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European Demographic Data Sheet 2006

The Forces Driving Unprecedented Population Ageing

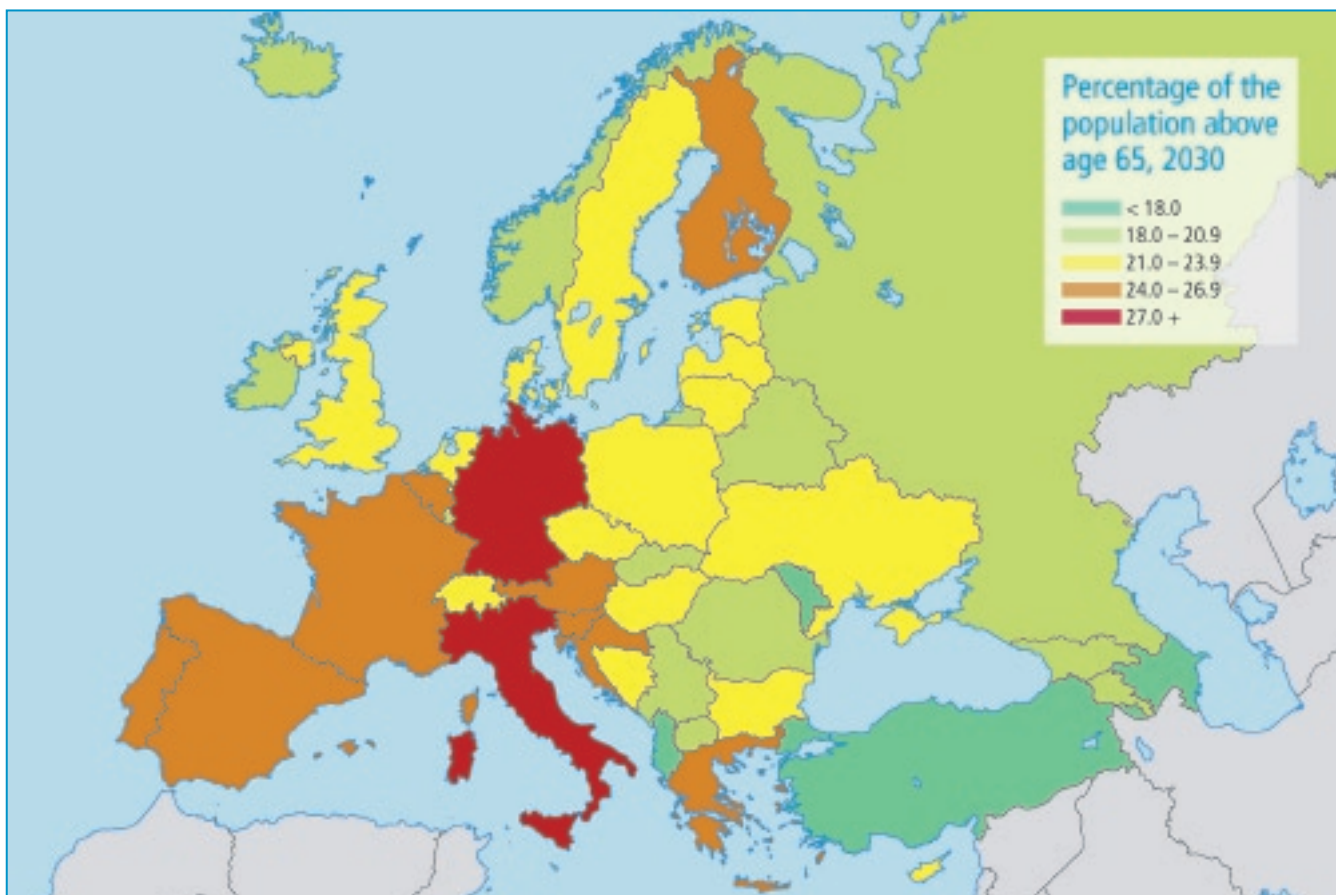
Europe is currently experiencing an upsurge of public and political interest in demography. Almost on a daily basis the media refer to demographic change, mostly to blame it for something bad that is happening or likely to happen. The Bulgarian government has officially declared demography a "national security crisis." President Putin calls demography "Russia's biggest problem," and EU Commission President Barroso calls demographic change "one of three major challenges facing Europe."

Given this skyrocketing public attention, the lack of solid science-based information about current and likely future demographic trends in these discussions is deplorable. Many discussants tend to use various fertility indicators and other demographic data without a clear understanding of their meaning and of the forces that are behind these demographic changes. This is where the publication of the first European Demographic Data Sheet can help. Together with the Vienna Institute of Demography, which focuses on comparative European analysis, and the Population Reference Bureau, which has long-standing experience in public information related to population trends, we decided to publish a demographic data sheet that lists for all countries of Europe (from the Atlantic to the Urals) some of the more conventional demographic indicators, together with more sophisticated ones, such as a tempo-adjusted TFR that, despite its complexity, is key to interpreting recent fertility trends in the right way.

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 POPULATION REFERENCE BUREAU

 Vienna Institute of Demography
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The European Demographic Data Sheet 2006

Country	Population size on January 1 st , 2005 (millions)	Projected population size, 2030 (millions)	Number of live births, 2004 (thousands)	Number of deaths, 2004 (thousands)	Net migration, 2004 (thousands)	Year when natural increase turns negative	Total fertility rate (children per woman), 1990	Total fertility rate (children per woman), 2004	Adjusted TFR (children per woman) See box below	Mean age at first birth, 1990 (years)	Mean age at first birth, 2004 (years)	Male life expectancy at birth, 2004 (years)	Male life expectancy increase, 1994-2004 (years)
Albania	3.1	4.1	47.0	78.0	-71.1	> 2050	3.00	2.10	2.36	-	-	71.7	2.4
Andorra	0.1	-	0.8	0.3	4.0	-	-	1.26	-	-	-	-	-
Armenia	3.2	3.1	37.5	25.7	-8.2	2021	2.63	1.38	1.46	22.8	23.4	70.4	5.3
Austria	8.2	8.5	79.0	74.3	61.7	2006	1.46	1.42	1.63	25.0	27.0	76.5	3.3
Azerbaijan	8.3	9.9	131.6	49.6	-0.4	2042	2.62	1.82	1.69	-	24.8	69.9	4.7
Belarus	9.8	8.5	88.5	140.1	2.6	1993	1.90	1.20	1.44	22.9	24.0	63.2	-0.3
Belgium	10.4	11.0	116.0	102.0	35.4	2026	1.62	1.64	1.77	26.4	27.6	75.9	2.9
Bosnia & Herzegovina	3.9	3.7	34.8	31.7	8.0	2009	1.71	1.23	1.58	23.6	-	-	-
Bulgaria	7.8	6.6	69.9	110.1	0.0	1990	1.82	1.29	1.53	22.2	24.4	69.1	1.8
Croatia	4.4	4.1	40.3	49.8	11.6	1991	1.67	1.35	1.64	24.1	26.1	72.0	2.7
Cyprus	0.8	0.9	8.3	5.2	15.7	2029	2.42	1.49	1.63	-	27.1	76.9	1.6
Czech Republic	10.2	9.7	97.7	107.2	18.6	1994	1.90	1.22	1.67	22.5	26.3	72.6	3.1
Denmark	5.4	5.6	64.4	55.8	5.2	2011	1.67	1.78	2.00	26.4	28.4	75.4	2.6
Estonia	1.3	1.2	14.0	17.8	-0.2	1991	2.05	1.46	1.95	22.7	24.8	66.2	3.6
Finland	5.2	5.4	57.8	47.6	6.7	2023	1.78	1.80	1.88	26.5	27.8	75.4	2.6
France	60.6	65.1	764.7	508.5	105.0	2017	1.78	1.91	2.02	27.0	28.4	75.9	2.6
Georgia	4.7	4.5	46.5	45.9	-28.0	2019	2.15	1.37	1.81	23.7	24.7	68.1	3.3
Germany	82.5	81.1	705.6	818.3	81.8	1972	1.45	1.36	1.51	26.6	29.0	76.5	3.5
Greece	11.1	11.3	101.5	104.0	34.9	1998	1.39	1.29	1.49	25.5	28.0	76.6	1.7
Hungary	10.1	9.5	95.1	132.5	18.2	1981	1.87	1.28	1.76	23.1	26.3	68.7	3.7
Iceland	0.3	0.3	4.2	1.8	0.6	> 2050	2.30	2.04	2.33	24.0	26.2	79.3	2.1
Ireland	4.1	5.1	64.5	29.4	46.4	2048	2.11	1.93	2.22	26.6	28.5	76.3	3.2
Italy	58.5	57.1	562.6	546.7	558.2	1993	1.33	1.33	1.41	26.9	28.7	76.8	2.5
Latvia	2.3	2.0	20.3	32.0	-1.1	1991	2.00	1.24	1.56	23.0	24.7	66.1	6.8
Liechtenstein	0.03	-	0.4	0.2	0.1	-	1.45	1.44	-	-	-	78.7	-
Lithuania	3.4	3.1	30.4	41.3	-9.6	1994	2.03	1.26	1.66	23.2	24.8	66.4	3.8
Luxembourg	0.5	0.6	5.5	3.6	1.5	> 2050	1.60	1.69	1.83	27.8	28.6	76.3	2.9
Macedonia, FYR	2.0	2.2	23.4	18.0	-0.1	2049	2.06	1.52	2.03	23.4	24.9	71.6	2.1
Malta	0.4	0.5	3.9	3.0	1.9	2027	2.04	1.48	1.64	-	-	76.7	2.0
Malta	3.6	4.1	38.3	41.7	-3.6	1998	2.39	1.25	1.65	-	23.3	64.6	2.3
Netherlands	16.3	17.6	194.0	136.6	-10.0	2028	1.62	1.73	1.82	27.6	28.9	76.8	2.2
Norway	4.6	5.4	57.0	41.2	13.2	> 2050	1.93	1.83	2.07	25.6	27.6	77.5	2.6
Poland	38.2	36.5	356.1	363.5	-9.4	2002	2.05	1.23	1.64	23.3	25.6	70.6	3.1
Portugal	10.5	10.7	109.3	102.3	47.6	2011	1.57	1.40	1.80	24.9	27.1	74.9	3.1
Romania	21.7	19.9	216.3	258.9	-10.1	1992	1.84	1.29	1.58	22.7	24.2	67.8	2.0
Russia	143.5	123.9	1502.5	2295.4	98.9	1992	1.90	1.33	1.47	22.6	24.0	58.9	1.3
San Marino	0.03	-	0.3	0.2	0.3	-	1.31	1.24	-	26.7	28.7	-	-
Serbia & Montenegro	8.1	10.8	88.4	110.1	0.0	> 2050	2.10	1.60	2.08	23.9	25.7	70.1	1.3
Slovakia	5.4	5.2	53.7	51.9	2.9	2001	2.09	1.24	1.60	22.6	25.3	70.4	2.1
Slovenia	2.0	2.0	17.9	18.6	1.9	1997	1.46	1.25	1.63	23.7	27.5	73.6	3.5
Spain	43.0	45.4	453.3	370.7	610.1	2014	1.36	1.32	1.33	26.8	29.2	77.2	2.9
Sweden	9.0	9.9	100.9	90.5	25.3	2030	2.13	1.75	1.91	26.3	28.6	78.4	2.3
Switzerland	7.4	7.4	73.1	60.2	41.3	2017	1.58	1.42	1.69	27.6	29.3	78.5	3.3
Turkey	71.6	99.7	1360.0	443.0	-	> 2050	3.01	2.41	2.44	-	-	66.6	1.9
Ukraine	47.1	37.7	427.3	761.3	-7.6	1991	1.80	1.22	1.36	-	23.5	62.1	-0.7
United Kingdom	59.9	64.4	716.0	584.8	203.6	2029	1.83	1.63	1.85	25.5	27.5	76.1	2.6
EU-25	459.5	469.4	4792.6	4348.0	1852.3	2010	1.64	1.50	1.67	26.1	27.8	75.1	2.8
United States	295.1	363.6	4115.6	2398.3	1049.5	-	2.08	2.05	2.15	24.2	25.2	75.2	2.8
Canada	32.1	38.8	336.0	232.2	197.5	-	1.71	1.50	-	-	27.7	77.4	2.5
Japan	127.6	117.6	1110.7	1028.6	-35.0	2006	1.54	1.29	1.39	27.0	28.9	78.6	2.5

Notes Numbers in italics refer to years different from the one in the column heading. ■ Population projections for non-EU/non-EFTA countries calculated by VID, assuming zero migration. ■ Eurostat projections are used for EU-countries, projections from national institutes for

More information: www.populationeurope.org

Female life expectancy at birth, 2004 (years)	Female life expectancy increase, 1994-2004 (years)	Male life expectancy at age 65, 2004 (years)	Female life expectancy at age 65, 2004 (years)	Proportion of the population above age 65, 2005 (%)	Projected proportion of the population above age 65, 2030 (%)	Proportion of the population above age 80, 2005 (%)	Projected proportion of the population above age 80, 2030 (%)	Old-age dependency ratio 65+/75-64, 2005 (%)	Projected old-age dependency ratio 65+/75-64, 2030 (%)	Actual age at retirement, 2004 (years)	Unemployment rate, 2004 (%)	Youth (< 25 years) unemployment rate, 2004 (%)	Country
76.4	1.0	-	-	8.3	13.7	1.2	2.3	12.8	21.7	-	15.2	-	Albania
-	-	-	-	12.0	-	-	-	16.3	-	-	-	-	Andorra
76.6	1.7	13.2	15.8	10.5	18.1	1.7	3.0	15.5	26.9	-	36.4	-	Armenia
82.1	2.5	16.9	20.2	16.0	25.1	4.2	7.3	23.5	40.8	58.8	4.8	9.6	Austria
75.0	1.1	13.9	15.6	6.9	13.7	0.8	1.8	10.3	19.9	-	-	-	Azerbaijan
76.0	1.7	-	-	14.5	20.3	2.4	3.3	20.7	30.3	-	-	-	Belarus
81.7	2.0	-	-	17.1	24.7	4.3	7.2	26.1	41.3	59.4	8.4	21.2	Belgium
-	-	-	-	13.9	22.7	1.4	5.1	20.1	35.4	-	-	-	Bosnia & Herzegovina
76.2	1.4	13.2	16.2	17.2	23.1	2.9	5.2	24.9	35.4	60.7	12.0	25.8	Bulgaria
79.0	-	12.9	16.6	17.2	24.4	2.9	5.8	24.2	39.4	59.6	13.6	33.3	Croatia
81.6	1.8	16.5	19.0	17.9	21.0	2.7	5.4	17.5	32.9	62.7	5.2	11.3	Cyprus
79.2	2.6	14.3	17.7	14.0	23.6	3.0	6.5	19.8	37.1	60.0	8.3	21.1	Czech Republic
80.3	2.1	15.9	19.0	15.0	22.6	4.1	6.6	22.7	37.1	62.1	5.5	8.2	Denmark
77.2	3.1	12.8	17.4	16.2	21.2	3.1	5.5	23.9	33.4	62.3	9.7	21.7	Estonia
82.2	2.1	16.5	20.4	15.9	26.1	3.8	8.0	23.8	45.0	60.5	8.8	20.7	Finland
83.0	1.6	17.1	21.3	16.4	24.2	4.5	7.7	25.2	40.7	58.9	9.6	21.9	France
74.7	1.1	13.4	15.4	13.3	18.9	2.1	3.4	19.5	29.0	-	12.6	28.3	Georgia
82.1	2.6	16.5	20.1	18.6	27.5	4.3	8.0	27.8	46.0	61.3	9.5	15.1	Germany
81.3	1.7	16.8	18.8	17.8	24.6	3.4	6.6	26.4	39.1	59.5	10.5	26.9	Greece
77.1	2.7	13.3	17.2	15.6	22.3	3.3	6.2	22.7	35.1	60.5	6.1	15.5	Hungary
83.6	2.2	18.0	21.3	11.8	19.1	3.4	4.4	17.9	30.8	64.0	3.3	7.0	Iceland
81.1	2.5	16.0	19.3	11.2	18.3	2.7	4.7	16.4	28.3	62.8	4.5	8.9	Ireland
82.5	1.8	16.8	20.5	19.2	27.5	5.0	8.8	28.9	45.2	67.0	8.0	23.6	Italy
76.2	3.5	12.7	17.1	16.5	21.3	3.0	5.6	24.1	33.4	62.9	10.4	18.1	Latvia
84.4	-	18.4	20.3	11.1	-	-	-	15.6	-	-	-	-	Liechtenstein
77.7	2.9	13.5	17.8	15.1	21.4	3.0	5.5	22.3	33.4	60.8	11.4	22.7	Lithuania
82.5	2.8	16.6	20.7	14.3	19.8	3.2	5.1	21.3	31.5	57.7	4.8	18.1	Luxembourg
75.8	1.7	13.5	15.3	10.9	18.2	1.7	3.6	15.8	28.1	-	37.2	-	Macedonia, FYR
80.4	1.8	15.8	18.2	13.0	22.4	2.8	6.3	19.0	36.0	57.7	7.7	19.0	Malta
72.4	2.6	11.4	14.2	9.9	16.5	1.5	2.4	13.9	24.0	-	8.1	-	Moldova
81.4	1.1	16.2	19.8	14.0	22.5	3.5	5.8	20.8	36.7	61.1	4.6	8.0	Netherlands
82.4	1.7	17.0	20.5	14.7	20.5	4.6	5.9	22.4	33.0	62.0	4.4	11.4	Norway
79.1	3.0	14.2	18.3	13.1	22.6	2.5	5.4	18.7	35.7	57.7	19.0	39.6	Poland
81.4	2.7	16.2	19.6	17.0	24.3	3.8	6.8	25.2	39.0	62.2	6.7	15.4	Portugal
75.3	2.2	13.3	16.1	14.4	19.2	2.4	4.1	20.9	28.4	59.5	7.6	23.2	Romania
72.3	1.1	11.0	15.3	13.7	19.5	2.3	3.4	19.3	29.2	-	7.8	24.7	Russia
-	-	-	-	16.5	-	-	-	24.1	-	-	-	-	San Marino
75.2	1.1	13.0	15.0	16.5	18.9	2.2	4.2	24.5	29.8	-	15.2	-	Serbia & Montenegro
78.0	1.5	13.4	17.1	11.6	20.8	2.4	4.4	16.3	31.7	58.5	18.2	33.1	Slovakia
80.8	3.1	15.1	19.3	15.3	25.1	3.0	6.3	21.8	40.4	56.2	6.3	16.1	Slovenia
83.8	2.4	-	-	16.8	24.7	4.3	7.3	24.4	38.9	62.2	11.0	22.1	Spain
82.7	1.4	17.4	20.6	17.2	23.1	5.3	7.6	26.5	38.5	62.8	6.3	16.3	Sweden
83.6	1.9	18.0	21.4	15.8	23.1	4.4	6.5	23.3	37.6	63.0	4.3	7.8	Switzerland
71.2	1.9	12.7	14.3	5.8	9.7	0.6	1.2	8.9	14.7	-	10.3	19.6	Turkey
73.6	0.4	11.6	15.4	15.9	21.3	2.7	4.4	23.0	31.9	-	8.6	16.6	Ukraine
80.5	1.7	16.2	19.1	16.0	22.9	4.4	6.8	24.3	37.4	62.1	4.7	12.1	United Kingdom
81.2	2.0	16.1	19.7	16.6	24.7	4.1	7.2	24.8	40.3	60.7	9.1	19.9	EU-25
80.4	1.4	16.8	19.8	12.4	19.6	3.5	5.4	18.5	32.4	-	5.5	11.8	United States
82.4	1.4	-	-	13.1	23.4	3.5	6.3	18.9	37.7	-	7.2	13.4	Canada
85.6	3.1	18.0	23.0	19.9	29.6	4.9	12.1	30.0	50.0	-	4.7	9.5	Japan

EFTA-countries. ■ For mean age at first birth the numbers for Belgium, France (only in 1990), Germany, Luxembourg and Switzerland refer to the mean age within current marriage. ■ For further information about data sources and country-specific definitions see www.populationeurope.org.

Tempo Effect and Adjusted TFR

The conventionally reported indicator of the level of fertility in a given calendar year (the period Total Fertility Rate or TFR) reflects the interplay of two components: tempo (timing) and quantum (level) of fertility. The tempo component affects the TFR when the timing of childbearing over the life cycle changes. In Europe many countries are currently experiencing a postponement of births, which is also reflected in an increasing mean age of childbearing. This results in a decline in the number of births in the current year and therefore depresses the period TFR, even if the number of children that women have over their life course does not change. One can also think of this tempo effect in terms of an expansion of the interval between generations during which fewer births fall into each calendar year.

In order to come up with a measure of the level (quantum) of fertility in a given calendar year that is free from the tempo effect and is a better indicator for the average number

of children per woman than the observed period TFR, the “tempo-adjusted TFR” has recently been developed. The adjusted TFR as listed in this data sheet is calculated on the basis of the Bongaarts–Feeney (1998) formula which uses fertility data by birth order. The sheet gives the mean of the adjusted TFR for the three-year period 2001–2003. For countries for which no such data are available the adjusted TFR is estimated on the basis of a regression relating the observed change in the mean age of childbearing to the size of the tempo effect. (For a detailed description of methods and data see www.populationeurope.org.)

Figure 1 illustrates the tempo adjustment for the Czech Republic where postponement was particularly pronounced after 1992 and the TFR fell sharply in tandem with an increase in the mean age at childbearing, reaching a low of 1.13 in 1999. The trend in the adjusted TFR shows that most of this drop was due to tempo effects linked to fertility postponement. In Spain (see Figure 2) the

pattern has been quite different, with the adjusted TFR following the decline in the conventional TFR and a divergence only emerging for the early 1990s when significant postponement occurred. In Spain the increase in the mean age of childbearing has recently leveled off and, as a consequence, the difference between the two fertility measures has almost disappeared, showing a slight increase in TFR combined with a continued decline of fertility quantum represented by the adjusted TFR.

As to the future fertility trends, the Spanish example shows that an end of postponement does not necessarily result in a significant increase in the TFR if the quantum of fertility declines simultaneously (i.e., if some of the postponed births are not recuperated). The future level of the quantum of fertility is an open question and there is no good theory to tell us whether it will be stable, recover, or continue to decline. Population projections need to reflect this uncertainty. ■

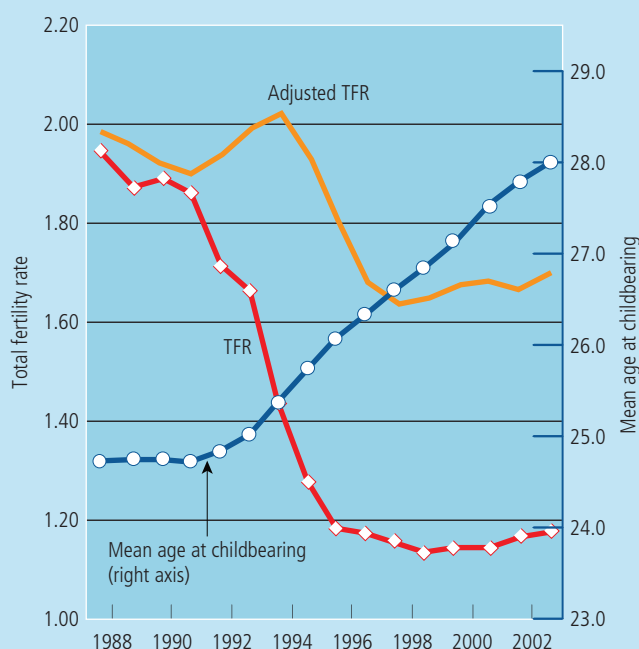


Figure 1 Fertility trends in the Czech Republic.

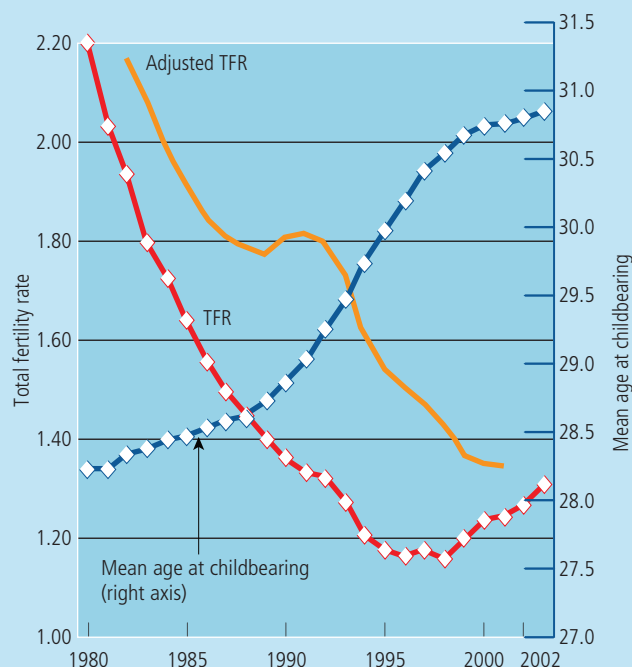


Figure 2 Fertility trends in Spain.

Range of Likely Future Trends in the EU-25

The future trends of all three forces (fertility, mortality, and migration) shaping the pattern of population ageing in Europe are uncertain within plausible ranges. Recently, methods of probabilistic population projections have been developed to describe these uncertainty ranges in an explicit and quantitative way (see: www.populationeurope.org).

Figure 1 shows the future trend in the old-age dependency ratio for all 25 EU member countries taken together, with the orange area referring to the 95 percent uncertainty range and the red area to the trend considered most likely. This indicator currently stands at 0.25 which means that there are four people in the age group 15–64 (considered as the potential working age) for each person age 65 or older. As the figure shows, this ratio is bound to increase significantly over the coming decades and there is little uncertainty about the trend because most of this increase is already pre-programmed in today's age structure.

There is an 80 percent chance that the ratio will more than double by 2050, which implies fewer than two persons of working age per person above age 65. And at the high end there is about a 20 percent chance that there will only be three people of working age for any two persons above age 65. Since not everybody between age 15 and 64 will be actually working—because of education, parental leave, unemployment, early retirement, or other reasons—the actual ratio of contributors to beneficiaries of the pension system may even be less favorable. While future trends in fertility, mortality, and migration can only marginally alter this pervasive population ageing, the actual ratio of workers to pensioners can also be influenced by policies affecting labor force participation rates and the retirement age.

There is significantly more demographic uncertainty as to the future trend in the proportion of the population above age 80 (see Figure 2). At the moment only 4 percent of the population are of this advanced age.

Over the next 20 years their proportion might well increase to about 6–7 percent, but then the increase accelerates because of the strong baby boom cohorts gradually entering this age group. At the same time, the uncertainty range rises considerably. This is a consequence of the high uncertainty about the path that old age mortality will take in the future, reflecting the controversy among scientists, some of whom think that the recent gains in life expectancy may even accelerate in the future while others suppose they will diminish. As a consequence, the 95 percent interval for 2050 ranges from a low 7 percent to a population in which one out of five persons is above age 80. Figure 3 shows the probabilistic age pyramid for 2030 which clearly illustrates that the uncertainty differs by age, with the highest uncertainty about the future number of children and the lowest one for the cohorts born around 1970 which are beyond their prime migration age but not yet affected by the uncertainty about future old age mortality.

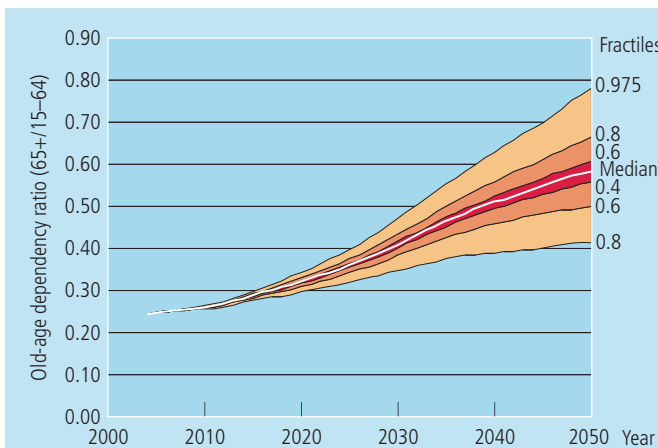


Figure 1 EU-25, old-age dependency ratio (65+/15–64).

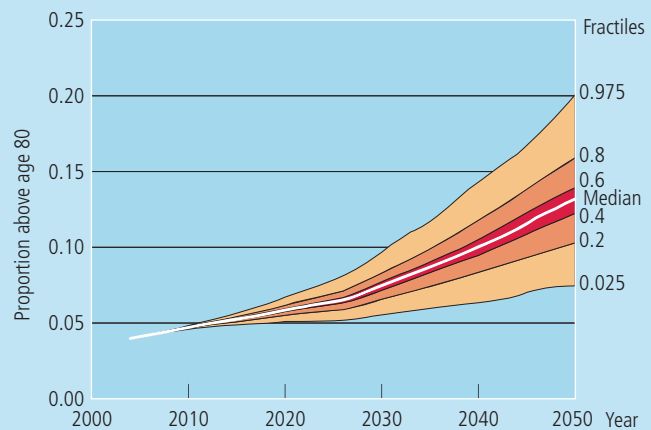


Figure 2 EU-25, proportion above age 80.

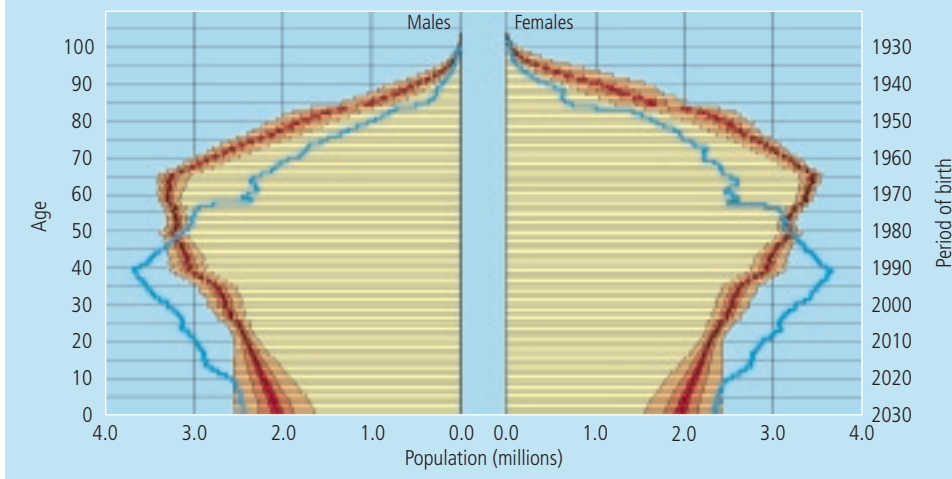


Figure 3 EU-25, 2030 (blue line refers to EU-25, 2004).

POPULATION

The Demography of Growing European Identity

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The process of European integration appears to be in disarray. After rejection of the new European constitution by referendum in France and the Netherlands and serious quarrels over the future budget of the European Union (EU), observers have warned that the EU is entering a period of stagnation or even disintegration (1, 2). But observers should not be overly impressed by short term events and need to study the important underlying forces. One such force is the slowly evolving feeling of identity in the national and European context. Here we study the trends in identity and project them into the future.

Easton (3) has suggested that the development of identity is crucial for the legitimacy of a political system. Eurobarometer surveys (EB) provide a consistent series of accessible individual level data with answers to the following question: "In the near future, do you see yourself as [Nationality] only, as [Nationality] and European, as European and [Nationality] or European only?" We combined the three categories that have at least some European element, and called this category "multiple identities" (4).

In the EB survey of 2004, 42% of the population above age 18 said that they felt themselves to be solely nationals of their own country, whereas 58% gave an answer that reflected at least some European identification. This implies that 130 million adult citizens of the EU-15 consider themselves only as nationals and 177 million as having multiple identities. But there are differences by country of residence (see table) and by age (see figure). The

PREVALENCE OF MULTIPLE IDENTITY	
Country	Percent*
Luxemburg	78
Italy	72
France	68
Spain	64
Belgium	59
Netherlands	59
Germany	56
Denmark	54
Ireland	53
Austria	51
Portugal	50
Greece	46
Sweden	45
Finland	43
UK	40

*Average of 1996–2004

older the respondents, the higher is the chance that they feel only a national identity.

Do these data allow us to make projections? No, because this empirical pattern at only one point in time could be due to (i) a cohort effect, i.e., the current younger generations having been socialized in such a way that they will maintain their multiple identities throughout their lives, or (ii) an age effect, which would assume that peoples' identities change over their life course. Age profiles at different points in time (which the EB data provide) allow us to distinguish between these possibilities.

When the data for 1996 (the first year after the EU expanded to 15 member states) are com-

Younger Europeans are more likely than older groups to consider themselves to have a European identity in addition to their national one.

also mattered, but only to a secondary degree, with the tendency to multiple identities reaching a peak around age 50 to 60 and then starting to decline around an age that seems to coincide roughly with retirement age.

This quantification allows us to forecast future trends under the assumption that the estimated effects will continue to prevail over the coming 25 years. In 2030, under the stated assumptions, there will be only 104 million adult EU-15 citizens who have strictly national identities and 226 million with multiple identities. Age-specific proportions with multiple identities in 2030 show a marked upward shift. In the age group 30 to 44, those who have some identity as Europeans will outnumber those with strictly national identities by more than three to one.

To test the sensitivity of our results to political events at the European level, we ran an alternative model that included dummy variables for 3 years, reflecting the negotiations of the Amsterdam and Nice Treaties, as well as the introduction of the Euro (6). This did not change the results. Multivariate models, including education, urban versus rural place of residence, and occupation, showed that those segments of the population that are likely to increase in size have more multiple identities (6). In addition, changing socialization processes such as expanding European-level media impact, increasing mobility of students and tourists, as well as labor migration within the EU, may also enhance the prevalence of European identity.

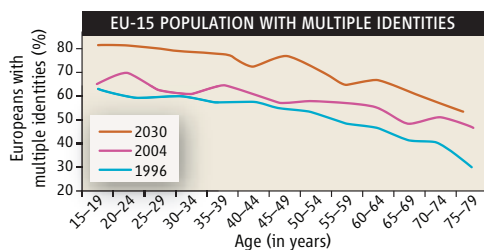
Our conclusion is that as older, more nationally oriented cohorts die, there are likely to be significant changes in the pattern of European identity. Although the politics of European integration remain volatile and unpredictable, these long-term tectonic shifts in identity are likely to have major and enduring consequences for the future of Europe.

References and Notes

1. L. Cohen-Tanugi, *Foreign Affairs* **84**, 6 (2005).
2. "Crisis, what crisis?," *Economist*, 8 September, 2005, p. 37.
3. D. Easton, *A Systems Analysis of Political Life* (Wiley, New York, 1965).
4. This question does not cover subnational identities.
5. R. V. Robinson, E. F. Jackson, *Soc. Sci. Res.* **30**, 117 (2001).
6. For detailed information and analyses see supplemental online material.

Supporting Online Material

www.sciencemag.org/cgi/content/full/VOL/ISSUE/PAGE/DC1



pared to those for 2004, the proportion with multiple identities was lower at each age in 1996, although the general shape of the curve was maintained. This upward shift of the profile from 1996 to 2004 indicates that the pattern is not primarily due to an age effect, but rather is dominated by cohort effects. Visual analysis also shows that the curve is not merely shifted upwards, but that the humps and valleys are also shifted to the right, i.e., along cohort lines.

This visual pattern was confirmed analytically by a demographic age-period-cohort model (5). The model shows a strong and highly significant positive cohort effect. The coefficient we calculated of 0.48 means that for cohorts born 1 year later, the proportion with some European identity is on average half a percentage point higher. An age effect

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This specific piece of analysis does not attempt to explain recent political events within the EU nor does it refer to the trust in and support of specific European institutions or the participation rates in European level elections. Instead of this actual (utilitarian) support for EU membership and policies, we focus on the deeper level of attitudes, namely, the identity of considering oneself as a member of a certain group of people including associated sets of norms and values, which in our case can either be a national population or the population of Europe. Contrary to common belief, the development of a European identity does not have to be accompanied by the decline of a national identity. Rather, European integration has established a new context that people can identify with and hence, opens up the possibility of multiple identities.

Our research question is structured accordingly: How does European identity differ by age, sex and by country of residence? How did it change over time and to what extent does this happen along cohort lines? And what do these patterns imply for the likely future trends in the prevalence of European identity over the coming decades? Our statistical analysis—using Eurobarometer (EB) data—starts with the expansion of the EU to 15 states in 1995 and does not consider the 10 new member countries that recently joined. We are fully aware of the fact that this EB question covers only one specific dimension of identity, which for instance does not cover the possibility of sub-national identities. However, this is the only feasible way of trying to quantitatively project an indicator of identity into the future, something that in political science has not been done so far and that could significantly enrich our discussions about the future.

Theoretical Background

In the political science literature, identity with a political system is often regarded as a necessary precondition for its stability and legitimacy. The identification of a citizen leads to the acceptance of a government's decisions and authority (1) and creates a 'common good' that leads a citizen to act as a community member (2). Identity reflects the emotional attachment that a citizen develops and possesses towards a political system. This emotional attachment is the outcome of a process of trust, a socialization process in which norms and values are communicated (3). Clearly distinct from this emotional attachment is a utilitarian support, which focuses on short-term outputs and trends and on benefits obtained from the political system. From this point of view, the development of the concept of a European identity amongst European citizens re-emerges as an important stepping stone in the ongoing integration process as it is not based on short-term outputs, developments and discussions. It could rather become a force that helps to 'uphold' the European integration process also in moments of crisis induced by referenda outcome, decisions taken, national interests, etc. The legitimacy of the European project through its citizens might thus be achieved (4, 5, 6).

Contrary to common belief, the development of a European identity does not have to be accompanied by the decline of a national identity. Rather, European integration has established a new context that people can identify with and hence, opens up the possibility of multiple identities. Depending on the context and the purpose, citizens have different feelings of belonging and they delegate power to different political units to make decisions. This context is the crucial factor for attributing political actions and decisions. European identity, hence, complements but does not displace national and regional identities (7). In this way, "national identity is a springboard, not the gravedigger, of European identity, with national identity providing a model of what it is to belong to a remote political community" (8). The socialization process and trust development—fostering multiple identities, and European identity in particular—could be enhanced by the expanding media impact coming from and reporting about the European level (9), the increasing free movement of people across European borders either for tourism or work, the increasing number of students in university exchange programs as well as the fast-growing day-to-day communication across borders.

Data and Analysis

For further methodological issues on Eurobarometer-data, including sampling procedures, etc., please visit http://ec.europa.eu/public_opinion/index_en.htm as well as the documentation of the individual Eurobarometer-surveys.

Demographers developed the well-established methodology of age-period-cohort (APC) analysis decades ago (11, 12, 13) to try to understand the relative importance of three different possible forces in shaping the changing patterns of sets of age-specific rates over time. Particularly the distinction between period and cohort effects is important for analysis as well as forecasting because they can have very different determinants. A period effect is something affecting all ages and cohorts simultaneously such as wars, epidemics or specific political events, while cohort effects only affect groups of people born in the same year and typically relates to factors that are associated with childhood experiences or socialization.

Our main model includes linear period and cohort variables and a set of dummy variables representing 5-year age groups. The dependent variable is the proportion with multiple identities in each age group and at the period of each survey. The model is run over all 12 surveys and thus for 12,780 cells (12 periods × 15 countries × 71 age groups) based on 185,568 interviews. In addition to the APC variables, the model also estimates country effects that are invariant over time.

Table A2 gives the results of our model confirming our initial expectation that the change towards more multiple identities in the European Union largely happens along cohort lines, i.e., cohorts born later in time are socialized in such a way that they adopt fewer solely national identities, and more multiple identities. They then largely maintain these identities throughout their lives. Regarding national fixed effects interesting country differences can be spotted. While Luxembourg, Italy and France have the strongest effects in increasing the probability of having a multiple identity, the United Kingdom, Finland and Sweden have the weakest effect in that direction. The high proportion with a European identity in France is interesting in light of the recent negative referendum on the European constitution, giving support to the view that the result had mostly to do with a protest against government and current conditions in France rather than a decline in European identity.

Table A3 (not shown here) gives the results of an alternative model which allows specific historical events at the European level to influence the model estimates. This was done through the introduction of period dummy variables for the calendar years 1997, 2001 and 2003 to reflect the following events: In 1997, the newly negotiated Amsterdam Treaty brought major changes, inter alia in the field of justice and home affairs, and in expanding the qualified majority voting. In 2001 the Nice Treaty was negotiated and major institutional reforms were introduced in order to prepare the EU and its institutional working procedures for the enlargement. Finally, we selected 2003 as the year when the impact of the introduction of the Euro in 2002 was clearly visible and tangible to European

Table A2: Results of the multivariate age-period-cohort model with fixed country effects. Dependent variable: Proportion with multiple identity (MI).

	Coefficient	Significance
Period	-0.13	n.s.
Cohort	0.48	***
Age	Dummies for 5-year age groups	***
Country	Dummies for individual countries	***
Luxemburg	26.3	***
Italy	21.0	***
France	16.7	***
Spain	12.2	***
Belgium	8.9	***
Netherlands	7.6	***
Germany	5.7	***
Denmark	3.2	***
Ireland	(Ref. Cat.)	
Austria	-0.3	***
Portugal	-1.2	***
Greece	-6.0	***
Sweden	-6.2	***
Finland	-9.3	***
UK	-10.1	***
Constant	-528.51	***
Number of observations (cells)	12741	
Number of countries	15	
R ² (adjusted)	0.3781	
*** = Significant at the 5 percent level.		
*** = Significant at the 1 percent level.		

citizens. The parameters for all three years turn out to be negative, which means that these events were associated with lower levels of multiple identities in the EB surveys of the respective years. The inclusion of these period dummies does not affect the estimated cohort effect, which is the key for our projections into the future.

Table A4 gives a rather different model that does not include the estimate of age-period-cohort effects but rather presents a multi-variate analysis of some key, non-demographic factors included in the Eurobarometer. Being interested in the most recent patterns, we analyze the data from the Eurobarometer survey from October/November 2004, which is the only available dataset that includes all variables of interest.

The findings clearly indicate that socio-economic categories that are likely to become larger in the future, such as the more highly educated, people living in urban areas and people whose parents have migrated from one EU country to another, all have significantly higher degrees of multiple identities. As expected, farmers, low-skilled workers and those who do not work have multiple identities to a lesser degree. This analysis of broader socio-economic variables supports the view that we can expect more people with multiple identities in the future because the social groups that show higher multiple identities are expected to grow in the future. But since we cannot produce quantitative forecasts for these factors, and their changes over time are already implicit in the estimated cohort effects, our forecasts are based only on those cohort effects.

These analyses do not yet include the 10 new EU member countries joining the Union in 2004. For these countries only one EB with a comparable identity question exists for 2004. From this survey it is interesting to find that level and age pattern of all 10 countries taken together are almost identical to the curve of the EU-15 in 1996 (see graph on page 6), but only above age 40. For cohorts below the age of 40 the level of multiple identities (65-70 percent) is even somewhat higher than for young adults in the EU-15 in 2004. This shows an interesting discontinuity toward more European identity for cohorts under age 40 in the new EU member countries. ■

Table A4: Results of the multi-variate model considering the impact of selected individual characteristics on European identity. Country-specific effects have been taken into account. Data: EB 62 (2004). Dependent variable: Proportion with multiple identity (MI).

	Coefficient	Std. Err.	
Female respondent	-0.05	0.01	***
Education level			
Primary (finished school at 15 at the latest)	(Ref. Cat.)		
Secondary (finished school at 19 at the latest)	0.12	0.01	***
Tertiary (at least 20 when finishing school)	0.22	0.01	***
Urbanization			
Rural area	(Ref. Cat.)		
Town	0.03	0.01	***
City	0.06	0.01	***
Parents' country of origin			
Both parents born in same country as respondent	(Ref. Cat.)		
One parent born in a different EU country than respondent	0.09	0.02	***
Both parents born in different EU countries than respondent	0.21	0.02	***
At least one parent born outside the EU	0.06	0.02	***
Occupation			
Self-employed professional	(Ref. Cat.)		
Responsible for household	-0.13	0.03	***
Farmer	-0.13	0.04	***
Fisher	0.04	0.33	
Student	0.03	0.03	
Unemployed	-0.12	0.03	***
Retired or disabled	-0.08	0.03	***
Shop owner	-0.05	0.03	
High skilled employee	0.00	0.03	
Low skilled employee	-0.09	0.03	***
Age	Dummies for 5-year age groups		***
Constant	0.28	0.04	***
R ² (adjusted)			0.11
Number of countries			15
Number of observations (cells)			14972
*** = Significant at the 1 percent level.			

*For all supporting online material, including numbered references, see: www.sciencemag.org/cgi/content/full/314/5798/425/DC1.



The New Generations of Europeans

Demography and Families in the Enlarged European Union

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"Demographic change is one of the three major forces now remodeling Europe,
alongside globalization and technological change."

—José Manuel Barroso, President of the European Commission

Europe today is characterized by aging populations, changing family patterns, dropping fertility rates and mass migration. With the potentially massive ramifications this has for pensions, health, housing, transport, family relations, employment and other sectors of society, *The New Generations of Europeans* sets out to assess what it is to be a citizen of a growing EU and what important demographic, social, and economic issues will have to be faced by European decision makers. Edited by leading demographers and sociologists, and made up of contributions from respected researchers in the fields of population and society from different parts of Europe, it presents the results of five years of research by the European Observatory on the Social Situation, Demography and the Family.

With the aid of over 100 graphs and tables and a full discussion, this book asks how numerous, fertile and long-lived the new generations of European citizens will be. The state of families, immigration and health are all examined, especially in the context of the challenges that will be faced in maintaining social cohesion. Crucially, the question of how demographic changes will impact Europe's socioeconomic infrastructure is woven throughout.

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