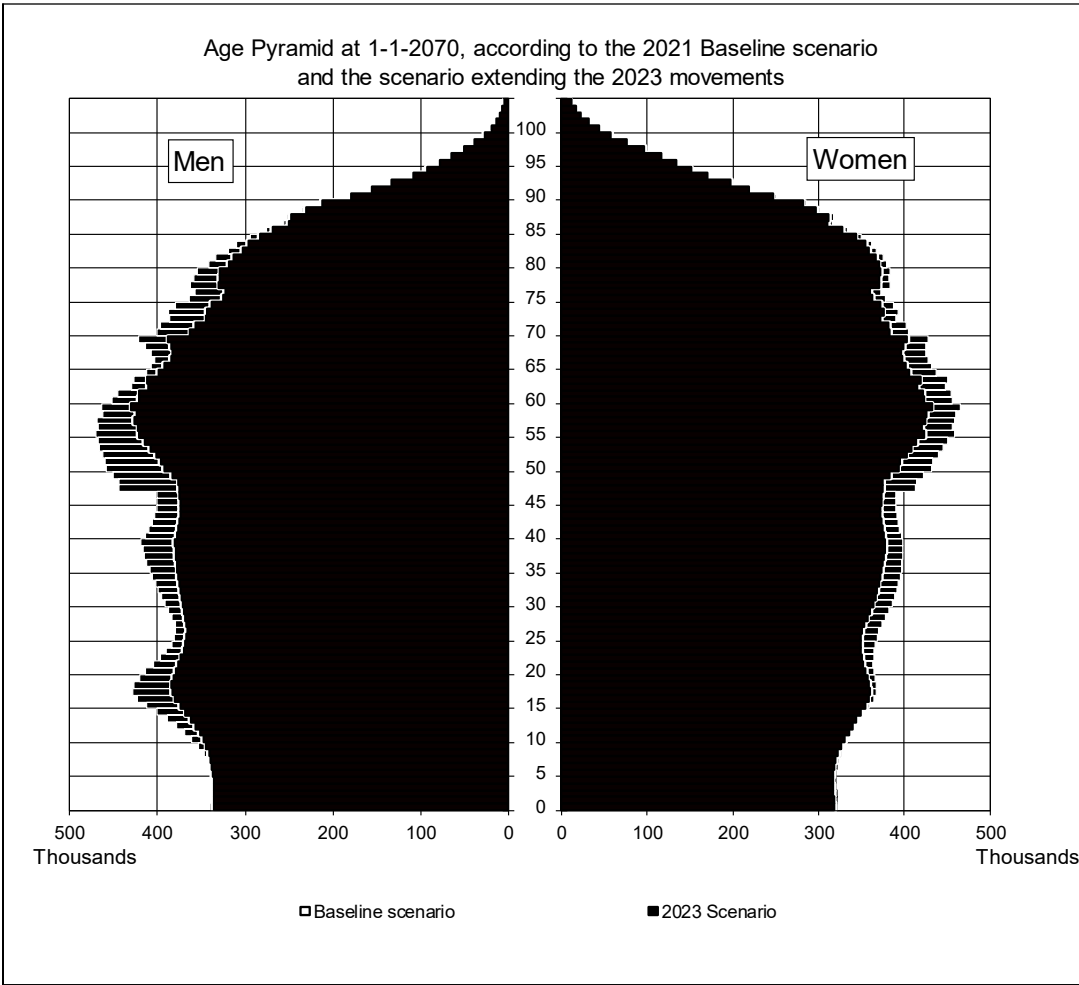


Figure A3: Age Pyramid in 2070, according to two scenarios



Reference

[1] Élisabeth Algava and Nathalie Blanpain, 2021, « Projections de population 2021-2070 pour la France : méthode et principales hypothèses », *Documents de travail de l’Insee*, n° 2021-05. <https://www.insee.fr/fr/statistiques/5893639>