



2.2 Population dynamics

	Crude death rate		Crude birth rate		Projected population by 2030	Population momentum	Average annual population growth rates					
	per 1,000 people		per 1,000 people				Age 0-14 %		Age 15-64 %		Age 65+ %	
	1980	1998	1980	1998	millions	1998	1980-98	1998-2015	1980-98	1998-2015	1980-98	1998-2015
Albania	6	7	29	18	4	1.4	0.3	-0.7	1.6	1.4	2.5	2.6
Algeria	12	6	42	26	48	1.6	1.4	-0.2	3.6	2.5	2.4	3.0
Angola	23	19	50	48	27	1.5	3.3	2.6	2.7	3.1	2.8	2.1
Argentina	9	8	24	19	48	1.4	1.0	0.0	1.5	1.3	2.3	1.6
Armenia	6	6	23	11	4	1.2	0.2	-2.1	1.3	0.9	3.0	1.9
Australia	7	7	15	13	23	1.2	0.3	-0.2	1.5	0.8	2.5	2.3
Austria	12	10	12	10	8	1.0	-0.6	-1.6	0.7	-0.1	0.2	1.4
Azerbaijan	7	6	25	16	10	1.3	0.7	-0.6	1.7	1.5	2.3	1.7
Bangladesh	18	10	44	28	190	1.6	1.3	-0.2	2.7	2.4	1.8	2.7
Belarus	10	13	16	9	9	1.0	-0.5	-2.1	0.4	-0.1	1.4	-0.3
Belgium	12	10	13	11	10	1.0	-0.6	-1.0	0.3	0.0	0.9	1.1
Benin	19	13	49	41	12	1.5	3.2	1.6	3.0	3.2	1.1	1.9
Bolivia	15	9	39	32	13	1.5	1.8	0.5	2.4	2.6	2.8	2.8
Bosnia and Herzegovina	7	7	19	13	4	1.1	-1.9	-0.5	-0.1	0.7	1.2	3.5
Botswana	10	16	45	33	2	1.2	2.3	-0.4	3.6	1.8	3.9	-0.7
Brazil	9	7	31	20	224	1.4	0.4	0.0	2.4	1.4	2.6	2.8
Bulgaria	11	14	15	8	7	0.9	-1.9	-2.4	-0.2	-0.6	1.1	0.5
Burkina Faso	20	19	47	44	22	1.3	2.4	1.8	2.4	2.8	2.4	0.9
Burundi	18	20	46	42	12	1.3	2.7	1.2	2.5	2.7	0.9	0.3
Cambodia	27	12	40	33	17	1.4	3.2	-0.2	2.7	2.4	3.2	2.8
Cameroon	16	12	45	38	26	1.4	2.8	1.1	2.8	2.8	2.6	1.9
Canada	7	7	15	12	34	1.1	0.3	-0.6	1.2	0.6	2.7	2.1
Central African Republic	19	19	43	37	6	1.3	2.4	1.0	2.2	2.1	1.8	-0.5
Chad	22	16	44	45	16	1.5	3.8	2.0	1.8	3.5	1.9	0.7
Chile	7	5	23	18	20	1.4	0.7	-0.5	1.9	1.4	2.8	3.1
China	6	8	18	16	1,477	1.2	-0.5	-0.8	2.0	1.0	3.2	2.3
Hong Kong, China	5	5	17	8	8	1.1	-0.2	-0.4	1.8	1.1	4.0	2.4
Colombia	7	6	31	24	60	1.5	0.9	-0.2	2.6	2.0	2.9	2.8
Congo, Dem. Rep.	16	15	48	46	114	1.5	3.4	2.5	3.1	3.3	3.0	2.6
Congo, Rep.	16	16	45	43	6	1.4	3.0	2.2	2.8	3.0	2.3	1.1
Costa Rica	4	4	31	22	5	1.6	1.5	-0.7	2.8	1.9	4.3	3.9
Côte d'Ivoire	17	17	51	37	23	1.3	2.8	0.8	3.4	2.3	3.6	0.7
Croatia	..	12	..	11	4	0.9	-1.1	-1.4	0.0	-0.3	0.9	1.2
Cuba	6	7	14	13	12	1.1	-1.4	-1.6	1.5	0.4	1.9	2.7
Czech Republic	13	11	15	9	9	1.0	-1.6	-2.0	0.5	-0.3	0.1	1.7
Denmark	11	11	11	13	5	1.0	-0.6	-0.6	0.4	-0.2	0.3	1.6
Dominican Republic	7	5	33	25	12	1.5	0.9	-0.4	2.7	2.0	3.8	3.2
Ecuador	9	6	36	24	18	1.5	1.2	-0.3	3.1	2.2	2.9	2.9
Egypt, Arab Rep.	13	7	39	24	92	1.5	1.7	-0.2	2.6	2.2	2.8	2.7
El Salvador	11	6	36	27	10	1.6	0.4	0.3	2.3	2.3	3.6	2.1
Eritrea	..	12	..	40	7	1.4	..	1.7	..	2.8	..	2.5
Estonia	12	13	15	9	1	0.9	-1.0	-2.3	0.1	-0.4	0.3	0.7
Ethiopia	22	20	48	45	114	1.3	2.9	1.7	2.5	2.5	2.1	0.4
Finland	9	10	13	11	5	0.8	-0.1	-0.8	0.3	-0.1	1.5	2.1
France	10	9	15	13	62	1.0	-0.4	-0.5	0.6	0.2	1.1	1.1
Gabon	19	16	33	36	2	1.3	3.8	2.1	2.5	2.3	2.4	1.2
Gambia, The	24	13	48	42	2	1.4	3.5	1.7	3.6	2.5	3.6	3.1
Georgia	9	7	18	9	5	1.1	-0.5	-2.6	0.4	0.3	2.0	1.0
Germany	12	10	11	10	74	0.9	-0.6	-1.6	0.5	-0.4	0.3	1.3
Ghana	14	9	45	35	33	1.6	2.8	1.1	3.1	2.9	3.5	2.9
Greece	9	10	15	9	10	1.0	-1.5	-1.1	0.7	-0.3	1.9	1.1
Guatemala	11	7	43	33	19	1.6	2.3	0.7	2.7	3.1	3.4	2.1
Guinea	24	17	46	41	12	1.4	2.5	1.1	2.6	2.7	2.6	2.1
Guinea-Bissau	26	21	44	41	2	1.3	2.6	1.4	1.7	2.3	2.1	1.0
Haiti	15	13	37	31	12	1.4	1.9	0.3	2.1	2.4	0.9	1.7
Honduras	10	5	43	33	11	1.7	2.5	0.5	3.5	3.1	3.9	2.8



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	Crude death rate		Crude birth rate		Projected population by 2030	Population momentum	Average annual population growth rates					
	per 1,000 people		per 1,000 people				Age 0-14 %		Age 15-64 %		Age 65+ %	
	1980	1998	1980	1998	millions	1998	1980-98	1998-2015	1980-98	1998-2015	1980-98	1998-2015
Hungary	14	14	14	10	9	0.9	-1.6	-1.6	0.0	-0.4	0.0	0.6
India	13	9	34	27	1,398	1.4	1.3	0.0	2.3	1.9	2.8	2.4
Indonesia	12	8	34	23	285	1.4	0.3	-0.2	2.5	1.7	3.4	2.9
Iran, Islamic Rep.	11	5	44	22	98	1.7	1.4	0.0	3.2	2.5	4.3	2.2
Iraq	9	10	41	32	38	1.6	2.4	0.5	3.5	2.8	3.8	3.8
Ireland	10	9	22	15	4	1.3	-1.2	-0.2	1.1	0.7	0.8	1.6
Israel	7	6	24	22	9	1.5	1.6	0.2	2.7	1.8	2.8	2.3
Italy	10	10	11	9	50	0.9	-2.2	-1.6	0.4	-0.6	1.5	1.3
Jamaica	7	6	28	23	3	1.5	-0.2	-0.8	1.9	1.5	0.7	1.6
Japan	6	7	14	10	117	0.7	-2.0	-0.9	0.5	-0.7	3.6	2.5
Jordan	..	4	..	31	8	1.7	2.9	1.0	5.1	2.9	3.7	4.4
Kazakhstan	8	10	24	14	17	1.2	-0.5	-0.8	0.5	0.6	1.1	1.1
Kenya	13	12	51	35	47	1.4	2.5	0.4	3.8	2.6	2.1	0.0
Korea, Dem. Rep.	6	9	21	20	29	1.2	-0.6	-0.8	2.5	1.1	3.4	2.9
Korea, Rep.	6	6	22	14	53	1.2	-1.3	-0.9	1.9	0.6	3.9	3.8
Kuwait	4	2	37	23	3	1.7	1.0	0.4	2.1	3.2	3.7	8.1
Kyrgyz Republic	9	7	30	22	7	1.5	1.2	-0.9	1.6	2.0	1.5	0.7
Lao PDR	20	13	45	38	9	1.5	2.6	1.3	2.2	2.8	3.8	1.7
Latvia	13	14	15	8	2	0.9	-0.7	-3.0	-0.2	-0.6	0.2	0.6
Lebanon	9	6	30	21	6	1.5	0.8	-0.5	2.5	2.0	2.3	1.3
Lesotho	15	13	40	35	3	1.4	2.1	0.4	2.6	2.3	2.1	2.4
Libya	12	4	46	29	9	1.7	2.1	0.5	3.8	2.6	4.7	4.9
Lithuania	10	11	16	10	4	1.0	-0.4	-1.8	0.6	0.0	1.2	1.1
Macedonia, FYR	7	8	21	15	2	1.2	-0.8	-0.8	0.6	0.6	2.1	2.1
Madagascar	16	11	47	41	30	1.7	2.9	1.8	2.8	3.3	1.2	3.6
Malawi	23	23	55	47	20	1.3	2.8	1.6	3.1	2.7	3.5	2.1
Malaysia	6	5	31	25	34	1.5	2.0	0.0	3.0	2.2	3.2	4.0
Mali	22	16	49	47	23	1.6	2.7	2.2	2.5	3.2	4.0	1.6
Mauritania	19	13	43	40	5	1.5	2.7	1.4	2.7	2.9	3.0	2.5
Mauritius	6	7	24	17	1	1.3	-0.8	-0.1	1.6	1.1	3.8	2.9
Mexico	7	5	34	28	141	1.6	0.4	-0.2	3.0	1.9	2.8	3.1
Moldova	10	9	20	10	4	1.1	-0.1	-1.6	0.4	0.2	1.6	0.4
Mongolia	11	7	38	21	4	1.6	1.5	-0.5	3.0	2.3	4.1	2.2
Morocco	12	7	38	25	41	1.5	0.6	0.0	2.9	2.0	2.3	2.6
Mozambique	20	20	46	41	30	1.4	2.0	1.2	1.7	2.7	3.1	0.8
Myanmar	14	10	36	26	59	1.3	-0.1	0.8	2.4	1.2	2.4	1.9
Namibia	14	13	41	35	3	1.3	2.5	0.9	2.8	2.4	2.6	1.0
Nepal	17	11	43	34	40	1.5	2.4	1.1	2.6	2.7	3.5	2.6
Netherlands	8	9	13	12	16	1.0	-0.5	-0.9	0.7	0.1	1.5	1.9
New Zealand	9	7	16	15	4	1.2	0.2	-0.5	1.3	0.5	1.9	1.9
Nicaragua	11	5	46	31	9	1.7	2.2	0.5	3.2	3.2	3.7	3.1
Niger	23	18	51	52	24	1.5	3.5	2.8	3.1	3.3	3.2	2.2
Nigeria	18	12	50	40	252	1.5	2.7	2.0	3.1	2.9	2.7	3.2
Norway	10	10	12	13	5	0.9	-0.3	-0.6	0.6	0.3	0.7	1.2
Oman	10	3	45	29	4	1.8	4.0	0.3	4.2	3.2	4.1	5.6
Pakistan	15	8	47	35	244	1.7	2.3	1.1	2.8	3.0	3.1	3.3
Panama	6	5	30	22	4	1.5	0.7	-0.5	2.6	1.8	2.9	3.1
Papua New Guinea	14	10	36	32	7	1.4	1.7	0.8	2.5	2.3	6.0	3.3
Paraguay	8	5	37	30	9	1.6	2.6	0.2	3.2	2.8	1.4	3.0
Peru	10	6	35	25	37	1.5	1.0	0.1	2.6	2.0	3.2	2.8
Philippines	9	6	35	28	119	1.6	1.8	0.1	2.8	2.3	3.8	3.8
Poland	10	10	20	10	38	1.1	-0.4	-1.6	0.6	0.2	1.2	1.3
Portugal	10	11	16	12	10	1.0	-2.1	-0.9	0.4	0.1	2.5	0.2
Puerto Rico	6	7	23	15	5	1.3	-0.4	-0.3	1.5	0.9	2.3	2.2
Romania	10	12	18	11	20	1.0	-1.8	-1.8	0.5	-0.1	1.2	0.6
Russian Federation	11	14	16	9	129	0.9	-0.3	-1.9	0.3	-0.1	1.3	0.2



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	1980	1998	1980	1998	millions	1998	1980-98	1998-2015	1980-98	1998-2015	1980-98	1998-2015
Rwanda	19	21	51	46	15	1.3	2.1	1.7	3.0	2.6	1.6	2.0
Saudi Arabia	9	4	43	34	46	1.6	4.0	2.3	4.7	3.1	4.4	5.5
Senegal	18	13	46	39	17	1.4	2.7	1.6	2.8	2.8	2.3	2.2
Sierra Leone	29	25	49	45	9	1.4	2.6	1.1	2.0	2.5	1.2	2.4
Singapore	5	5	17	13	4	1.0	0.8	-1.0	2.0	1.1	3.6	4.2
Slovak Republic	10	10	19	11	5	1.1	-0.8	-1.4	0.8	0.3	0.8	1.2
Slovenia	10	9	15	9	2	0.9	-1.6	-1.7	0.6	-0.3	1.0	1.7
South Africa	12	9	36	25	56	1.3	1.3	0.0	2.7	1.5	4.2	1.0
Spain	8	9	15	9	36	1.0	-2.8	-1.0	0.8	-0.2	2.6	0.7
Sri Lanka	6	6	28	18	25	1.4	0.0	0.2	1.9	1.2	3.4	3.4
Sudan	17	11	45	33	50	1.4	1.6	1.8	2.8	2.3	3.1	2.6
Sweden	11	11	12	10	8	0.8	0.1	-1.9	0.3	-0.1	0.7	1.3
Switzerland	9	9	12	11	7	0.9	-0.1	-1.7	0.8	-0.2	1.0	1.9
Syrian Arab Republic	9	5	46	29	27	1.7	2.4	0.3	3.8	3.1	2.8	3.0
Tajikistan	8	5	37	21	10	1.6	2.1	-0.8	2.7	2.8	2.2	1.1
Tanzania	15	16	47	41	56	1.3	2.8	1.2	3.2	2.6	3.3	0.8
Thailand	8	7	28	17	77	1.3	-0.8	-0.3	2.6	1.1	3.8	3.2
Togo	16	16	45	40	8	1.4	3.1	1.1	2.8	2.8	2.6	0.9
Trinidad and Tobago	7	6	29	15	2	1.3	-0.3	-0.9	1.5	1.1	1.6	2.6
Tunisia	9	6	35	18	13	1.5	0.7	-0.5	2.8	1.9	4.4	2.1
Turkey	10	6	32	21	88	1.4	0.4	0.1	2.8	1.5	2.8	2.6
Turkmenistan	8	6	34	20	7	1.5	2.3	-0.6	3.2	2.5	2.7	1.6
Uganda	18	20	49	47	41	1.3	2.8	1.7	2.6	2.9	1.8	-0.4
Ukraine	11	15	15	9	40	0.9	-0.7	-2.2	0.1	-0.5	0.9	-0.4
United Arab Emirates	5	3	30	17	4	1.2	5.2	0.2	5.3	1.9	8.1	9.9
United Kingdom	12	11	13	12	59	1.1	-0.3	-1.0	0.4	0.0	0.5	1.0
United States	9	9	16	14	327	1.2	0.8	-0.1	0.9	0.7	1.5	1.9
Uruguay	10	9	19	17	4	1.2	0.2	-0.2	0.7	0.8	1.7	0.7
Uzbekistan	8	6	34	23	36	1.6	1.9	-1.1	2.6	2.6	1.5	1.6
Venezuela, RB	6	4	33	25	36	1.6	1.5	-0.2	2.9	2.2	3.9	3.8
Vietnam	8	6	36	21	110	1.5	0.8	-0.8	2.7	2.1	2.1	1.1
West Bank and Gaza	..	5	..	42	7	1.9	..	2.7	..	4.3	..	2.2
Yemen, Rep.	19	12	53	40	36	1.6	3.5	2.0	3.9	3.5	4.6	1.3
Yugoslavia, FR (Serb./Mont.)	9	10	18	11	11	1.0	-0.3	-0.8	0.5	0.2	2.0	0.8
Zambia	15	19	50	42	16	1.3	2.5	0.7	3.3	2.5	2.4	0.8
Zimbabwe	12	13	43	31	16	1.3	2.1	-0.5	3.5	2.1	3.1	0.1
World	10 w	9 w	27 w	22 w	8,043 s	1.3 w	0.8 w	0.1 w	2.0 w	1.4 w	2.3 w	2.0 w
Low income	11	9	31	26	5,149	1.4	1.0	0.3	2.3	1.8	3.0	2.3
Excl. China & India	16	12	43	34	2,246	1.5	2.0	1.1	2.7	2.5	2.7	2.3
Middle income	9	8	28	20	1,957	1.4	0.7	-0.2	2.0	1.4	2.1	1.9
Lower middle income	10	9	28	20	1,158	1.3	0.8	-0.4	1.8	1.4	2.0	1.5
Upper middle income	8	7	28	21	798	1.4	0.5	-0.1	2.2	1.4	2.3	2.6
Low & middle income	11	9	30	24	7,106	1.4	0.9	0.1	2.2	1.7	2.7	2.2
East Asia & Pacific	7	7	22	18	2,284	1.3	-0.2	-0.6	2.1	1.2	3.2	2.5
Europe & Central Asia	10	11	19	12	489	1.1	-0.1	-1.3	0.8	0.4	1.3	0.7
Latin America & Carib.	8	6	31	23	715	1.5	0.7	-0.1	2.5	1.8	2.7	2.7
Middle East & N. Africa	12	7	41	27	475	1.6	1.9	0.4	3.3	2.5	3.4	2.8
South Asia	14	9	37	28	1,951	1.5	1.5	0.2	2.4	2.1	2.8	2.5
Sub-Saharan Africa	18	15	47	40	1,191	1.4	2.7	1.6	2.9	2.7	2.8	1.8
High income	9	9	14	12	937	1.0	-0.2	-0.6	0.9	0.2	1.7	1.7
Europe EMU	10	10	13	10	276	1.0	-1.2	-1.1	0.6	-0.2	1.2	1.2



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About the data

The vital rates shown in the table are based on data derived from birth and death registration systems, censuses, and sample surveys conducted by national statistical offices, United Nations agencies, and other organizations. The estimates for 1998 for many countries are based on extrapolations of levels and trends measured in earlier years.

Vital registers are the preferred source of these data, but in many developing countries systems for registering births and deaths do not exist or are incomplete because of deficiencies in geographic coverage or coverage of events. Many developing countries carry out specialized household surveys that estimate vital rates by asking respondents about births and deaths in the recent past. Estimates derived in this way are subject to sampling errors due to inaccurate recall by the respondents.

The United Nations Statistics Division monitors the completeness of vital registration systems. It compiles quarterly reports of the latest birth and death rates, as well as an indication of their completeness, in the *Population and Vital Statistics Report*. The share of countries with at least 90 percent complete vital registration increased from 45 percent in 1988 to 54 percent in 1999. Still, some of the most populous developing countries—China, India, Indonesia, Brazil, Pakistan, Nigeria, Bangladesh—do not have complete vital registration systems. Fewer than 25 percent of vital events worldwide are thought to be recorded.

International migration is the only other factor besides birth and death rates that directly determines a country's population growth. In the industrial world about 40 percent of annual population growth in 1990–95 was due to migration, while in the developing world migration reduced the population growth rate by about 3 percent. Estimating international migration is difficult. At any time many people are located outside their home country as tourists, workers, or refugees or for other reasons. Standards relating to the duration and purpose of international moves that qualify as migration vary, and accurate estimates require information on flows into and out of countries that is difficult to collect.

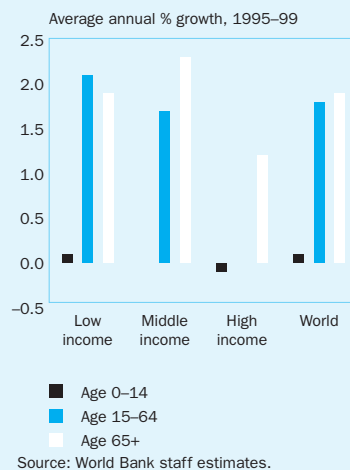
Over the next several decades the population of low- and middle-income countries will continue to grow. The rate of growth will decline, but the absolute increases will be large—and accompanied by substantial shifts in the age structure. Even when fertility reaches the replacement level of about two children per couple, the number of births will remain high—and population growth will not stop for several decades. This phenomenon, called population momentum, is a facet of

the youthful age structures typical of developing country populations. It occurs because large cohorts born in previous years move through the reproductive ages, generating more births than are offset by deaths in the smaller, older cohorts.

The growth rate of the total population (see table 2.1) conceals the fact that different age groups may grow at very different rates. In many developing countries the population under 15 was earlier growing rapidly, but is now starting to shrink. Previously high fertility rates and declining mortality are now reflected in rapid growth of the working-age population.

Figure 2.2

Growth in the working-age and elderly populations has accelerated in developing countries



Population dynamics are reflected in the growth rates of different age groups. Changes in the size of the youth population (age 0–14), once the driving force behind total population growth, are no longer an important factor. Lower birth rates combined with an increasing number of women of childbearing age indicate that the size of the youth population will remain almost constant in the near future. In contrast, the working-age (15–64) and elderly populations are both increasing rapidly in many low- and middle-income countries, while in high-income countries only the elderly population is growing.

Definitions

- **Crude death rate** and **crude birth rate** are the number of deaths and the number of live births occurring during the year, per 1,000 population estimated at midyear. Subtracting the crude death rate from the crude birth rate provides the rate of natural increase, which is equal to the population growth rate in the absence of net migration.
- **Projected population by 2030** is the total number of people expected to be alive in 2030, based on a cohort component projection in which assumed future patterns in fertility, mortality, and international migration are applied to the current age structure.
- **Population momentum** is the ratio of the population when zero growth has been achieved to the population in year t (in this case 2000), given the assumption that fertility remains at replacement level from year t onward.
- **Average annual population growth rates** are calculated using the exponential endpoint method (see *Statistical methods* for more information).

Data sources

The World Bank's population estimates are produced by its Human Development Network and Development Data Group in consultation with its operational staff and resident missions. Important inputs to the World Bank's demographic work come from many sources: census reports and other statistical publications from country statistical offices; demographic and health surveys conducted by national sources, Macro International, and the U.S. Centers for Disease Control and Prevention; United Nations Statistics Division, *Population and Vital Statistics Report* (quarterly); United Nations Population Division, *World Population Prospects: The 1998 Revision*; Eurostat, *Demographic Statistics* (various years); South Pacific Commission, *Pacific Island Populations Data Sheet 1999*; Centro Latinoamericano de Demografía, *Boletín Demográfico* (various years); and U.S. Bureau of the Census, International Database.