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GERMANY'S POPULATION BY 2060

Results of the 12th coordinated population projection

Federal Statistical Office

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Subject-related information on this publication:
Division VI A
Tel: +49 (0) 611 / 75 22 42
Fax: +49 (0) 611 / 75 30 69
E-mail: demografie@destatis.de

Information for journalists:
Press Office
Tel: +49 (0) 611 / 75 34 44
Fax: +49 (0) 611) / 75 39 76
E-mail: presse@destatis.de
Contact form: www.destatis.de/kontakt

General information on the data supply:
Information Service
Tel: +49 (0) 611 75 / 24 05
Fax: +49 (0) 611 75 / 33 30
Contact form:www.destatis.de/kontakt

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1. Executive summary

The projection covers the period until 2060

The 12th population projection for Germany, a coordinated effort by the statistical offices of the Federation and the Länder, focuses on population trends until 2060. It quantifies future changes in the size and, above all, the age structure of Germany's population and reveals the effects of demographic trends that can be identified from today's perspective. What has become apparent is the long-term and sustained nature of the processes of population dynamics. The projection is based upon various assumptions on fertility, life expectancy and Germany's balance of immigration and emigration, providing the framework for a total of 12 variants of future development scenarios.

Results of the 12th coordinated population projection

Population according to two medium variants

The results described below are based on two variants of development scenarios, assuming that fertility will remain nearly constant, life expectancy will increase by about eight years (men) and seven years (women), and net migration will amount to 100 000 or 200 000 people per year. These variants define the limits of a range within which the population size and age structure will develop, provided the current demographic trends continue. The lower and upper limits of this range refer to what we call a medium trend of population development (in brief "medium" population).

Fewer births in the future

Birth numbers will continue to fall in the future. Low fertility causes the number of potential mothers to become smaller and smaller. Today the cohorts of new-born girls are already smaller than those of their mothers. In the future, when these girls will be grown up and will on average have less than 2.1 children, too, the number of children will continue to drop as the number of potential mothers will also decline.

More deaths

In spite of a rise in life expectancy the number of deaths will increase because the large birth cohorts will move into old age.

Population decline as a result of growing birth deficit

The number of deaths will increasingly exceed the number of births. This will lead to a rapidly growing birth deficit, which cannot be compensated by net immigration. As a consequence, Germany's population, which has dwindled ever since 2003, will further decrease. If the demographic situation continues to develop along current lines, the population will drop from about 82 million at the end of 2008 to approximately 65 million (lower limit of the "medium" population) or 70 million (upper limit of the "medium" population) in 2060.

Relations between old and young people will change considerably

The ageing of the currently large middle-aged cohorts will lead to dramatic shifts in the age structure. In 2008, children and young people aged under 20 years made up 19% of the population, while the share of people aged 20 to under 65 was 61% and of those aged 65 and over 20%. In 2060, every third person (34%) will be at least 65 years old and the number of 70 year olds will be twice the number of new-born children.

The ageing process will be particularly reflected by an increase in the number of the oldest seniors. In 2008, the number of people aged 80 and over amounted to approximately 4 million in Germany, which was a share of 5% of the country's population. That number will increase continuously and reach an all-time high (more than 10 million) in 2050. Between 2050 and 2060, the number of the oldest seniors will then decline to 9 million. Hence about 14% of the population – that is every seventh person – can be expected to be 80 or over in fifty years' time.

Like the population as a whole, the working-age population (here: from 20 to under 65 years of age) will undergo a process of considerable ageing and, finally, shrinking. Today, this age group comprises just under 50 million persons. That number, which will decrease markedly only after 2020, will amount to 39 to 41 million in 2035. In 2060, about 36 million people will be of working age (–27%) if the balance of immigration and emigration totals approximately 200 000 persons per year. If net immigration is only half that amount, the potential working-age population will be even smaller in 2060: nearly 33 million or –34% on 2008.

Ageing and decrease of working-age population

The declining number of 20 to 65 year olds will be accompanied by a shift in the working-age population towards older workers. Currently, 20% of working-age adults belong to the young age group (20 to under 30 years), while 49% belong to the middle age group (30 to under 50 years) and 31% are aged 50 to under 65 years. As early as in about 10 years' time, i.e. between 2017 and 2024, the German economy will face a first particularly dramatic change in the age structure. At that time, 40% each of the potential working-age population will be aged 30 to under 50 and 50 to under 65 years.

Working-age population will be dominated by older people

In the future, the old-age to working-age dependency ratio will increasingly shift towards a rising number of senior citizens. In 2008, that ratio was 34 senior citizens (65 years and over) per 100 people of working age (20 to under 65 years). Until the end of the 2030s, the old-age dependency ratio, as it is called, will rise most quickly by more than 80%. Depending on the extent of immigration, the ratio will be 63 or 67 potential pensioners to 100 working-age adults in 2060. Notwithstanding a rise in the retirement age, the 2060 old-age dependency ratio for people aged 67 and older will clearly exceed today's old-age dependency ratio for people aged 65 and over.

By 2060 the old-age dependency ratio will almost double for the 65 year olds

...and rise strongly for the 67 year olds

Assumptions

On the whole, **fertility** will remain at a low level. Against this background, three assumptions are derived from the interaction of long-term trends and current developments.

All three assumptions on fertility remaining low

The base assumption is that the major long-term trends will continue until 2020: The total fertility rate will remain at its present level of 1.4 children per woman and the average age at birth will rise by circa 1.6 years. Afterwards fertility rates are assumed to remain constant during the period 2021-2060.

The second option assumes a gradual increase in fertility to 1.6 children per woman until 2025, the average age at birth rising by approximately 1.1 years. Fertility will then remain constant during the period 2026-2060.

The third assumption is that fertility will gradually decrease to 1.2 children per woman until 2060, while the average age at birth will rise by circa 2.0 years.

Life expectancy will continue to increase. Two assumptions are made with regard to life expectancy based on a short-term (since 1970) and a long-term (since 1871) mortality trend.

Two assumptions on increasing life expectancy

The base assumption is that men's average life expectancy at birth will be 85.0 years and that of women 89.2 years in 2060. That is a rise of 7.8 and 6.8 years, respectively, on the 2006/2008 life expectancy in Germany. The gap between men's and women's life expectancy will narrow from 5.2 to 4.2 years by 2060. 65 year old men and women can expect to live for another 22.3 and 25.5 years, respectively, each of which is about five years more than in 2006/2008.

The second option assumes a higher life expectancy at birth. It will rise to 87.7 years for men and 91.2 years for women by 2060. That is an increase of 10.6 years for men and 8.8 years for women as compared with 2006/2008. The gap between men's and women's life expectancy will narrow from 5.2 to 3.5 years. 65 year old men and women can expect to live for a further 24.7 and 27.4 years, respectively.

Two assumptions are made regarding future **net migration** trends. The 12th coordinated population projection expects the balance of immigration and emigration to increase gradually in the medium and long term. It is anticipated that the balance will develop in accordance with the long-term average trend observed.

Net migration of 100 000 or 200 000 per year

The first of the assumptions is that annual net migration will increase to 100 000 persons by 2014 and then remain at the same level. The second option assumes that annual net migration will climb to 200 000 persons by 2020 and then remain constant. In this way, the limits are defined of a range within which migration processes can be expected to evolve in the future. The values should however be interpreted as long-term averages as, in all likelihood, the actual net migration figures will be subject to great variation.

2. Introduction

Population projections provide basic future-related information for political, social and economic decision-making processes. They reveal the effects that present structures and currently identifiable changes will have on the future population. The results of the population projections coordinated between the Federal Statistical Office and the statistical offices of the Länder are now submitted regularly. The 12th coordinated population projection covers the period up to 2060. It includes several variant projections which, on the one hand, show future developments that can be identified from today's point of view and, on the other, allow to judge the impact of different demographic components, namely fertility, mortality and migration, on future population trends.

Changes in the population take place very slowly and continuously. That is the reason why this population projection does not show a completely new picture of Germany's demographic future as compared with that of the 11th coordinated population projection. Rather, the current projection is intended to adjust that picture by incorporating updated assumptions and to extend the time horizon by ten years to 2060.

Again, the 12th coordinated population projection does not claim to forecast future developments until 2060. It rather shows how the size and structure of the population are expected to develop under certain assumptions. The assumptions on fertility, mortality and migration are based on both analyses of past trends of these components over time and across Länder and on hypotheses regarding future trends that can be identified from today's perspective (Chapter 4). However, the further a projection is taken into the future, the more difficult it becomes to predict the trends of major variables. For this reason, long-term projections of that kind have a model character.

There are other additional uncertainties which are attributable to the data basis: Basic figures on the current state of the population are obtained by updating the results of the latest population census. The data become increasingly uncertain the further they are carried forward. The most recent population censuses took place in the former territory of the Federal Republic in 1987 and in the ex-GDR in 1981. Since that time population figures have been updated on a yearly basis, using notifications of births, deaths and arrivals or departures of migrants. These population figures can however not be readjusted until after the evaluation of the 2011 census. Estimates assume that the updated figures exceed the real population size. Considering, however, that a population projection is not a forecast, but aims to show future long-term changes in a population's age structure and size, the quality of the results will not be essentially affected by these uncertainties.

The current 12th population projection, a coordinated effort by the statistical offices of the Federation and the Länder, provides data for both Germany as a whole and its individual Länder. The results are based on harmonised assumptions and identical methods of computation. This report presents selected results for Germany. More detailed data are available for free download on the internet (www.destatis.de/shop, keyword "Population 2060"). At http://www.destatis.de/bevoelkerungspyramide, animated population pyramids illustrate the changes in the age structure of the population. Results for the Länder will be available at a later time.

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The assumptions of the 12th coordinated population projection were again discussed by this expert team on Population Projections. The Federal Statistical Office expresses its gratitude to the following experts for their valuable support in compiling the 12th coordinated population projection:

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3 Results of the 12th coordinated population projection

The 12th coordinated population projection comprises a total of 12 variants. They are obtained by combining different assumptions on fertility, life expectancy and Germany's balance of immigration and emigration[1]. The results of all these model calculations confirm the following: Germany's population will decline, the people will become older and less children will be born even if a slightly increasing fertility rate is assumed.

Results are presented on the basis of four scenarios

The following results focus on two variants which depict the upper and lower limits of a "medium" population (see Overview). The two variants define the bounds of a range within which the population size and age structure will develop, provided the current demographic trends continue.

A wider range of ageing can be best defined by two further variants, namely those of a "relatively young" and a "relatively old" population (see Overview). The population would be "relatively young" if fertility rose, life expectancy increased modestly and net migration amounted to about 200 000 persons. If fertility declined, life expectancy increased strongly and net migration were low, however, the ageing of the population would be particularly rapid.

Overview of selected variants of the 12th coordinated population projection

Variant	Assumptions:		
	Fertility (children per woman)	Life expectancy at birth in 2060	Net migration (persons/year)
"Medium" population, lower limit	Approximate stability at 1.4	Base assumption: increase by 8 years for boys and 7 years for girls	100 000 persons from 2014
"Medium" population, upper limit			200 000 persons from 2020
"Relatively young" population	Slight increase to 1.6	Base assumption	200 000 persons from 2020
"Relatively old" population	Long-term decrease to 1.2	Strong increase: by 11 years for boys and 9 years for girls	100 000 persons from 2014

In addition to the three demographic components outlined above, the current age structure of the population will impact the demographic development for a long time. A relatively large number of middle-aged people and few young people today will result in a relatively large number of older people and few people of middle age in the next few decades. This age-structure effect will lead to serious changes already in the next ten to twenty years.

[1] A complete survey of all variants including additional model computations and other selected results can be found in Appendix A. The full range of detailed results can be accessed via the internet website of the Federal Statistical Office at: www.destatis.de, keyword "Population 2060".

3.1 Decline in population

Germany's population has declined since 2003. This decline will continue and even accelerate. In late 2008, about 82 million people lived in Germany. In 2060, their number will range between 65 million (annual net migration of 100 000 persons, lower limit of the "medium" population) and 70 million (annual net migration of 200 000 persons, upper limit of the "medium" population). In accordance with the maximum population variant (assumed increase in fertility, strong rise in life expectancy and annual net migration of 200 000 persons), too, the number of people living in Germany would amount to about 77 million in 2060 and hence be lower than today.

Figure 1

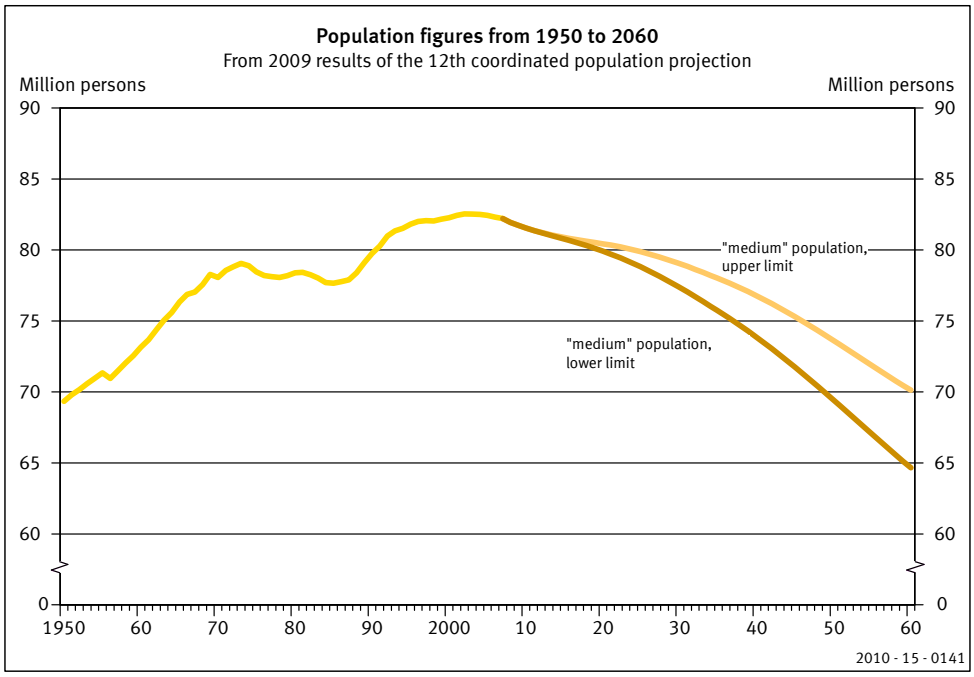


Table 1: Difference between births and deaths. From 2020 results of the 12th coordinated population projection

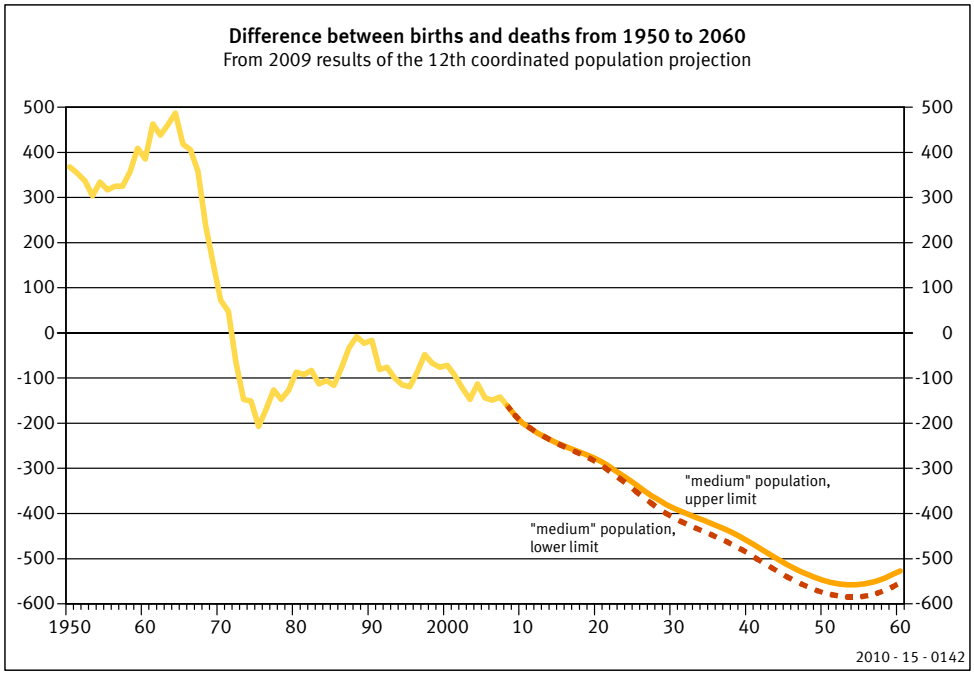
Year	"Medium" population, lower limit			"Medium" population, upper limit	"Relatively young" population	"Relatively old" population
	Births	Deaths	Birth deficit	Birth deficit		
				1 000		
2008	683	844	-162	-162	-162	-162
2020	660	948	-288	-281	-224	-292
2030	580	990	-409	-388	-303	-409
2040	522	1011	-489	-463	-374	-488
2050	501	1077	-576	-549	-430	-603
2060	465	1018	-553	-527	-391	-630

Increasing birth deficit and declining population due to less births and more deaths

The population is dwindling because the number of deaths increasingly exceeds the number of births. Net immigration, which is defined as the positive difference between immigration into and emigration from Germany, cannot close this gap. As the low fertility rate of about 1.4 children per woman has been relatively constant for more than 30 years and is expected to remain largely unchanged in the future, every new generation will be smaller by one third compared to the generation of its parents. The number of births will thus decline continuously. Though a slightly higher fertility of 1.6 children per woman would slow down the trend, it would not stop it. As shown in Table 1, the number of births will be markedly smaller than the number of deaths even in the variant projection for a “relatively young” population.

The number of deaths will however increase because, in the course of the projection period, the large birth cohorts (i.e. those who are currently middle-aged) will move into old age, when the death rates will by nature be higher. The difference between the number of births and the number of deaths is referred to as natural population change. This balance which has been negative in Germany since the beginning of the 1970s is therefore called “birth deficit”. As regards the “medium” population, the deficit will continuously rise from 162 000 in 2008 to 550 000 - 580 000 in 2050 (Fig. 2). After the baby boom generation, the smaller 1970s birth cohorts will move into old age. Hence the number of deaths will decrease slightly and the birth deficit, too, will somewhat decline after 2054. In 2060, the number of deaths will presumably overtake the number of births by about 527 000 to 553 000.

Figure 2

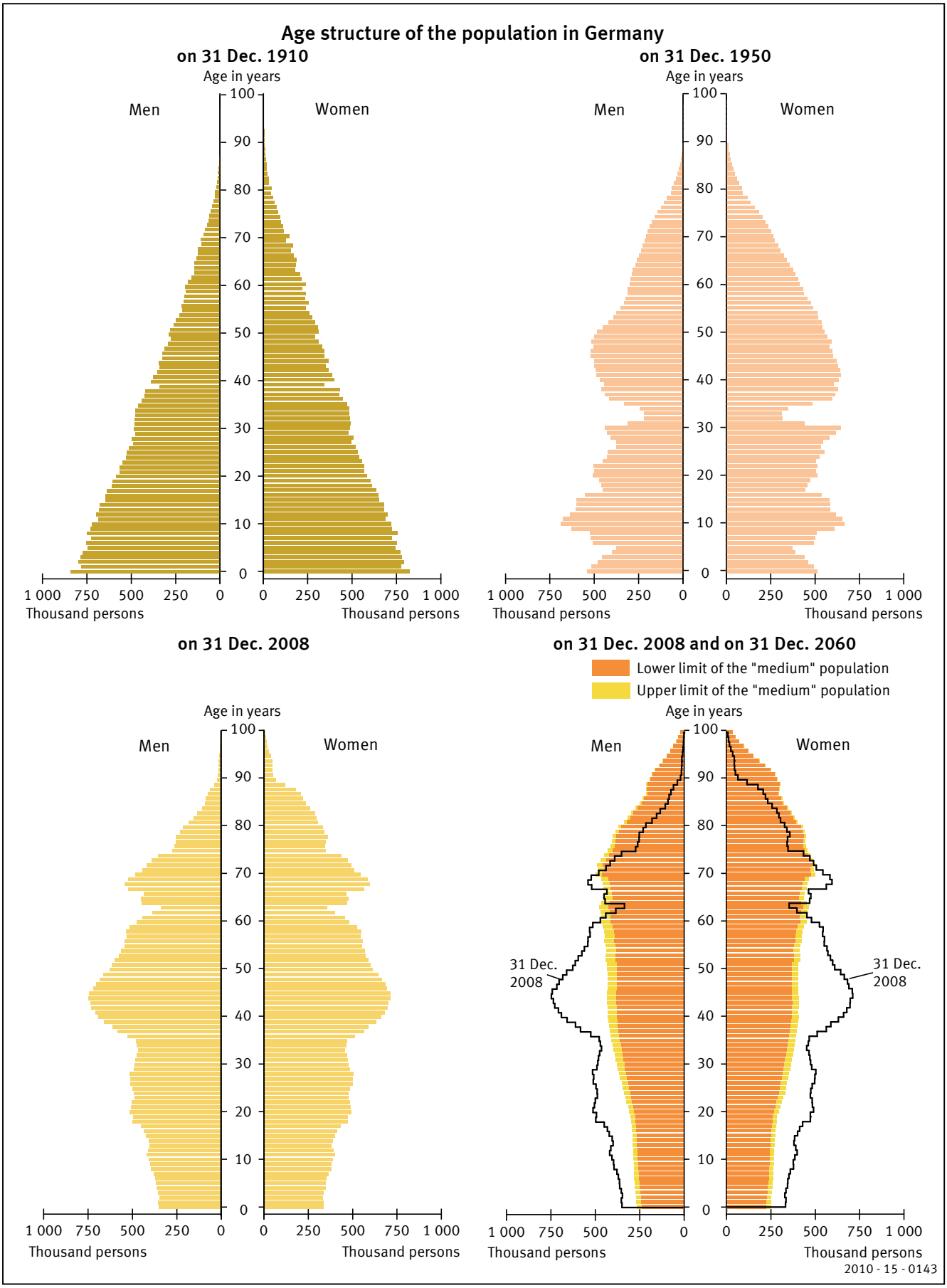


3.2 Changes in the age structure

Both the declining number of births and the ageing of the large middle-aged cohorts cause significant changes in the age structure of the population. For a long time, the current population structure has deviated from the 'classic' population pyramid shape where children represent the strongest cohorts and the older cohorts gradually decrease in size as a result of increasing mortality. In 1910, for instance, the age structure of the German Reich had the form of a pyramid (Fig. 3). The age structure of 1950 instead shows deep recesses caused by two world wars and the world economic crisis of the early 1930s. Today Germany's population structure resembles a "dishevelled fir tree", rather than a pyramid. The middle-aged cohorts are particularly large while the groups of older and younger people are smaller. By 2060, the large birth cohorts will move further upward, become sparser and will finally be replaced by smaller cohorts. At the same time, the relations between the different age groups will change significantly.

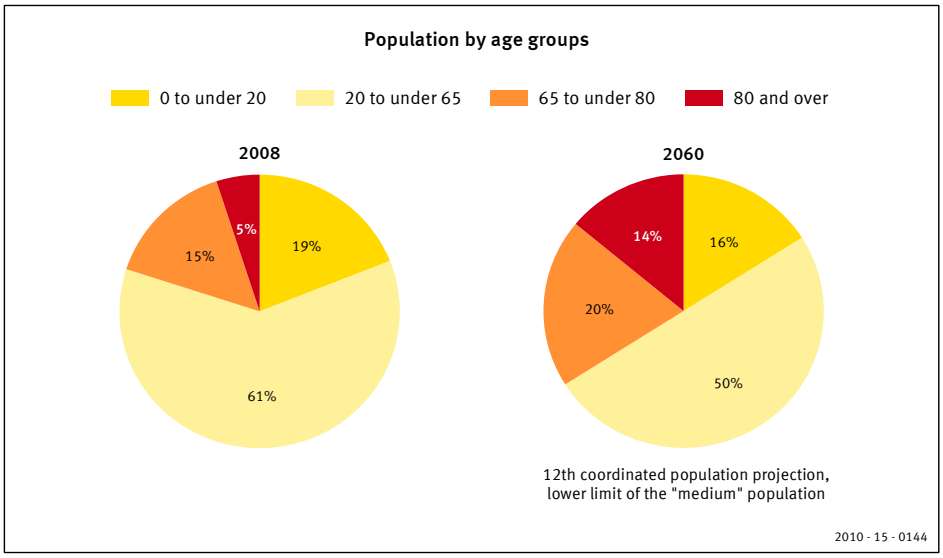
Today, children and young people under 20 years of age account for 19% of the population. The proportion of people aged 20 to under 65 years is 61%, while that of seniors aged 65 and over amounts to 20% (Fig. 4). In accordance with the variant projection for the "medium" population (lower limit), every third person (34%) will be at least 65 years old in 2060 and the number of 70 year olds will be twice the number of new-born children.

Figure 3


Age structure of the population in Germany
on 31 Dec. 1910
Age in years
Men
Women
100
90
80
70
60
50
40
30
20
10
0
1 000 750 500 250 0
0 250 500 750 1 000
Thousand persons
Thousand persons
on 31 Dec. 1950
Age in years
Men
Women
1 000 750 500 250 0
0 250 500 750 1 000
Thousand persons
Thousand persons
on 31 Dec. 2008
Age in years
Men
Women
1 000 750 500 250 0
0 250 500 750 1 000
Thousand persons
Thousand persons
on 31 Dec. 2008 and on 31 Dec. 2060
Lower limit of the "medium" population
Upper limit of the "medium" population
Age in years
Men
Women
31 Dec. 2008
31 Dec. 2008
1 000 750 500 250 0
0 250 500 750 1 000
Thousand persons
Thousand persons
2010 - 15 - 0143

The ageing process is especially reflected by the number of **seniors aged 80 and over**. In 2008, a total of about 4 million people in Germany were 80 years of age or older. They accounted for 5% of the population. Their number will continuously increase to reach an all-time high of more than 10 million in 2050. Between 2050 and 2060, the number of the oldest seniors will decline to 9 million. Hence 14% of the population (i.e. every seventh person) can be expected to be 80 years old or older in 50 years' time.

Figure 4



The number of people aged under 20 years, which totals about 16 million today, will decline to some 10 million by 2060. This will be 16% of the population. Thus the number of young people aged under 20 will exceed the number of people aged 80 and above by not more than about 1 million in 2060.

Noticeable changes in the age structure of Germany's population will be observed already in the next decade. As shown in Table 2, particularly the groups of people aged 50 to 65 (+24%) and 80 and over (+48%) will increase in size by 2020. The number of those aged under 50 will however decline (-16%). The population aged 30 to under 50 alone will shrink by about 4 million (-18%) (lower limit of the "medium" population).

The median age of the population will increase rapidly due to the above changes. Today those aged 43 years are in the very middle of the age distribution of the population. By the mid-2040s, the median age will rise by nine years so that about half of the population will be older than 52 years between 2045 and 2060 (lower limit of the "medium" population).

Table 2: Population by age groups, 2008, 2020 and 2060

Age in years from .... to under ...	2008	2020				2060			
		"Medium" population, lower limit		"Medium" population, upper limit		"Medium" population, lower limit		"Medium" population, upper limit	
			Change on 2008		*Change on 2008*		*Change on 2008*		*Change on 2008*
	Million persons								
0 to under 20.....	15.6	13.6	*-2.0*	*13.7*	*-1.9*	10.1	*-5.5*	11.0	*-4.6*
20 to under 30.....	9.9	8.5	*-1.3*	*8.7*	*-1.2*	6.1	*-3.8*	6.7	*-3.2*
30 to under 50.....	24.3	19.8	*-4.4*	*20.1*	*-4.2*	14.6	*-9.7*	16.3	*-8.0*
50 to under 65.....	15.5	19.2	*3.7*	*19.3*	*3.8*	11.9	*-3.6*	13.2	*-2.3*
65 to under 80.....	12.7	12.6	*0.0*	*12.7*	*0.0*	12.9	*0.3*	13.7	*1.0*
80 and older.....	4.1	6.0	*1.9*	*6.0*	*2.0*	9.0	*5.0*	9.2	*5.2*
Total	82.0	*79.9*	*-2.1*	*80.4*	*-1.6*	64.7	*-17.4*	70.1	*-11.9*
	Percent								
0 to under 20.....	19	17	*-13*	17	*-12*	16	*-35*	16	*-29*
20 to under 30.....	12	11	*-14*	11	*-12*	9	*-38*	10	*-32*
30 to under 50.....	30	25	*-18*	25	*-17*	23	*-40*	23	*-33*
50 to under 65.....	19	24	*24*	24	*24*	18	*-23*	19	*-15*
65 to under 80.....	15	16	*0*	16	*0*	20	*2*	19	*8*
80 and older.....	5	8	*48*	7	*48*	14	*123*	13	*128*
Total	100	100	*-3*	100	*-2*	100	*-21*	100	*-15*

3.3 Reduction and ageing of the working-age population

Decline in working-age population after 2020

In fact, the population of working age will be particularly affected by shrinking and ageing. The working age is defined as the age between 20 and 65 years. Today, this age group comprises just under 50 million people. That number will decrease markedly only after 2020. In 2030, it will amount to about 42 to 43 million people (Table 3). In 2060, about 36 million people will be of working age (a decline of 27% compared with today's figure), provided the annual number of immigrants will be 200 000 (upper limit of the "medium population"). If immigration totals only half that amount (lower limit of the "medium" population), the potential working-age population will be even smaller in 2060: 33 million or –34% on 2008. Hence the level of immigration will have an impact on the extent to which the population of working age will decline.

Table 3: Working-age population from 20 to 65 years

Year	"Medium" population	
	lower limit	upper limit
	Million persons	
2008	50	50
2020	48	48
2030	42	43
2040	38	40
2050	36	39
2060	33	36

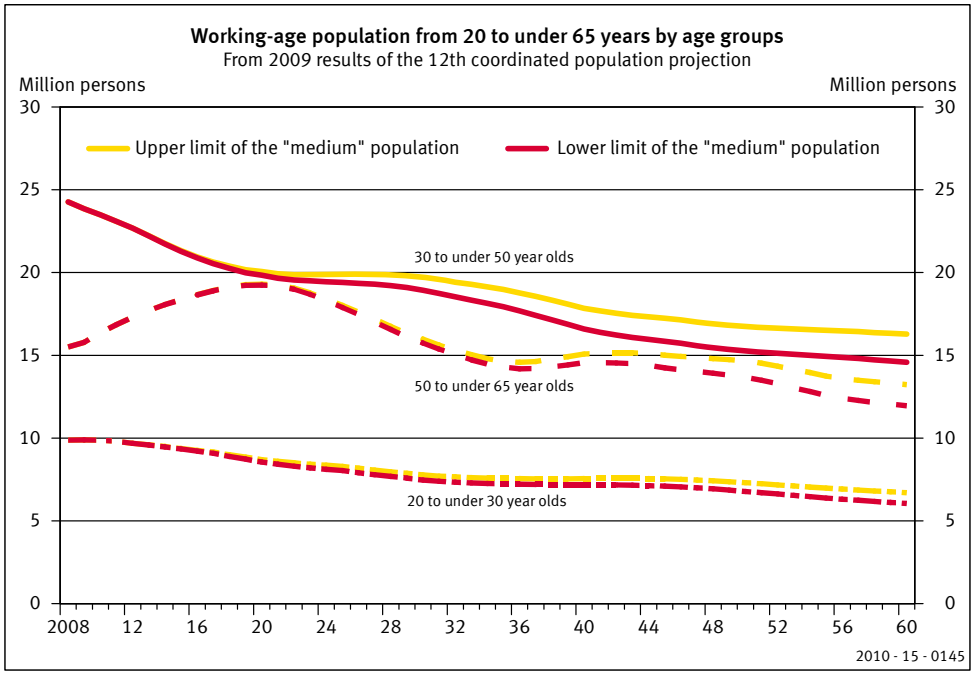
The declining number of 20 to 65 year olds will be accompanied by a shift in the working-age population towards older workers (Fig. 5). Today, 20% of working-age adults belong to the young age group (20 to under 30 years, 9.9 million persons), while 49% belong to the middle age group (30 to under 50 years, 24.3 million persons) and 31% to the older age group (50 to under 65 years, 15.5 million persons). While the size of the young age group will decrease to about 6 to 7 million persons, their share in the total working-age population will remain nearly constant. However, the proportions of the other two groups of the working-age population will develop differently.

Between 2017 and 2024 the number of the 50 to 64 year olds will almost equal the number of the 30 to 49 year olds

As early as in about 10 years' time, i.e. between 2017 and 2024, the German economy will face a first particularly dramatic change in the age structure. At that time, 40% each of the potential working-age population will consist of persons aged 30 to under 50 and 50 to under 65 years. Afterwards when the large 1960s birth cohorts will reach retirement age, the age structure of the working-age population will shift slightly in favour of the middle age group. At the same time, however, the total of working-age adults will decrease considerably. If immigration remains at a relatively low level, the middle and older age groups will again converge between 2040 and 2050. In the last decade of the projection, however, the difference between these groups will again be greater. The total number of persons of working age will continue to decline. In any case, the potential working-age population will comprise a large share of people who are older than 50 years in the future. This should be kept in mind when considering the current problems in the labour market.

As a result of raising the retirement age to 67 years, the working-age population will grow by 1 to 2 million by 2060. At the same time, the weight of the older group within the working-age population will further increase.

Figure 5



3.4 Increasing number of senior citizens in relation to the working-age population

Young-age and old-age dependency ratios measure the relation between the younger / the older population and the population of working age (here: 20 to 65 years)

In addition to the absolute number of people of a given age, the age-group dependency ratios are a characteristic feature of the ageing process. On the one hand, the young-age dependency ratio reflects the ratio of the younger people who are regarded as dependants in the process of their development, education and training to the working-age population. And on the other, the old-age dependency ratio is the ratio between the population of retirement age, that is the group of potential recipients of benefits of the pension insurance scheme or other old-age protection systems, and the people of working age. The two ratios add up to the total dependency ratio that shows the extent to which the middle age group in the widest sense has to care for both younger and older people who are not part of the working-age population. And this “burden” will increase considerably in future years.

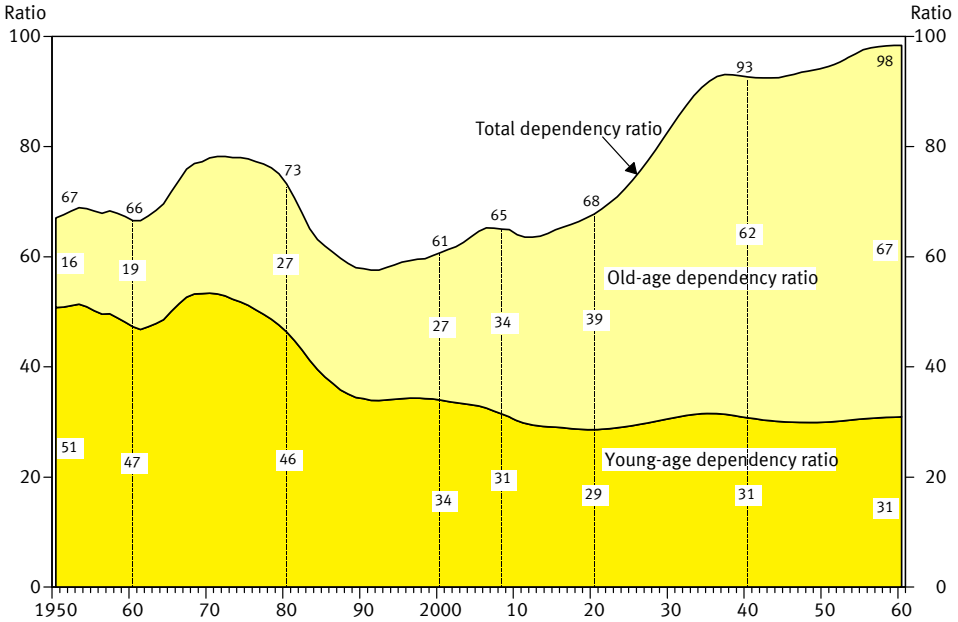
Apart from the assumptions made, the age structure of today’s population in Germany with its large middle-aged and its small young cohorts will determine these ratios for a long time.

Figure 6

Young-age, old-age and total dependency ratios with age limits between 20 and 65 years[1)]

From 2009 results of the 12th coordinated population projection

Variant: lower limit of the "medium" population



1) Young-age dependency ratio: number of people under 20 years of age per 100 people aged between 20 and 64 years; old-age dependency ratio: number of people aged 65 years and older per 100 people aged between 20 and 64 years; total dependency ratio: number of people under 20 years of age and people aged 65 years and older per 100 people aged between 20 and 64 years.

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The ratio between young people aged under 20 years and the population of working age will remain relatively stable in the projection period. The reason is that the population aged under 20 years will decline almost in parallel with the population of working age. In both major variants, the young-age dependency ratio hovers around 30 per 100 persons of working age (here: from 20 to under 65 years). Given a higher average number of children per woman (1.6), it would climb to 36.

By 2060 the old-age dependency ratio will almost double for the 65 year olds ...

However, the old-age dependency ratio will increase considerably. The changes in the age structure will lead to a situation where the old-age dependency ratio will shift towards an increasing number of senior citizens. In 2008, that ratio was 34 senior citizens aged 65 and over to 100 people of working age (20 to under 65 years). In accordance with the lower limit of the “medium” population, i.e. assuming an annual net migration of 100 000 persons, the number of senior citizens will be twice as high (67) in 2060. If annual net migration amounts to 200 000 (upper limit of the “medium” population), the old-age dependency ratio will be only slightly lower, namely 63 persons aged 65 and over to 100 working-age adults.

The old-age dependency ratio will not rise evenly until 2060. It will rather increase very rapidly until the mid-2030s and then remain constant over a couple of years. From the beginning of the 2040s, it will begin to rise again very slowly.

Raising the retirement age to 67 years will result in both a reduction of the population of retired people and an enlargement of the working-age population, which then will cover people aged between 20 and under 67 years. Hence it will lead to a lower old-age dependency ratio, which in 2060 would range between 59 (lower limit of the "medium" population) and 56 (upper limit of the "medium" population). A similar value, namely an old-age dependency ratio of 60 would be achieved for a retirement age of 65 years, too, if annual net migration were as high as 200 000 persons and, in addition, fertility increased to 1.6 children per woman. Even if these more favourable conditions were in place, the old-age dependency ratio would nonetheless rise substantially (Table 4).

... and rise strongly for the 67 year olds

Table 4: Old-age dependency ratios in 2008 and 2060

Year		Old-age dependency ratios for a retirement age of:		
		60 years	65 years	67 years
2008		46	34	29
2060	"Medium" population, lower limit	92	67	59
	"Medium" population, upper limit	87	63	56
	"Relatively young" population	82	60	53
	"Relatively old" population	105	77	68

4 Assumptions regarding fertility, life expectancy and migration

4.1 Births

The development of births depends on the reproductive behaviour of people of the relevant age. In statistical terms, this behaviour is reflected, above all, by the number of children per woman and the age at which women have children. The assumptions on the future development of fertility rates therefore relate to these two indicators.

The long-term development of births (since 1950) is described in detail in various publications of the Federal Statistical Office[2]. For this reason, the present publication only focuses on the development trends which were of particular relevance in specifying the assumptions of the 12th coordinated population projection. If no other source is indicated, the trends shown are based on the statistics of births.

On average, a mother's age at birth is higher today than in the past. This is due to the fact that fertility among women aged below 30 years has declined, while women aged 30 and above have more children compared to the past. Since 2005, fertility rates of women aged 30 to under 40 have on average been even higher than those of women aged 20 to under 30 years. Depending on the group of women covered, however, this development shows somewhat different trends.

German women[3] in the old Länder have their children at a significantly older age. In 2008, they were on average 30.4 years old when they had a child (Table 5). Since 1990, slow changes have been recorded in the fertility of different age groups of west German women. The fertility rates have increased most notably among women in their early thirties. Currently, the level of births is therefore highest in that age group although, most recently, only slight increases have been recorded in the fertility of women in their early thirties. Between 1990 and 2008, the average age at birth increased by 1.8 years in the western part of Germany. However, the number of children per woman, which is measured as the total fertility rate for the individual calendar years, declined slightly in the same period.

In the new Länder where women had their children at a far younger age than women in the old Länder before 1990, the average age at birth has increased very rapidly. Thus an increase of four years was observed between 1990 and 2008. As a result, the difference to the old Länder has become much smaller although the age at birth in the new Länder is still below the related average age of west German women. The total fertility rate, which fell most considerably at the beginning of the 1990s, has seen an almost continuous increase since 1995. For the first time since 1990, it exceeded the total fertility rate of west German women again in 2008.

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[2] Eisenmenger, M., Pötzsch, O., Sommer, B.: Germany's population by 2050 - Results of the 11th coordinated population projection, Wiesbaden 2006; Pötzsch, O.: Geburten in Deutschland, Statistisches Bundesamt, Wiesbaden 2007.

[3] Women with German citizenship.

The fertility behaviour of female foreigners[4] has become more similar to that of west German women, too. The number of children born to female foreigners aged under 28 years has continuously dropped. However, the fertility of women aged between 28 and 40 years has been relatively high and stable over a longer period of time. This has led to an increase in the average age at birth and, at the same time, a falling average number of children per woman. In 2007 and 2008 when the fertility of German women in the old and the new Länder rose as a whole, the total fertility rate continued to decline among female foreigners.

Due to the above changes, the differences in the reproductive behaviour have been minimised between the three major groups of women who have determined the development of fertility rates in Germany.

Table 5: Average number of children per woman (total fertility rate) and average age at birth *)

Year	Women, total		Women in the old Länder [1]						Women in the new Länder [2]	
			Total		Of whom					
					German women		Foreign women			
	Children per woman	Age at birth in years	Children per woman	Age at birth in years	Children per woman	Age at birth in years	Children per woman	Age at birth in years	Children per woman	Age at birth in years
1990	1.45	27.6	1.45	28.3	1.37	28.6	2.18	26.7	1.52	25.1
1995	1.25	28.3	1.34	28.6	1.24	29.0	1.81	27.2	0.84	26.5
2000	1.38	28.7	1.41	28.9	1.33	29.3	1.85	27.9	1.21	27.7
2005	1.34	29.5	1.36	29.6	1.30	29.9	1.69	28.6	1.30	28.5
2008	1.38	30.0	1.37	30.2	1.34	30.4	1.61	29.2	1.40	29.1

*) Calculated on the basis of age-specific fertility rates.
1) Since 2001 excluding Berlin-West.
2) Since 2001 excluding Berlin-East.

As regards the future development of births, it is assumed that fertility will continue to become more similar between women in the eastern and the western part of Germany and between German and foreign women. In this context, the fertility behaviour of west German women is considered to determine the relevant trends.

Falling final number of children of female cohorts

The future level of total fertility rates will depend on the development of the completed fertility of female generations (also: cohorts). In 2008, the 1959 birth cohort reached their 50th year of age. In statistical terms, the number of children of that birth cohort was considered final then. For Germany as a whole, it amounted to 1.66 children per woman. Now the question is whether the final number of children of younger cohorts who can still have children will be as high as this one.

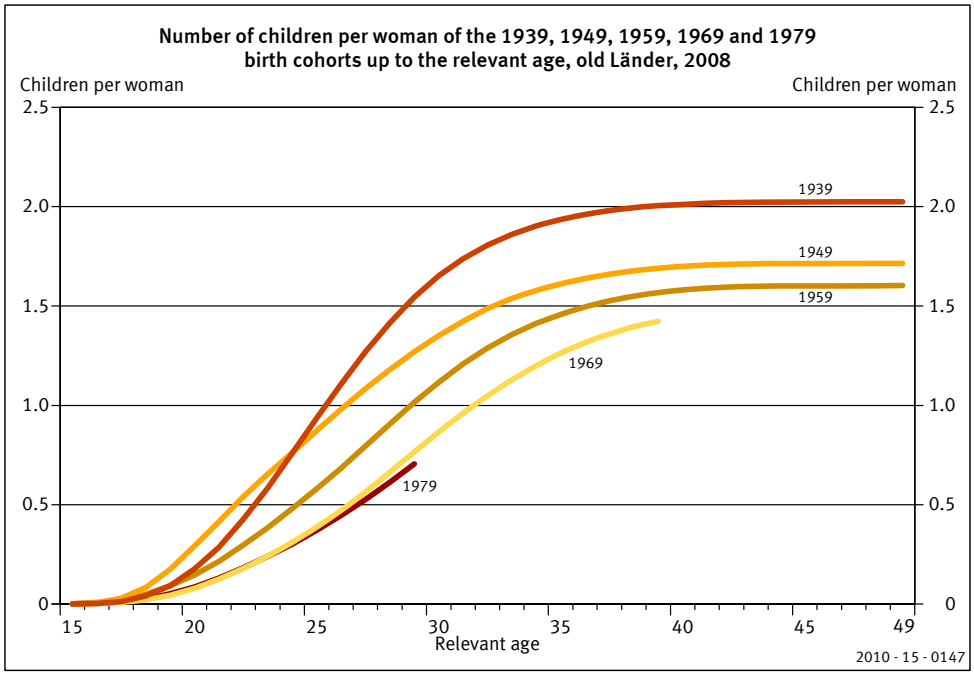
[4] Women without German citizenship in the old Länder. Their fertility behaviour differs from that of German women. In the new Länder, the number of female foreigners is rather small and their fertility is extremely similar to that of German women. For this reason, they are not considered separately.

Figure 7 shows the development of the average number of children per woman at different ages of several female cohorts. The examples given are the birth cohorts of 1939, 1949, 1959, 1969 and 1979 in the old Länder.

The number of children per woman of the 1939 cohort amounted to an average 1.68 at an age of 30 and finally to 2.03 children at an age of 49 years. Women of the birth cohorts of the 1940s were partly very young when they had their children in the baby boom period of the 1960s. From their mid-twenties, however, they had far less children than women of the 1930s birth cohorts. That trend is illustrated by the example of the 1949 birth cohort. The number of children born to that cohort amounted to 1.72 per woman. However, 90% of that level were reached already at an age of 33 years. On the whole, the women of the 1959 cohort had their children later in life. In western Germany, the fertility behaviour of the 1950s cohorts was characterised, among other things, by having children at a later age and by rising childlessness. Finally, this led to a lower completed fertility (1.6 per woman) in the former territory of the Federal Republic (1959 cohort).

In all probability, a completed fertility of 1.6 children per woman will not be reached by the birth cohorts of the late 1960s and the 1970s. The women of the 1969 cohort had 1.42 children when they turned 40. And the number of children born to the women of this cohort in the next ten years is expected to be rather small. As far as the 1979 birth cohort is concerned, it would only reach the fertility rate of the 1969 cohort if the fertility of women in their mid-thirties increased.

Figure 7



The main reason for the decline in the final number of children of younger female cohorts is that women delay starting a family until later in life. As a result, fertility rises among women aged 30 and over. However, that increase cannot offset the decline in births among younger women as more and more women remain childless in life. As shown in Table 6, the share of childless women in all women of a birth cohort has climbed continuously. Over a period of 30 years, which covered the cohorts of the 1930s to the 1960s, their share almost doubled[5].

Table 6: Share of women with and without children in all women of the relevant birth cohorts in 2008*)

Birth cohort (age in years)	Germany		Old Länder	
	Mothers	Childless women	Mothers	Childless women
	Percent			
1964-1968 (40-44)	79	21	78	22
1959-1963 (45-49)	83	17	81	19
1954-1958 (50-54)	84	16	83	17
1949-1953 (55-59)	86	14	85	15
1944-1948 (60-64)	88	13	87	13
1939-1943 (65-69)	89	11	88	12
1933-1938 (70-75)	89	11	89	11

*) Results of the 2008 microcensus.

[5] More information on childlessness and the number of children per mother can be accessed in: Mikrozensus 2008 – Neue Daten zur Kinderlosigkeit in Deutschland, Statistisches Bundesamt, Wiesbaden 2009.

Underlying assumptions

On the whole, the projection is based on three assumptions regarding birth trends until 2060. Although all of these assumptions consider the relevant trends in the past, each of them emphasises different aspects. The extent to which the introduction of parental allowance, improved care services for small children or the current discussion about the family as such will change attitudes cannot yet be predicted today. Both long and medium-term trends were taken as a basis for the assumptions made.

Assumption of an "approximate stability" of 1.4 children per woman

The **main assumption** is that the following major long-term trends will continue until 2020:

- An increasing number of women will have their first child at an age above 30; fertility rates among younger women will continue to decline.
- The proportion of women with three or more children will fall slightly.
- The proportion of childless women will increase slightly and then remain constant.

Under these conditions, the total fertility rate would remain at the level of 1.4 children per woman. At the same time, the average age at birth would rise by about 1.6 years until 2020. Between 2021 and 2060, fertility would remain constant for the individual age years. In the long run, the completed fertility rates of female cohorts would decline from 1.66 children per woman (1959 cohort) to 1.4 children.

Assumption of a "slight increase" to 1.6 children per woman

The **second assumption** is that the trend will reverse in the medium term and the current birth situation be improved:

- Fertility rates of women aged under 30 years will become stable.
- An increasing number of children will be born to women aged 30 and over.
- Children whose birth is postponed to a later age will actually be born so that childlessness will no longer rise.

In such a scenario, the total fertility rate of the calendar years would gradually rise to 1.6 children per women by 2025. At the same time, the average age at birth would increase by about 1.1 years until 2025. Between 2026 and 2060, the birth situation would then remain unchanged.

Following a temporary decline which can already be foreseen today for women of the 1960s and 1970s cohorts, the completed fertility of female cohorts would again rise slightly to remain at a level of 1.6 children per woman in the long run.

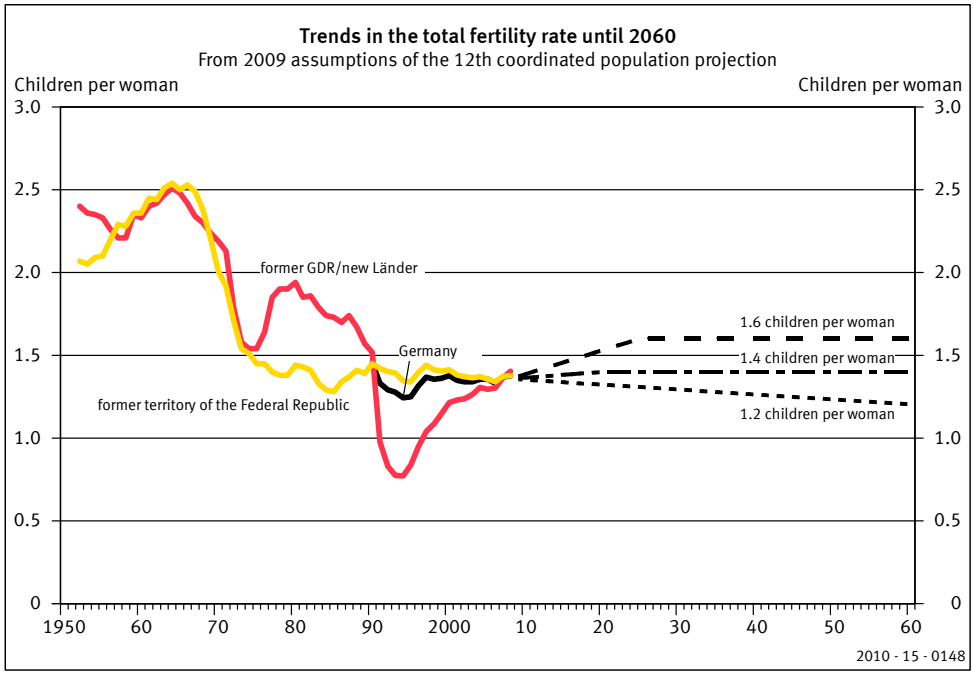
Assumption of a "long-term decline" to 1.2 children per woman

The **third assumption** is that the trends observed will continue over the long term. In this context, childlessness will reach an unprecedented level. This pessimistic approach assumes the following trends:

- An increasing number of women will have their first child at an age above 30; fertility rates among younger women will decrease.
- The proportion of mothers having three or more children will further decline as the age at which women have their first child continues to rise.
- The proportion of childless women will continuously increase because an ever smaller number of children whose birth is postponed to a later age will actually be born.

In this case, the total fertility rate of the calendar years would fall to 1.2 children per woman by 2060, while the average age at birth would simultaneously rise by approximately 2.0 years. The completed fertility of female cohorts would gradually decline.

Figure 8



Overview of assumptions on future trends in the total fertility rate

	Trend	Target values	
		Total fertility rate	Average age of mothers at birth [1]
Base period 2006 to 2008		1.36 children per woman	29.8 years
Assumption 1	Approximate stability	2009 to 2060: 1.4 children per woman	Increase to 31.4 until 2020, constant afterwards
Assumption 2	Slight increase	Increase to 1.6 until 2025; 2026 to 2060: 1.6 children per woman	Increase to 30.9 until 2025, constant afterwards
Assumption 3	Long-term decline	Decrease to 1.2 children per woman until 2060	Increase to 31.9 until 2060

1) Calculated on the basis of age-specific fertility rates.

4.2 Life expectancy

Continuous increase in life expectancy for a long time

For more than 130 years we have witnessed a continuous fall in mortality and rise in life expectancy in Germany. This development is largely attributable to progress in medical care, better hygiene and nutrition, improvements in the housing situation and to better conditions of work and increasing material well-being. At the end of the 19th century mortality began to fall strongly, first of all, in respect of infants and children. In the second half of the last century the mortality of older people also fell considerably[6].

Since the foundation of the German Reich in 1871, mortality rates and average life expectancies have been recorded regularly using what are called period life tables. The average life expectancy shows how many years new-born male or female children can expect to live if the population's mortality risk observed at a given time continues to apply during the age years of their whole life. As for persons who have reached a certain age, e.g. 65 years, the number of further years they can expect to live is expressed as the average further life expectancy.

In the light of past developments in Germany and the evolution of life expectancy in other developed countries of the world, it is assumed that improvements in living conditions compared to those of former generations and a further enhancement of the medical care system will lead to a further rise in life expectancy in Germany in the years to come.

The 12th coordinated population projection includes two assumptions on the development of life expectancy by 2060. In the future, however, life expectancy is supposed to grow less rapidly than in the recent past (Fig. 9). Both assumptions are based on a continuous increase in life expectancy although, in future years, that rise will increasingly depend on the older age groups. As the mortality risk is already very low in the young age groups, improvements in living conditions would only have a relatively small effect on the development of total life expectancy.

With the aim to define the individual assumptions, the mortality risks of men and women were examined in each age cohort in order to identify both long-term and short-term trends in the past. The fact that the mortality risk has declined continuously made it easier to derive the relevant trends. Both a long-term trend for the period since 1871 and a short-term trend since 1970 were determined for each age group. The short-term trend takes into account the clear reduction in the mortality risk of people aged about 60 and over during the last 35 years. This decline has been particularly due to medical progress regarding diseases of the circulatory system.

Furthermore, the short-term trend shows that the gap in life expectancy between men and women is closing.

[6] For more information on historical mortality trends, please see the publication Germany's population by 2050 - Results of the 11th coordinated population projection, Statistisches Bundesamt, Wiesbaden 2006, pp.36 ff.

Assumption L1:

According to the base assumption L1 on life expectancy, the average life expectancy at birth will be 85.0 years for men and 89.2 years for women. This will be an increase of 7.8 and 6.8 years, respectively, on the 2006/2008 level of life expectancy in Germany. The difference in life expectancy between men and women will fall from 5.2 to 4.2 years by 2060. 65 year old men and women of the same age can expect to live 22.3 and 25.5 more years, respectively. This is about 5 years more than in 2006/2008. The base assumption L1 is based on a combination of the short-term trend observed since 1970 and the long-term trend recorded since 1871.

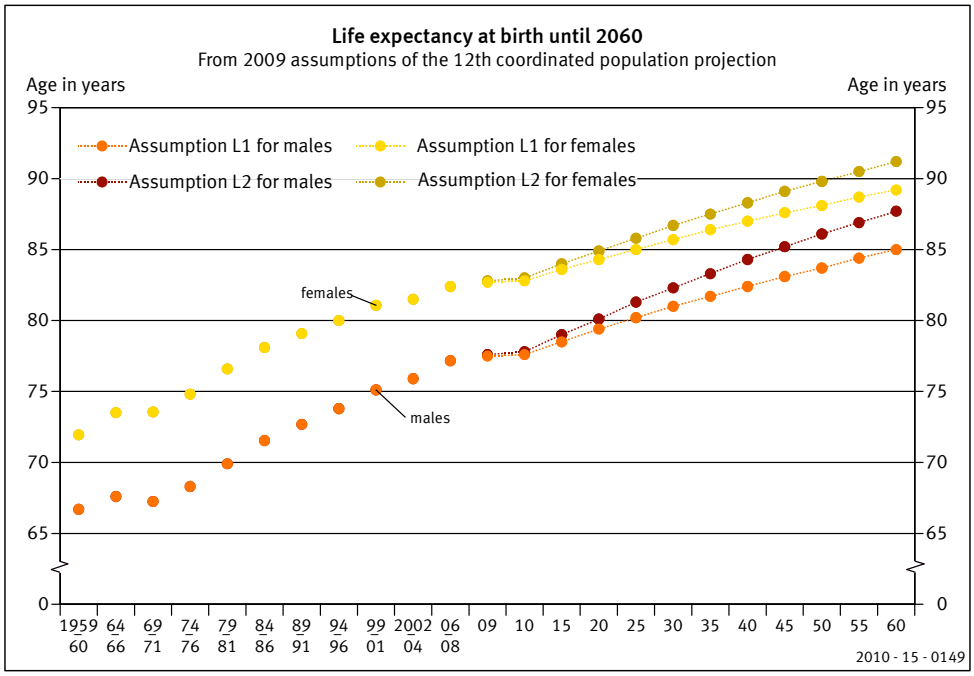
Base assumption: life expectancy will increase by 7 to 8 years

Assumption L2:

In an assumed scenario of high life expectancy, men can expect to live (from birth) on average for 87.7 years and women for 91.2 years. That means that men will live 10.6 years and women 8.8 years longer than in 2006/2008. The difference in life expectancy between men and women will fall from 5.2 to 3.5 years. 65 year old men and women can expect to live 24.7 and 27.4 more years, respectively. The assumption of high life expectancy (L2) is based on the trends observed since 1970. A necessary condition for that assumption is that the improvements in the medical care system and the resulting reduction in the mortality risk of older age groups will proceed largely along the same lines until 2060 as during the last 35 years. Both assumptions outlined above are the result of trend extrapolation.

Assumption of high increase: life expectancy will rise by 9 to 11 years

Figure 9



Overview of assumptions on the future evolution of life expectancy until 2060

	Life expectancy at birth			Increase on 2006/2008*) Germany	
	2006/2008 Germany	2060 Base assumption L1	2060 Assumption of high increase L2	2060 Assumption L1	2060 Assumption L2
Men	77.2	85.0	87.7	+7.8	+10.6
Women.....	82.4	89.2	91.2	+6.8	+8.8
Difference ...	5.2	4.2	3.5	-1.0	-1.8

	Life expectancy at the age of 65			Increase on 2006/2008*) Germany	
	2006/2008 Germany	2060 Base assumption L1	2060 Assumption of high increase L2	2060 Assumption L1	2060 Assumption L2
Men	17.1	22.3	24.7	+5.2	+7.6
Women.....	20.4	25.5	27.4	+5.1	+7.0
Difference ...	3.3	3.2	2.7	-0.1	-0.6

*) Discrepancies may occur due to rounding.

4.3 External migration

In addition to births and deaths there is another important factor which influences population trends in Germany. It is the movement of people across the border of the country, which is referred to as external migration. Net migration – defined as the number of immigrants minus the number of emigrants – is particularly important for the future population number and age structure. But unlike fertility and life expectancy, net migration trends can hardly be derived from past data. On the one hand, net migration depends on the potential number of migrants leaving their countries of origin for certain political, economic, demographic and even ecological reasons. And on the other, it is influenced by Germany's migration policy and the extent to which Germany is perceived as a country of destination that is attractive in socio-economic terms.

However, the migration trends of past years show some tendencies which can definitely be considered in the assumptions on future net migration. They concern, above all, the long and medium-term level of immigration and emigration, differences in the migration patterns of German and foreign citizens and specific characteristics of the age structure.

As a matter of fact, persons with foreign citizenship account for more than 80% of the total volume of migration - i.e. immigration and emigration. Except for a few years they have continuously dominated migration movements and net migration (Table 7).

Table 7: Migration across Germany's borders*)

Period	Persons, total			Germans			Foreigners		
	Immi-grants	Emi-grants	Balance	Immi-grants	Emi-grants	Balance	Immi-grants	Emi-grants	Balance
	Average per year in 1 000								
Former territory of the Federal Republic									
1954-1969	456	325	**131**	75	89	-14	381	235	145
1970-1979	700	544	**156**	78	54	24	622	490	132
1980-1990	673	478	**195**	159	68	91	514	411	104
1954-1990	586	430	**157**	101	73	27	486	356	130
Germany									
1991-1999	1070	717	**354**	259	115	144	811	601	210
2000-2007	770	642	**129**	157	135	22	614	507	107
1991-2007	929	681	**248**	211	124	87	718	557	161

*) Discrepancies may occur due to rounding.

Strong migration surplus recorded in the long term

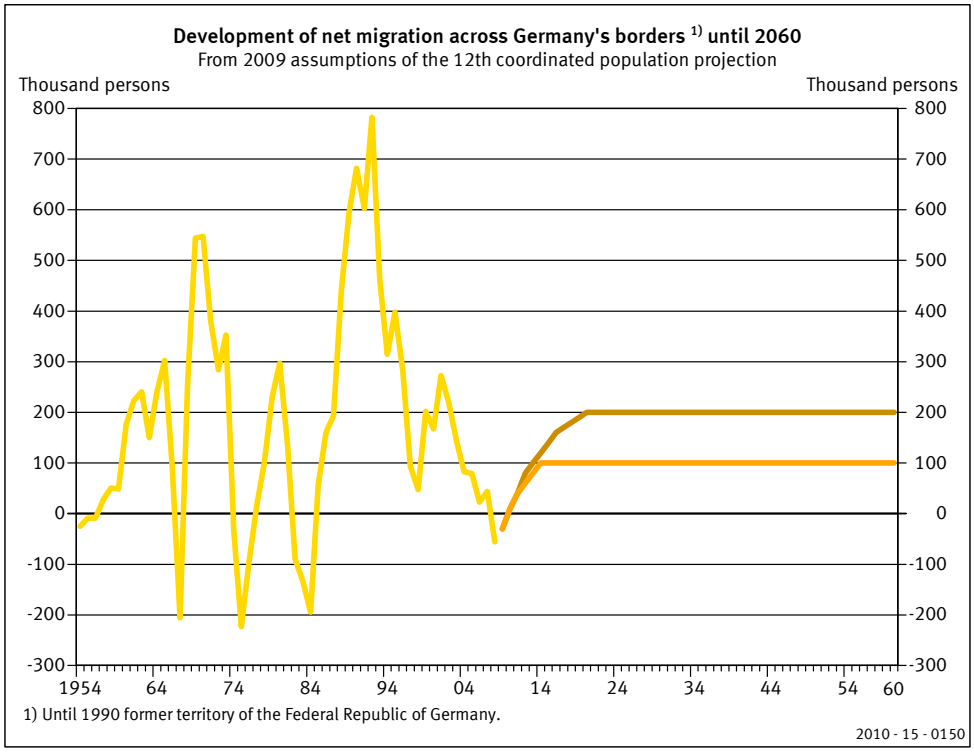
With the exception of a few years, net migration was positive in Germany in the period under review. Its annual total ranged between 129 000 and 354 000 persons in the periods indicated in Table 7. In the past five years or so, the balance of immigration and emigration has declined markedly. This has been due to, on the one hand, an increase in the number of German emigrants and, on the other, the negligible inflow of ethnic German immigrants and lessening number of foreign immigrants. Figures are not included for 2008 because the volume of emigration determined for that year was affected by a wide range of adjustments made in the population register.

Assumptions: long-term net migration between 100 000 and 200 000 people

The two assumptions made in the context of the 12th coordinated population projection indicate a gradual growth of annual net migration, on the one hand, to 100 000 persons from 2014 (assumption W1) and, on the other, to 200 000 persons from 2020 (assumption W2) (Fig. 10). These assumptions are in line with long-term averages. As the extremely high number of immigrants recorded at the beginning of the 1990s was a rather specific phenomenon, it is no longer taken into account.

At present, the migration balance of the German population is negative. It is however assumed that the negative trend will decline and finally almost level off as the number of young people and, consequently, the total of German emigrants will decrease in the future.

Figure 10



The temporarily very low migration balance of foreigners, which is partly attributable to the adjustments made in the population register in the context of introducing a tax identification code, is expected to rise quickly again. It is assumed that immigration levels will be boosted slightly from 2011 when in the German labour market, too, the free movement of labour will be applied to the new Member States that joined the European Union in 2004. Afterwards different trends will be possible. The declining number of young people in Germany could cause an increasing demand for foreign workers. However, the population in the central and eastern European EU Member States, whose mobility will be encouraged by the free movement of labour, will also experience a rapid ageing process in the near future. In those countries, too, the population of working age will decrease. The above processes could lead to an aggravated competition in the European labour market. Therefore, it cannot be ruled out that new incentives will be created for young people in the previous countries of origin of migrant workers with the aim to limit the extent of their emigration. As a consequence, the level of immigration into Germany might rather remain near the lower limit of the defined range and thus be clearly below its long-term average.

However, assuming - from today's perspective - a very high level of annual net migration near the upper limit of the range within which net migration might vary in the future seems to be advisable, too. An increase in the number of people (above all foreign persons) immigrating into Germany will be as likely as a slow-down in migration flows. The actual development will be largely determined by both demographic processes in Germany and world-wide trends. The current economic crisis will possibly lead to a short-term rise in unemployment and, consequently, a temporary decline in the demand for labour. At the same time, however, Germany will be increasingly forced to push innovations in the economic and research sectors. In view of the rapidly ageing potential working-age population in the domestic territory, the demand for young and well-qualified immigrants might therefore grow. The extent to which the working-age population will shrink and age in Germany will be by far more aggravated than in its neighbouring countries. Under these circumstances, Germany would certainly be forced to raise its attractiveness in the competition for young workers. This, in turn, could lead to changes in current migration flows and result in a higher number of migrants moving to Germany.

Furthermore, the level of potential immigration from other regions in the world will

continue to be high. The population in Asian and African countries will be both young and growing over the next few decades. Also, the effects of global climate warming which, according to recent estimates, would be less intense in Central Europe than in the other continents, could intensify immigration flows as 'push' factors of migration in the regions of origin.

Actual migration levels will certainly continue to be subject to great variation so that the values assumed should only be interpreted as long-term averages. The assumptions that long-term annual net migration will be either 100 000 or 200 000 persons define the limits of a range within which migration processes could be expected to develop in the future.

The total migration surplus summed over the period 2009 to 2060 would amount to 4.9 million for assumption W1 and to 9.4 million for assumption W2 (see Overview).

Overview of assumptions on the future trends in the balance of immigration and emigration across Germany's borders

Years	Assumption W1	Assumption W2
2009	-30 000	-30 000
2010	10 000	10 000
2011	40 000	40 000
2012	60 000	80 000
2013	80 000	100 000
2014	100 000	120 000
2015	100 000	140 000
2016	100 000	160 000
2017	100 000	170 000
2018	100 000	180 000
2019	100 000	190 000
2020-2060	100 000	200 000
Cumulated migration surplus for the period 2009 to 2060	4 860 000	9 360 000

The structure of net migration in terms of sex and age is based on the empirical age distribution among immigrants and emigrants, which is particularly stable among foreigners. On average, persons immigrating to Germany are younger than those leaving the country. As a result, the population in Germany is getting younger. As a matter of fact, the level of emigration tends to be rather constant over several decades. Because of this stability, one speaks of a 'basic migration flow' which always takes place irrespective of the actual level of net migration. This basic migration has also been considered in the assumptions of the 12th coordinated population projection. Hence the population is getting younger even in the case of a balanced net migration[7].

[7] Like previous population projections of the Federal Statistical Office, the current projection, too, includes a model calculation based on a balanced net migration (Appendix A).

Variants of the 12th coordinated population projection

If combined with each other, the assumptions on fertility, life expectancy and net migration yield 12 variants. For the sake of clarity, they are summarised in two blocks, each of which containing six variants: Three assumptions on fertility by two assumptions on life expectancy, which are combined with a net migration of 100 000 (W1) in the first block and of 200 000 (W2) in the second block:

Annual balance of external migration: gradual increase to an annual net migration of 100 000 people from 2014 (W1)		Total fertility rate (children per woman)		
		Nearly constant at 1.4 (G1)	Slightly rising, from 2025: 1.6 (G2)	Long-term decline, 2060: 1.2 (G3)
Life expectancy of new-born children in 2060:				
Males: 85.0 Females: 89.2	Base assumption (L1)	Variant 1-W1 “medium” population, lower limit	Variant 3-W1	Variant 5-W1
Males: 87.7 Females: 91.2	High increase (L2)	Variant 2-W1	Variant 4-W1	Variant 6-W1 “relatively old” population

Annual balance of external migration: gradual increase to an annual net migration of 200 000 people from 2020 (W2)		Total fertility rate (children per woman)		
		Nearly constant at 1.4 (G1)	Slightly rising, from 2025: 1.6 (G2)	Long-term decline, 2060: 1.2 (G3)
Life expectancy of new-born children in 2060:				
Males: 85.0 Females: 89.2	Base assumption (L1)	Variant 1-W2 “medium” population, upper limit	Variant 3-W2 “relatively young” population	Variant 5-W2
Males: 87.7 Females: 91.2	High increase (L2)	Variant 2-W2	Variant 4-W2	Variant 6-W2

Further model calculations are available in addition to these 12 variants of the 12th coordinated population projection. A calculation based on a balanced net migration identifies the effects of immigration even more clearly and gives an outlook on how the ageing process would possibly develop if the trend of net immigration ceased in the long run. Two further model calculations show the potential implications of a hypothetical increase in fertility to 2.1 children per woman and a minor rise in life expectancy (not expected either).

List of variants of the 12th coordinated population projection and additional model calculations

Name of variant	Assumptions		
	Fertility rate (children per woman)	Life expectancy	Annual net migration (persons per year)
Variant 1-W1 "medium" population, lower limit	Nearly constant at 1.4	Base assumption 1)	100 000 from 2014
Variant 1-W2 "medium" population, upper limit	Nearly constant at 1.4	Base assumption 1)	200 000 from 2020
Variant 2-W1	Nearly constant at 1.4	High increase 2)	100 000 from 2014
Variant 2-W2	Nearly constant at 1.4	High increase 2)	200 000 from 2020
Variant 3-W1	Slight increase, at 1.6 from 2025	Base assumption 1)	100 000 from 2014
Variant 3-W2 "relatively young" population	Slight increase, at 1.6 from 2025	Base assumption 1)	200 000 from 2020
Variant 4-W1	Slight increase, at 1.6 from 2025	High increase 2)	100 000 from 2014
Variant 4-W2	Slight increase, at 1.6 from 2025	High increase 2)	200 000 from 2020
Variant 5-W1	Long-term decline, 2060: 1.2	Base assumption 1)	100 000 from 2014
Variant 5-W2	Long-term decline, 2060: 1.2	Base assumption 1)	200 000 from 2020
Variant 6-W1 "relatively old" population	Long-term decline, 2060: 1.2	High increase 2)	100 000 from 2014
Variant 6-W2	Long-term decline, 2060: 1.2	High increase 2)	200 000 from 2020
Model calculation - slow increase in life expectancy	Nearly constant at 1.4	Slow increase 3)	100 000 from 2014
Model calculation - migration balance zero	Nearly constant at 1.4	Base assumption 1)	+/-0
Model calculation - 2.1 children per woman	High increase, at 2.1 from 2015	Base assumption 1)	100 000 from 2014

1) Life expectancy of new-born boys in 2060: 85.0 years; life expectancy of new-born girls in 2060: 89.2 years.

2) Life expectancy of new-born boys in 2060: 87.7 years; life expectancy of new-born girls in 2060: 91.2 years.

3) Life expectancy of new-born boys in 2060: 82.0 years; life expectancy of new-born girls in 2060: 87.2 years.

Table 1: Development of Germany's population by 2060 [1)]

Variant: lower limit of the "medium" population

- Fertility: nearly constant, life expectancy: base assumption, net migration: 100 000 -

Specification		31 Dec. of the year					
		2008	2020	2030	2040	2050	2060
		Old-age dependency ratio with an age limit of 60 years					
Population, total	1000....	82 002	79 914	77 350	73 829	69 412	64 651
	2008 = 100....	100	97.5	94.3	90.0	84.6	78.8
under 20 years	1000....	15 619	13 624	12 927	11 791	10 701	10 085
	%....	19.0	17.0	16.7	16.0	15.4	15.6
	2008 = 100....	100	87.2	82.8	75.5	68.5	64.6
20 to under 60 years	1000....	45 426	41 743	35 955	33 746	30 787	28 378
	%....	55.4	52.2	46.5	45.7	44.4	43.9
	2008 = 100....	100	91.9	79.2	74.3	67.8	62.5
60 years and older	1000....	20 958	24 547	28 469	28 292	27 924	26 188
	%....	25.6	30.7	36.8	38.3	40.2	40.5
	2008 = 100....	100	117.1	135.8	135.0	133.2	125.0
Young-age, old-age, total dependency ratios							
Per 100 20 to under 60 year olds there are							
under 20 year olds.....		34.4	32.6	36.0	34.9	34.8	35.5
60 year olds and older..		46.1	58.8	79.2	83.8	90.7	92.3
together		80.5	91.4	115.1	118.8	125.5	127.8
		Old-age dependency ratio with an age limit of 65 years					
Population, total	1000....	82 002	79 914	77 350	73 829	69 412	64 651
	2008 = 100....	100	97.5	94.3	90.0	84.6	78.8
under 20 years	1000....	15 619	13 624	12 927	11 791	10 701	10 085
	%....	19,0	17.0	16.7	16.0	15.4	15.6
	2008 = 100....	100	87.2	82.8	75.5	68.5	64.6
20 to under 65 years	1000....	49 655	47 636	42 149	38 329	35 722	32 591
	%....	60.6	59.6	54.5	51.9	51.5	50.4
	2008 = 100....	100	95.9	84.9	77.2	71.9	65.6
65 years and older	1000....	16 729	18 654	22 275	23 709	22 989	21 975
	%....	20.4	23.3	28.8	32.1	33.1	34.0
	2008 = 100....	100	111.5	133.2	141.7	137.4	131.4
Young-age, old-age, total dependency ratios							
Per 100 20 to under 65 year olds there are							
under 20 year olds.....		31.5	28.6	30.7	30.8	30.0	30.9
65 year olds and older..		33.7	39.2	52.8	61.9	64.4	67.4
together		65.1	67.8	83.5	92.6	94.3	98.4
		Old-age dependency ratio with an age limit of 67 years					
Population, total	1000....	82 002	79 914	77 350	73 829	69 412	64 651
	2008 = 100....	100	97.5	94.3	90.0	84.6	78.8
under 20 years	1000....	15 619	13 624	12 927	11 791	10 701	10 085
	%....	19,0	17.0	16.7	16.0	15.4	15.6
	2008 = 100....	100	87.2	82.8	75.5	68.5	64.6
20 to under 67 years	1000....	51 477	49 723	44 771	40 025	37 562	34 228
	%....	62.8	62.2	57.9	54.2	54.1	52.9
	2008 = 100....	100	96.6	87.0	77.8	73.0	66.5
67 years and older	1000....	14 906	16 567	19 652	22 013	21 149	20 338
	%....	18.2	20.7	25.4	29.8	30.5	31.5
	2008 = 100....	100	111.1	131.8	147.7	141.9	136.4
Young-age, old-age, total dependency ratios							
Per 100 20 to under 67 year olds there are							
under 20 year olds.....		30.3	27.4	28.9	29.5	28.5	29.5
67 year olds and older..		29.0	33.3	43.9	55.0	56.3	59.4
together		59.3	60.7	72.8	84.5	84.8	88.9

1) From 2020 estimates of the 12th coordinated population projection.
Discrepancies in totals are due to rounding.

Table 2: Development of Germany's population by 2060 [1)]

Variant: upper limit of the "medium" population

- Fertility: nearly constant, life expectancy: base assumption, net migration: 200 000 -

Specification		31 Dec. of the year					
		2008	2020	2030	2040	2050	2060
		Old-age dependency ratio with an age limit of 60 years					
Population, total	1000....	82 002	80 437	79 025	76 757	73 608	70 120
	2008 = 100....	100	98.1	96.4	93.6	89.8	85.5
under 20 years	1000....	15 619	13 708	13 229	12 375	11 480	11 015
	%....	19.0	17.0	16.7	16.1	15.6	15.7
	2008 = 100....	100	87.8	84.7	79.2	73.5	70.5
20 to under 60 years	1000....	45 426	42 161	37 224	35 788	33 519	31 611
	%....	55.4	52.4	47.1	46.6	45.5	45.1
	2008 = 100....	100	92.8	81.9	78.8	73.8	69.6
60 years and older	1000....	20 958	24 568	28 571	28 593	28 610	27 494
	%....	25.6	30.5	36.2	37.3	38.9	39.2
	2008 = 100....	100	117.2	136.3	136.4	136.5	131.2
Young-age, old-age, total dependency ratios							
Per 100 20 to under 60 year olds there are							
under 20 year olds.....		34.4	32.5	35.5	34.6	34.2	34.8
60 year olds and older..		46.1	58.3	76.8	79.9	85.4	87.0
together		80.5	90.8	112.3	114.5	119.6	121.8
		Old-age dependency ratio with an age limit of 65 years					
Population, total	1000....	82 002	80 437	79 025	76 757	73 608	70 120
	2008 = 100....	100	98.1	96.4	93.6	89.8	85.5
under 20 years	1000....	15 619	13 708	13 229	12 375	11 480	11 015
	%....	19.0	17.0	16.7	16.1	15.6	15.7
	2008 = 100....	100	87.8	84.7	79.2	73.5	70.5
20 to under 65 years	1000....	49 655	48 062	43 465	40 495	38 704	36 230
	%....	60.6	59.8	55.0	52.8	52.6	51.7
	2008 = 100....	100	96.8	87.5	81.6	77.9	73.0
65 years and older	1000....	16 729	18 668	22 331	23 887	23 425	22 876
	%....	20.4	23.2	28.3	31.1	31.8	32.6
	2008 = 100....	100	111.6	133.5	142.8	140.0	136.7
Young-age, old-age, total dependency ratios							
Per 100 20 to under 65 year olds there are							
under 20 year olds.....		31.5	28.5	30.4	30.6	29.7	30.4
65 year olds and older..		33.7	38.8	51.4	59.0	60.5	63.1
together		65.1	67.4	81.8	89.5	90.2	93.5
		Old-age dependency ratio with an age limit of 67 years					
Population, total	1000....	82 002	80 437	79 025	76 757	73 608	70 120
	2008 = 100....	100	98.1	96.4	93.6	89.8	85.5
under 20 years	1000....	15 619	13 708	13 229	12 375	11 480	11 015
	%....	19.0	17.0	16.7	16.1	15.6	15.7
	2008 = 100....	100	87.8	84.7	79.2	73.5	70.5
20 to under 67 years	1000....	51 477	50 150	46 100	42 228	40 622	38 008
	%....	62.8	62.3	58.3	55.0	55.2	54.2
	2008 = 100....	100	97.4	89.6	82.0	78.9	73.8
67 years and older	1000....	14 906	16 579	19 696	22 153	21 507	21 097
	%....	18.2	20.6	24.9	28.9	29.2	30.1
	2008 = 100....	100	111.2	132.1	148.6	144.3	141.5
Young-age, old-age, total dependency ratios							
Per 100 20 to under 67 year olds there are							
under 20 year olds.....		30.3	27.3	28.7	29.3	28.3	29.0
67 year olds and older..		29.0	33.1	42.7	52.5	52.9	55.5
together		59.3	60.4	71.4	81.8	81.2	84.5

1) From 2020 estimates of the 12th coordinated population projection.
Discrepancies in totals are due to rounding.

Table 3: Development of Germany's population by 2060 [1)]

Variant: "relatively young" population

- Fertility: rising slightly, life expectancy: base assumption, net migration: 200 000 -

Specification		31 Dec. of the year					
		2008	2020	2030	2040	2050	2060
		Old-age dependency ratio with an age limit of 60 years					
Population, total	1000....	82 002	80 831	80 227	78 805	76 703	74 515
	2008 = 100....	100	98.6	97.8	96.1	93.5	90.9
under 20 years	1000....	15 619	14 101	14 416	14 030	13 375	13 367
	%....	19.0	17.4	18.0	17.8	17.4	17.9
	2008 = 100....	100	90.3	92.3	89.8	85.6	85.6
20 to under 60 years	1000....	45 426	42 161	37 240	36 181	34 718	33 654
	%....	55.4	52.2	46.4	45.9	45.3	45.2
	2008 = 100....	100	92.8	82.0	79.6	76.4	74.1
60 years and older	1000....	20 958	24 568	28 571	28 593	28 610	27 494
	%....	25.6	30.4	35.6	36.3	37.3	36.9
	2008 = 100....	100	117.2	136.3	136.4	136.5	131.2
Young-age, old-age, total dependency ratios							
Per 100 20 to under 60 year olds there are							
under 20 year olds.....		34.4	33.4	38.7	38.8	38.5	39.7
60 year olds and older..		46.1	58.3	76.7	79.0	82.4	81.7
together		80.5	91.7	115.4	117.8	120.9	121.4
		Old-age dependency ratio with an age limit of 65 years					
Population, total	1000....	82 002	80 831	80 227	78 805	76 703	74 515
	2008 = 100....	100	98.6	97.8	96.1	93.5	90.9
under 20 years	1000....	15 619	14 101	14 416	14 030	13 375	13 367
	%....	19.0	17.4	18.0	17.8	17.4	17.9
	2008 = 100....	100	90.3	92.3	89.8	85.6	85.6
20 to under 65 years	1000....	49 655	48 062	43 481	40 888	39 904	38 272
	%....	60.6	59.5	54.2	51.9	52.0	51.4
	2008 = 100....	100	96.8	87.6	82.3	80.4	77.1
65 years and older	1000....	16 729	18 668	22 331	23 887	23 425	22 876
	%....	20.4	23.1	27.8	30.3	30.5	30.7
	2008 = 100....	100	111.6	133.5	142.8	140.0	136.7
Young-age, old-age, total dependency ratios							
Per 100 20 to under 65 year olds there are							
under 20 year olds.....		31.5	29.3	33.2	34.3	33.5	34.9
65 year olds and older..		33.7	38.8	51.4	58.4	58.7	59.8
together		65.1	68.2	84.5	92.7	92.2	94.7
		Old-age dependency ratio with an age limit of 67 years					
Population, total	1000....	82 002	80 831	80 227	78 805	76 703	74 515
	2008 = 100....	100	98.6	97.8	96.1	93.5	90.9
under 20 years	1000....	15 619	14 101	14 416	14 030	13 375	13 367
	%....	19.0	17.4	18.0	17.8	17.4	17.9
	2008 = 100....	100	90.3	92.3	89.8	85.6	85.6
20 to under 67 years	1000....	51 477	50 150	46 115	42 621	41 821	40 051
	%....	62.8	62.0	57.5	54.1	54.5	53.7
	2008 = 100....	100	97.4	89.6	82.8	81.2	77.8
67 years and older	1000....	14 906	16 579	19 696	22 153	21 507	21 097
	%....	18.2	20.5	24.6	28.1	28.0	28.3
	2008 = 100....	100	111.2	132.1	148.6	144.3	141.5
Young-age, old-age, total dependency ratios							
Per 100 20 to under 67 year olds there are							
under 20 year olds.....		30.3	28.1	31.3	32.9	32.0	33.4
67 year olds and older..		29.0	33.1	42.7	52.0	51.4	52.7
together		59.3	61.2	74.0	84.9	83.4	86.1

1) From 2020 estimates of the 12th coordinated population projection.
Discrepancies in totals are due to rounding.

Table 4: Development of Germany's population by 2060 [1)]

Variant: "relatively old" population

- Fertility: declining slightly, life expectancy: high, net migration: 100 000 -

Specification		31 Dec. of the year					
		2008	2020	2030	2040	2050	2060
		Old-age dependency ratio with an age limit of 60 years					
Population, total	1000....	82 002	79 963	77 382	73 868	69 353	64 041
	2008 = 100....	100	97.5	94.4	90.1	84.6	78.1
under 20 years	1000....	15 619	13 355	12 170	10 757	9 473	8 518
	%....	19.0	16.7	15.7	14.6	13.7	13.3
	2008 = 100....	100	85.5	77.9	68.9	60.7	54.5
20 to under 60 years	1000....	45 426	41 755	35 963	33 503	30 050	27 105
	%....	55.4	52.2	46.5	45.4	43.3	42.3
	2008 = 100....	100	91.9	79.2	73.8	66.2	59.7
60 years and older	1000....	20 958	24 853	29 248	29 609	29 830	28 418
	%....	25.6	31.1	37.8	40.1	43.0	44.4
	2008 = 100....	100	118.6	139.6	141.3	142.3	135.6
Young-age, old-age, total dependency ratios							
Per 100 20 to under 60 year olds there are							
under 20 year olds.....		34.4	32.0	33.8	32.1	31.5	31.4
60 year olds and older..		46.1	59.5	81.3	88.4	99.3	104.8
together		80.5	91.5	115.2	120.5	130.8	136.3
		Old-age dependency ratio with an age limit of 65 years					
Population, total	1000....	82 002	79 963	77 382	73 868	69 353	64 041
	2008 = 100....	100	97.5	94.4	90.1	84.6	78.1
under 20 years	1000....	15 619	13 355	12 170	10 757	9 473	8 518
	%....	19.0	16.7	15.7	14.6	13.7	13.3
	2008 = 100....	100	85.5	77.9	68.9	60.7	54.5
20 to under 65 years	1000....	49 655	47 659	42 180	38 108	35 014	31 346
	%....	60.6	59.6	54.5	51.6	50.5	48.9
	2008 = 100....	100	96.0	84.9	76.7	70.5	63.1
65 years and older	1000....	16 729	18 949	23 031	25 003	24 866	24 177
	%....	20.4	23.7	29.8	33.8	35.9	37.8
	2008 = 100....	100	113.3	137.7	149.5	148.6	144.5
Young-age, old-age, total dependency ratios							
Per 100 20 to under 65 year olds there are							
under 20 year olds.....		31.5	28.0	28.9	28.2	27.1	27.2
65 year olds and older..		33.7	39.8	54.6	65.6	71.0	77.1
together		65.1	67.8	83.5	93.8	98.1	104.3
		Old-age dependency ratio with an age limit of 67 years					
Population, total	1000....	82 002	79 963	77 382	73 868	69 353	64 041
	2008 = 100....	100	97.5	94.4	90.1	84.6	78.1
under 20 years	1000....	15 619	13 355	12 170	10 757	9 473	8 518
	%....	19.0	16.7	15.7	14.6	13.7	13.3
	2008 = 100....	100	85.5	77.9	68.9	60.7	54.5
20 to under 67 years	1000....	51 477	49 752	44 819	39 819	36 872	32 999
	%....	62.8	62.2	57.9	53.9	53.2	51.5
	2008 = 100....	100	96.6	87.1	77.4	71.6	64.1
67 years and older	1000....	14 906	16 856	20 393	23 293	23 008	22 523
	%....	18.2	21.1	26.4	31.5	33.2	35.2
	2008 = 100....	100	113.1	136.8	156.3	154.4	151.1
Young-age, old-age, total dependency ratios							
Per 100 20 to under 67 year olds there are							
under 20 year olds.....		30.3	26.8	27.2	27.0	25.7	25.8
67 year olds and older..		29.0	33.9	45.5	58.5	62.4	68.3
together		59.3	60.7	72.7	85.5	88.1	94.1

1) From 2020 estimates of the 12th coordinated population projection.
Discrepancies in totals are due to rounding.

Table 5: People under 20 years of age by age group

- 12th coordinated population projection -
Base: 31 December 2008

Year (as of 31 Dec.)	Variant "medium" population, lower limit [1])		Variant "medium" population, upper limit [2])	
	1 000	2008 = 100	1 000	2008 = 100
		Under 6 year olds		
2020	3 973	95.6	4 008	96.5
2030	3 619	87.1	3 754	90.4
2040	3 213	77.3	3 415	82.2
2050	3 042	73.2	3 281	79.0
2060	2 868	69.0	3 163	76.1
		6 to under 10 year olds		
2020	2 648	88.1	2 661	88.5
2030	2 594	86.3	2 658	88.4
2040	2 272	75.6	2 399	79.8
2050	2 080	69.2	2 235	74.4
2060	2 000	66.5	2 185	72.7
		10 to under 16 year olds		
2020	4 084	85.1	4 102	85.4
2030	4 013	83.6	4 076	84.9
2040	3 660	76.2	3 823	79.6
2050	3 254	67.8	3 484	72.6
2060	3 084	64.2	3 350	69.8
		16 to under 20 year olds		
2020	2 919	79.8	2 937	80.3
2030	2 701	73.8	2 741	74.9
2040	2 647	72.4	2 738	74.9
2050	2 325	63.6	2 480	67.8
2060	2 134	58.3	2 316	63.3
		Total		
2020	13 624	87.2	13 708	87.8
2030	12 927	82.8	13 229	84.7
2040	11 791	75.5	12 375	79.2
2050	10 701	68.5	11 480	73.5
2060	10 085	64.6	11 015	70.5

1) Nearly constant fertility, base assumption on life expectancy, net migration of 100 000 persons/year.
2) Nearly constant fertility, base assumption on life expectancy, net migration of 200 000 persons/year.
Discrepancies in totals are due to rounding.

Table 6: Working-age population of 20 to under 65 years

- 12th coordinated population projection -
Base: 31 December 2008

Year (as of 31 Dec.)	Variant "medium" population, lower limit [1])			Variant "medium" population, upper limit [2])		
	1 000	%[3])	2008 = 100	1 000	%[3])	2008 = 100
			Aged 20 to under 30 years			
2020	8 549	17.9	86.5	8 699	18.1	88.0
2030	7 473	17.7	75.6	7 776	17.9	78.7
2040	7 188	18.8	72.7	7 559	18.7	76.5
2050	6 784	19.0	68.6	7 306	18.9	73.9
2060	6 059	18.6	61.3	6 711	18.5	67.9
			Aged 30 to under 50 years			
2020	19 842	41.7	81.8	20 066	41.7	82.7
2030	18 932	44.9	78.0	19 714	45.4	81.3
2040	16 591	43.3	68.4	17 849	44.1	73.6
2050	15 260	42.7	62.9	16 738	43.2	69.0
2060	14 588	44.8	60.1	16 285	44.9	67.1
			Aged 50 to under 65 years			
2020	19 245	40.4	124.1	19 298	40.2	124.4
2030	15 743	37.4	101.5	15 975	36.8	103.0
2040	14 549	38.0	93.8	15 087	37.3	97.3
2050	13 678	38.3	88.2	14 660	37.9	94.5
2060	11 944	36.6	77.0	13 233	36.5	85.3
			Total			
2020	47 636	100	95.9	48 062	100	96.8
2030	42 149	100	84.9	43 465	100	87.5
2040	38 329	100	77.2	40 495	100	81.6
2050	35 722	100	71.9	38 704	100	77.9
2060	32 591	100	65.6	36 230	100	73.0

1) Nearly constant fertility, base assumption on life expectancy, net migration of 100 000 persons/year.
2) Nearly constant fertility, base assumption on life expectancy, net migration of 200 000 persons/year.
3) Percentage of the working-age population.
Discrepancies in totals are due to rounding.

Table 7: 65 to under 80 year olds and persons aged 80 years and over

- 12th coordinated population projection -
Base: 31 December 2008

Year (as of 31 Dec.)	Variant "medium" population, lower limit [1])		Variant "medium" population, upper limit [2])	
	1 000	2008 = 100	1 000	2008 = 100
		65 to under 80 year olds		
2020	12 646	99.8	12 656	99.9
2030	15 857	125.2	15 902	125.5
2040	15 600	123.1	15 754	124.4
2050	12 766	100.8	13 134	103.7
2060	12 925	102.0	13 651	107.8
		80 year olds and older persons		
2020	6 008	147.9	6 012	148.0
2030	6 417	158.0	6 429	158.3
2040	8 109	199.7	8 133	200.3
2050	10 223	251.7	10 291	253.4
2060	9 050	222.8	9 225	227.1
		65 year olds and older persons, total		
2020	18 654	111.5	18 668	111.6
2030	22 275	133.2	22 331	133.5
2040	23 709	141.7	23 887	142.8
2050	22 989	137.4	23 425	140.0
2060	21 975	131.4	22 876	136.7

1) Nearly constant fertility, base assumption on life expectancy, net migration of 100 000 persons/year.
2) Nearly constant fertility, base assumption on life expectancy, net migration of 200 000 persons/year.
Discrepancies in totals are due to rounding.

Table 8: Population trends in Germany from 2009 to 2060

- 12th coordinated population projection -

Year (as of 31 Dec.)	Variant "medium" population, lower limit [1])		Variant "medium" population, upper limit [2])	
	1 000	2008 = 100	1 000	2008 = 100
2009	81 735	99.7	81 735	99.7
2010	81 545	99.4	81 545	99.4
2011	81 374	99.2	81 374	99.2
2012	81 212	99,0	81 232	99.1
2013	81 060	98.9	81 101	98.9
2014	80 920	98.7	80 982	98.8
2015	80 772	98.5	80 875	98.6
2016	80 616	98.3	80 781	98.5
2017	80 453	98.1	80 690	98.4
2018	80 282	97.9	80 603	98.3
2019	80 102	97.7	80 519	98.2
2020	79 914	97.5	80 437	98.1
2021	79 715	97.2	80 346	98,0
2022	79 503	97,0	80 244	97.9
2023	79 279	96.7	80 131	97.7
2024	79 041	96.4	80 007	97.6
2025	78 790	96.1	79 870	97.4
2026	78 526	95.8	79 722	97.2
2027	78 249	95.4	79 562	97,0
2028	77 959	95.1	79 392	96.8
2029	77 659	94.7	79 213	96.6
2030	77 350	94.3	79 025	96.4
2031	77 032	93.9	78 830	96.1
2032	76 706	93.5	78 627	95.9
2033	76 373	93.1	78 418	95.6
2034	76 033	92.7	78 203	95.4
2035	75 686	92.3	77 981	95.1
2036	75 331	91.9	77 753	94.8
2037	74 969	91.4	77 517	94.5
2038	74 598	91,0	77 273	94.2
2039	74 219	90.5	77 020	93.9
2040	73 829	90,0	76 757	93.6
2041	73 430	89.5	76 484	93.3
2042	73 020	89,0	76 201	92.9
2043	72 599	88.5	75 907	92.6
2044	72 169	88,0	75 604	92.2
2045	71 729	87.5	75 291	91.8
2046	71 280	86.9	74 969	91.4
2047	70 823	86.4	74 639	91,0
2048	70 359	85.8	74 301	90.6
2049	69 888	85.2	73 957	90.2
2050	69 412	84.6	73 608	89.8
2051	68 931	84.1	73 255	89.3
2052	68 448	83.5	72 899	88.9
2053	67 963	82.9	72 541	88.5
2054	67 478	82.3	72 183	88,0
2055	66 994	81.7	71 827	87.6
2056	66 513	81.1	71 473	87.2
2057	66 037	80.5	71 125	86.7
2058	65 567	80,0	70 782	86.3
2059	65 105	79.4	70 447	85.9
2060	64 651	78.8	70 120	85.5

1) Nearly constant fertility, base assumption on life expectancy, net migration of 100 000 persons/year.
2) Nearly constant fertility, base assumption on life expectancy, net migration of 200 000 persons/year.

Glossary

Appendix C

Age-specific fertility rate

The fertility rate can be determined for any age of women between 15 and 49 years. It is defined as the number of births to mothers of a given age in a calendar year in relation to the total female population of that age. Age-specific fertility rates calculated in this manner indicate the average number of children born to women of a given age.

Basic migration

Basic migration assumes a certain level of emigration to other countries. Hence the same or a higher level of immigration is required to achieve a balanced or positive net migration. At the same time, foreigners moving to Germany are younger than those leaving the country so that the population is getting younger even in the case of a balanced net migration.

Birth cohort

A birth cohort consists of people who were born in the same year.

Birth deficit

The number of births is smaller than the number of deaths.

Completed/cumulative fertility

The completed/cumulative fertility of a female cohort indicates the average number of children born to the women of the cohort during their life. As regards female cohorts who have reached their 50th year of age, fertility refers to the total number of children born to the women of the cohorts. This fertility rate is calculated for a cohort by adding the age-specific fertility rates (source: statistics of births) determined for the cohort's individual years of age from 15 to 49.

Childlessness

Childlessness refers to the share of childless women in the total of women of a given group. As for women aged 50 and over who have typically passed through their childbearing years, childlessness is considered permanent. As the share of childless women in younger age groups may still change, it should be interpreted as reflecting the situation at a given instant in time.

Life expectancy

The average number of additional years a person of a certain age can expect to live if the current mortality rates continue for the rest of that person's life. Life expectancy is determined using the life table of the Federal Statistical Office of Germany, which considers the current probabilities of death at a specific age. It is a hypothetical indicator because mortality levels may change in the course of further life. Life expectancy is shown in a breakdown by sex.

We speak of an average life expectancy at birth (i.e. at the age of 0 years) and further life expectancy, for instance, at the age of 60 or 65 years. The sum of the age reached and the further life expectancy or the total number of years a person can expect to live rises with increasing age. Today, for instance, a one year old child's life expectancy is higher than that of a new-born child. This is so because the former has al-

ready overcome the risks of dying in the first months of his/her life, and his/her chance to become old has increased.

Migration surplus

Migration surplus (positive net migration, net immigration) means that the number of immigrants exceeds the number of emigrants.

Mortality

Mortality is one of the two main components of natural population change. By mortality we understand the number of deaths occurring over a certain period, which is related to the population. In this context, total mortality or the mortality of sub-populations (breakdown by age or sex) can be studied.

Natural population change

This is the balance of births and deaths.

Net migration

The difference between immigration into Germany and emigration from Germany to other countries.

Old-age dependency ratio

This is the ratio of the number of people of pension age (e.g. 65 years and older) to 100 persons of working age (e.g. 20 to under 65 years).

Reproductive behaviour

The reproductive behaviour has an impact on the total number of births. Characteristics are, for instance, the time of starting a family, the number of children, and the intervals between births.

Total fertility rate

The total fertility rate is defined as the average number of children a women would have during her lifetime if the conditions in the reference year were characteristic of the whole period of her childbearing years (from 15 to 49). This indicator is of a hypothetical nature as it shows the fertility rate for a modelled, rather than a concrete generation of women. However, it has the advantage that it is available promptly and measures the level of births irrespective of the population's age structure. The total fertility rate is determined by adding up the age-specific fertility rates of the reference year for all women aged between 15 and 49 years.

Young-age dependency ratio

This is the ratio of the number of people aged 0 to 19 years to 100 persons of working age (e.g. 20 to under 65 years).

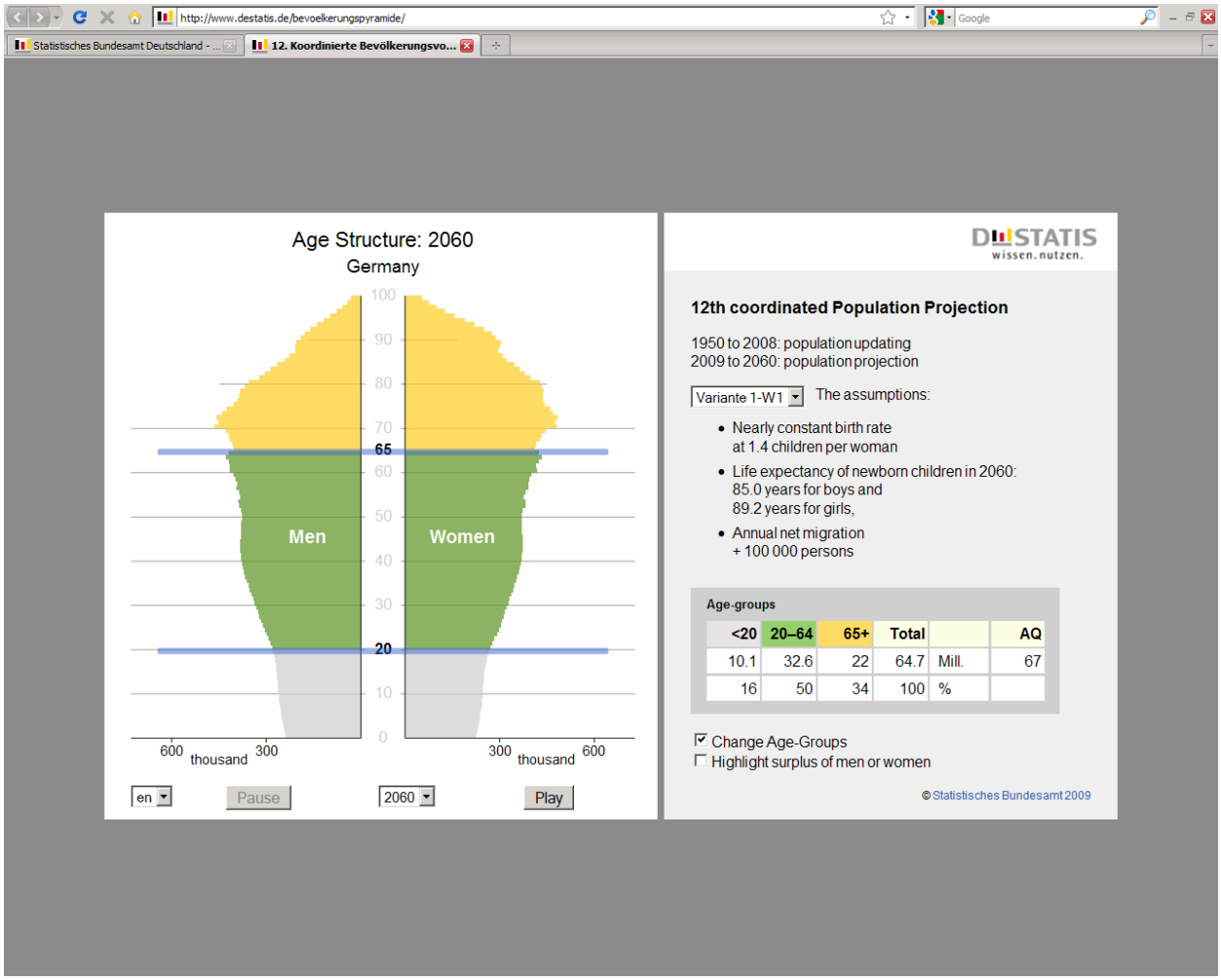
Animated population pyramid on the internet

Appendix D

Our animated population pyramid is designed to visualise, in an interactive way, the complex interdependencies identified in the context of the 12th coordinated population projection. Population trends are shown for the period from 1950 until today and also for the next five decades. Taking into account the underlying assumptions, future scenarios based on four selected variants of the 12th coordinated population projection can be compared with each other.

In addition to animated graphs, the interactive population pyramid provides a wide range of statistical information on the following:

- number of women and men by individual cohorts
- size of the age groups selected (in million persons and percent)
- old-age dependency ratio: number of persons of pension age to 100 persons of working age

The presentation allows to select periods and age groups.

It is available in German, English, French and Russian.