World Mortality Report 2013



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Department of Economic and Social Affairs Population Division

World Mortality Report 2013



United Nations New York, 2013

DESA

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PREFACE

The World Mortality Report 2013, prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, assesses changes in mortality risks at the global, regional and country levels, focusing in particular on the implementation period of the Programme of Action of the International Conference on Population and Development, from 1990-1995 to 2010-2015. The report reviews the survival targets outlined in the ICPD Programme of Action and discusses them in the context of other internationally agreed mortality reduction goals, including the Millennium Development Goals. It evaluates the progress of regions and countries with respect to life expectancy at birth, child mortality, mortality in the reproductive and working ages, and life expectancy at advanced ages and discusses the contributions of improvements in survival at different stages of life towards the achievement of the ICPD survival targets. Disparities in progress towards those targets are partially explained by examining differences between selected countries in the sex and age patterns of mortality reduction. Some priorities for future reductions in mortality risks are discussed.

The mortality estimates presented in this report are available in digital form. Interested users can request a CD-ROM¹ containing the corresponding data and interactive graphical analysis contained within the *World Mortality Report 2013*. A description of the data and tools provided on the CD-ROM and an order form can be found on page 84 of this publication. The electronic data files and interactive graphs associated with this report may also be accessed on the Population Division's website or by clicking on the links below the graphs in the electronic pdf version of this document. http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-

2013.shtml

The Population Division is grateful to the Statistics Division of the United Nations Department of Economic and Social Affairs for its continuing cooperation. The Population Division also acknowledges the assistance and cooperation of the World Health Organization, UNICEF, Measure DHS, the Human Mortality Database, the International Programs Center of the U.S. Census Bureau, and IPUMS-International as well as national statistical offices in providing some of the data that inform the estimates presented in this report.

For information about the *World Mortality Report 2013*, please contact the Director, Population Division, Department of Economic and Social Affairs, United Nations, New York, NY 10017, USA (email: population@un.org).

¹ United Nations, Department of Economic and Social Affairs, Population Division (2013). World Mortality Report 2013, CD-ROM Edition, Datasets in Excel format and interactive charts (POP/DB/MORT/2013).

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EXPLANATORY NOTES

The following symbols have been used in the tables throughout this report:

Two dots (..) indicate that data are not available or are not reported separately. A hyphen (-) indicates that the item is not applicable. A minus sign (-) before a figure indicates a decrease. A full stop (.) is used to indicate decimals. Years given refer to 1 July. Use of a hyphen (-) between years, for example, 1995-2000, signifies the full period involved, from 1 July of the first year to 1 July of the second year.

Numbers and percentages in tables do not necessarily add to totals because of rounding.

References to countries, territories and areas:

The designations employed and the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

The designation "more developed" and "less developed" regions are intended for statistical purposes and do not express a judgment about the stage reached by a particular country or area in the development process. The term "country" as used in this publication also refers, as appropriate, to territories or areas.

More developed regions comprise all regions of Europe plus Northern America, Australia/New Zealand and Japan. Less developed regions comprise all regions of Africa, Asia (excluding Japan), and Latin America and the Caribbean as well as Melanesia, Micronesia and Polynesia. Countries or areas in the more developed regions are designated as "developed countries". Countries or areas in the less developed regions are designated as "developing countries".

The least developed countries, as defined by the United Nations General Assembly in its resolutions (59/209, 59/210, 60/33, 62/97, 64/L.55, 67/L.43) included 49 countries in June 2013: 34 in Africa, 9 in Asia, 5 in Oceania and one in Latin America and the Caribbean. Those 49 countries are: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia. These countries are also included in the less developed regions.

The group denominated "other less developed countries" comprises all countries in the less developed regions minus the least developed countries.

The term "sub-Saharan Africa" is used to designate the countries in Africa that exclude those in Northern Africa.

Countries and areas are grouped geographically into six major areas designated as: Africa; Asia; Europe; Latin America and the Caribbean; Northern America, and Oceania. These major areas are further divided into 21 geographical regions.

The names and composition of geographical areas follow those presented in "Standard country or area codes for statistical use" (ST/ESA/STAT/SER.M/49/Rev.3), available at <u>http://unstats.un.org/unsd/methods/m49/m49.htm</u>.

The following abbreviations/acronyms have been used:

| AIDS | Acquired Immunodeficiency Syndrome |
|--------|--|
| ART | Antiretroviral Therapy |
| DESA | Department of Economic and Social Affairs |
| HIV | Human Immunodeficiency Virus |
| ICPD | International Conference on Population and Development |
| IMR | Infant Mortality Rate |
| MDG | Millennium Development Goals |
| MMR | Maternal Mortality Ratio |
| NCD | Non-Communicable Disease |
| NGO | Non-Governmental Organization |
| SAR | Special Administrative Region |
| U5MR | Under-five Mortality Rate |
| UNAIDS | Joint United Nations Programme on HIV/AIDS |
| UNFPA | United Nations Population Fund |
| UNICEF | United Nations Children's Fund |
| UNPD | United Nations Population Division |
| WHA | World Health Assembly |
| WHO | World Health Organization |
| | |

CLASSIFICATION OF COUNTRIES BY MAJOR AREA AND REGION OF THE WORLD

| Eastern Africa | Middle Africa | Northern Africa | Western Africa |
|--|----------------------------|------------------------|-----------------------------|
| Burundi | Angola | Algeria | Benin |
| Comoros | Cameroon | Egypt | Burkina Faso |
| Djibouti | Central African Republic | Libyan Arab Jamahiriya | Cabo Verde |
| Eritrea | Chad | Morocco | Côte d'Ivoire |
| Ethiopia | Congo | Sudan | Gambia |
| Kenya | Democratic Republic of the | Tunisia | Ghana |
| Madagascar | Congo | Western Sahara | Guinea |
| Malawi | Equatorial Guinea | | Guinea-Bissau |
| Mauritius ¹ | Gabon | Southern Africa | Liberia |
| Mayotte | São Tomé and Príncipe | | Mali |
| Mozambique | | Botswana | Mauritania |
| Réunion | | Lesotho | Niger |
| Rwanda | | Namibia | Nigeria |
| Seychelles | | South Africa | Saint Helena ² * |
| Somalia | | Swaziland | Senegal |
| South Sudan | | | Sierra Leone |
| Uganda | | | Togo |
| United Republic of Tanzania ³ | | | |
| Zambia | | | |
| Zimbabwe | | | |

Africa

 ¹ Including Agalega, Rodrigues, and Saint Brandon.
 ² Including Ascension, and Tristan da Cunha.
 ³ Including Zanzibar.

| Eastern Asia | South-Central Asia ⁴ | South-Eastern Asia | Western Asia |
|-----------------------------------|---------------------------------|-------------------------|----------------------------------|
| | Central Asia | | |
| China ⁵ | Kazakhstan | Brunei Darussalam | Armenia |
| China, Hong Kong SAR ⁶ | Kyrgyzstan | Cambodia | Azerbaijan ⁷ |
| China, Macao SAR ⁸ | Tajikistan | Indonesia | Bahrain |
| Democratic People's | Turkmenistan | Lao People's Democratic | Cyprus ⁹ |
| Republic of Korea | Uzbekistan | Republic | Georgia ¹⁰ |
| Japan | | Malaysia ¹¹ | Iraq |
| Mongolia | Southern Asia | Myanmar | Israel |
| Republic of Korea | | Philippines | Jordan |
| Other non-specified areas | Afghanistan | Singapore | Kuwait |
| | Bangladesh | Thailand | Lebanon |
| | Bhutan | Timor-Leste | Oman |
| | India | Viet Nam | Qatar |
| | Iran (Islamic Republic of) | | Saudi Arabia |
| | Maldives | | State of Palestine ¹² |
| | Nepal | | Syrian Arab Republic |
| | Pakistan | | Turkey |
| | Sri Lanka | | United Arab Emirates |
| | | | Yemen |

Asia

 ⁴ The regions Southern Asia and Central Asia are combined into South-Central Asia.
 ⁵ For statistical purposes, the data for China do not include Hong Kong and Macao, Special Administrative Regions (SAR) of China, and Taiwan Province of China.

 ⁶ As of 1 July 1997, Hong Kong became a Special Administrative Region (SAR) of China.
 ⁷ Including Nagorno-Karabakh.
 ⁸ As of 20 December 1999, Macao became a Special Administrative Region (SAR) of China.

 ⁹ Including Northern Cyprus.
 ¹⁰ Including Abkhazia and South Ossetia.
 ¹¹ Including Sabah and Sarawak.
 ¹² Including East Jerusalem.

Europe

| Eastern Europe | Northern Europe | Southern Europe | Western Europe |
|-----------------------------------|-------------------------------|-------------------------------------|----------------|
| Belarus | Channel Islands ¹³ | Albania | Austria |
| Bulgaria | Denmark | Andorra* | Belgium |
| Czech Republic | Estonia | Bosnia and Herzegovina | France |
| Hungary | Faeroe Islands* | Croatia | Germany |
| Poland | Finland ¹⁴ | Gibraltar* | Liechtenstein* |
| Republic of Moldova ¹⁵ | Iceland | Greece | Luxembourg |
| Romania | Ireland | Holy See ¹⁶ * | Monaco* |
| Russian Federation | Isle of Man* | Italy | Netherlands |
| Slovakia | Latvia | Malta | Switzerland |
| Ukraine | Lithuania | Montenegro | |
| | Norway ¹⁷ | Portugal | |
| | Sweden | San Marino* | |
| | United Kingdom of Great | Serbia ¹⁸ | |
| | Britain and Northern | Slovenia | |
| | Ireland ¹⁹ | Spain ²⁰ | |
| | | The former Yugoslav | |
| | | Republic of Macedonia ²¹ | |

¹³ Refers to Guernsey, and Jersey.
¹⁴ Including Åland Islands.
¹⁵ Including Transnistria.
¹⁶ Refers to the Vatican City State.
¹⁷ Including Svalbard and Jan Mayen Islands.
¹⁸ Including Kosovo.
¹⁹ Also referred to as United Kingdom.
²⁰ Including Canary Islands, Ceuta and Melilla.
²¹ Also referred to as TFYR Macedonia.

Latin America and the Caribbean

 ²² Refers to Bonaire, Saba and Sint Eustatius.
 ²³ Including Saint-Barthélemy and Saint-Martin (French part).

Northern America

Bermuda* Canada Greenland* Saint Pierre and Miquelon* United States of America

Oceania

| Australia/New Zealand | Melanesia | Micronesia | Polynesia ²⁴ |
|-------------------------|------------------|---------------------------|----------------------------|
| Australia ²⁵ | Fiji | Guam | American Samoa* |
| New Zealand | New Caledonia | Kiribati | Cook Islands* |
| | Papua New Guinea | Marshall Islands* | French Polynesia |
| | Solomon Islands | Micronesia | Niue* |
| | Vanuatu | (Federated States of) | Samoa |
| | | Nauru* | Tokelau* |
| | | Northern Mariana Islands* | Tonga |
| | | Palau* | Tuvalu* |
| | | | Wallis and Futuna Islands* |

Sub-Saharan Africa

| Angola | Côte d'Ivoire | Guinea-Bissau | Namibia | South Africa |
|--------------------------|---------------------|---------------|-----------------------|-----------------|
| Benin | Democratic Republic | Kenya | Niger | South Sudan |
| Botswana | of the Congo | Lesotho | Nigeria | Swaziland |
| Burkina Faso | Djibouti | Liberia | Réunion | Togo |
| Burundi | Equatorial Guinea | Madagascar | Rwanda | Uganda |
| Cameroon | Eritrea | Malawi | Saint Helena | United Republic |
| Cape Verde | Ethiopia | Mali | São Tomé and Príncipe | of Tanzania |
| Central African Republic | Gabon | Mauritania | Senegal | Zambia |
| Chad | Gambia | Mauritius | Seychelles | Zimbabwe |
| Comoros | Ghana | Mayotte | Sierra Leone | |
| Congo | Guinea | Mozambique | Somalia | |

NOTE: Countries with a population of less than 90,000 in 2013 are indicated by an asterisk (*).

 ²⁴ Including Pitcairn.
 ²⁵ Including Christmas Island, Cocos (Keeling) Islands, and Norfolk Island.

EXECUTIVE SUMMARY

In September 2014 United Nations Member States will mark the twentieth anniversary of the International Conference on Population and Development (ICPD), which was held in Cairo in 1994. The ICPD Programme of Action, which was adopted at the conference, is widely recognized as a ground-breaking agreement on population and development issues rooted in a human rights-based framework. Among the many goals agreed in the Programme of Action were targets for lengthening life expectancy at birth by 2015 to at least 75 years in most countries and to at least 70 years in countries with the highest mortality levels at the time of the ICPD.

The two decades since the ICPD have witnessed tremendous global progress in improving survival. Life expectancy at birth for the world as a whole increased from 65 years in 1990-1995 to 70 years in 2010-2015. Average survival improved in each of the development groups and major areas, although wide disparities persist such that the average length of life in Africa in 2010-2015, for example, is 12 years shorter than the global average and 21 years shorter than in Northern America (figure i).



Figure i. Life expectancy at birth by development group and major area, 1950-1955 to 2010-2015

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

Despite the average gains observed across development groups and major areas, the most recent United Nations country-level mortality projections for the period 2010-2015, from *World Population Prospects: The 2012 Revision*, indicate that progress in average survival has fallen far short of that to which ICPD delegates aspired twenty years ago. Only 76 out of 201 countries or areas have achieved life expectancy greater than 75 years in 2010-2015, and 33 of these are countries where average survival already exceeded 75 years in 1990-1995. Only 35 per cent of countries with life expectancy between 60 and 75 years at the time of the ICPD have surpassed 75 years in 2010-2015. Just one of the 53 countries with life expectancy less than 60 years at the time of the ICPD has since surpassed 70 years (figure ii).

Each of the major areas is represented among those countries having achieved the life expectancy targets, but Europe, Northern America and Latin America and the Caribbean saw a larger proportion of their constituent countries meeting the targets compared to Oceania, Asia and Africa. All of the countries that saw loss of life expectancy between 1990-1995 and 2010-2015 are located in Africa, while those countries or areas that saw little or no change in life expectancy over the twenty-year Programme of Action implementation period can be found in Africa and Asia, as well as in Europe.





Solid markers correspond to countries that have met or exceeded the life expectancy targets outlined in the ICPD Programme of Action, while unshaded markers correspond to countries or areas that are not projected to achieve the targets for the period 2010-2015.

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

This report analyses the progress and challenges to improving life expectancy at birth by: 1) reviewing the levels and trends in key mortality indicators across countries classified by development group and major geographical area; 2) examining the changes in survival prospects at various stages of the life course, including among children, among adults in the reproductive and working ages, and among older persons; and 3) decomposing changes that have occurred in levels of life expectancy at birth since the ICPD according to the contributions of changing mortality risks at various ages and by sex.

Key findings:

- a) Compared to the ICPD life expectancy targets, countries have been more successful in achieving progress towards ICPD targets for child mortality reduction.
 - 1. All 201 countries or areas for which indicators are available saw reductions in child mortality between 1990-1995 and 2010-2015. Close to 70 per cent have met the Programme of Action absolute target of 45 deaths per 1,000 live births by 2015, including 35 of the 96 countries with under-five mortality rates (U5MR) greater than 45 at the time of the ICPD.
 - 2. Around the time of the ICPD in 1990-1995, close to half of births worldwide took place in countries with under-five mortality rates greater than 100 deaths per 1,000 live births, but today less than 1 in 10 babies are born in such high mortality contexts and the majority of births take place in countries with under-five mortality rates below the ICPD target level of 45 deaths per 1,000 live births.
 - 3. Despite achievements in reducing both infant mortality and under-five mortality, the global averages for these indicators have not yet met the ICPD targets, held back in particular by high levels of infant and child mortality still prevailing in parts of Africa. In seven countries located in Middle and Western Africa, under-five mortality in 2010-2015 is estimated to be greater than 150 deaths per 1,000 live births, which is more than 50 times higher than in the world's populations with the lowest mortality levels and three times higher than the ICPD target.
 - 4. Success in reducing mortality among children has been instrumental to achieving progress towards the ICPD life expectancy targets, especially in high mortality countries where the median probability of survival to age five increased from 844 per 1,000 births in 1990-1995 to 908 per 1,000 births in 2010-2015. Among the 53 countries with life expectancy below 60 years in 1990-1995, 67 per cent of the total 6.8-year median improvement in the life expectancy at birth to 2010-2015 was attributable to reductions in child mortality, compared to 26 per cent due to improved survival at ages 15-60 and 7 per cent due to improve survival above age 60.
 - 5. Rapid reductions in infant and child mortality accounted for more than two-thirds of Bangladesh's 9-year gain in life expectancy at birth during the Programme of Action implementation period. Pakistan, however, which had a similar level of mortality to Bangladesh at the time of the ICPD, did not achieve similar success, adding just under 5 years of life expectancy over the past two decades. Persistently high infant mortality in Pakistan accounts for most of the differential success in advancing life expectancy in the two countries.
- b) Around the time of the ICPD, trends in mortality risks between ages 15 and 60 were relatively flat at the global level, but improvements in adult survival accelerated between 2000-2005 and 2010-2015 such that the global probability of dying in that age range declined by more than 20 per cent over the Programme of Action implementation period.
 - 1. The vast majority of countries or areas achieved advances in the probability of survival between ages 15 and 60 since the ICPD, but several countries saw no progress or even reversals of earlier progress. These tended to be former Soviet republics where economic transition has been accompanied by high rates of mortality from external causes and

premature death from non-communicable diseases, as well as countries highly affected by the HIV/AIDS epidemic.

- 2. The challenges to improvements in longevity facing some of the former Soviet states is evident in the case of Ukraine, which saw essentially no net change in the life expectancy at birth between 1990-1995 and 2010-2015. Increases in mortality risks among young and middle-aged adults were primarily responsible for the lack of progress: the age group 15 to 60 contributed a loss of life expectancy of close to one year, completely negating the achievements in child survival in the overall assessment of life expectancy at birth.
- 3. HIV/AIDS has impacted success towards the ICPD life expectancy targets in different ways across affected countries. For example, in Uganda where the epidemic was already well established at the time of the ICPD, reductions in AIDS-related and other mortality risks between ages 15 and 60 in recent years yielded a gain of 5.6 years of life expectancy, accounting for 45 per cent of the country's total 12.6-year gain in life expectancy at birth since 1990-1995. In contrast, the epidemic emerged later in South Africa, and while some benefits of prevention and treatment have begun to be realized, HIV prevalence has not yet declined in the country. As a result, South Africa lost more than 5 years of life expectancy since the ICPD, as gains in survival among children and at older ages were entirely negated by increases in mortality among reproductive and working aged adults.
- 4. Success in reducing mortality risks between ages 15 and 60 was highly predictive of progress achieved towards the ICPD life expectancy targets, particularly for countries with intermediate levels of mortality at the time of the ICPD. For example, the Republic of Korea added 3.3 years of life expectancy at birth due to mortality reductions between ages 15 and 60, more than double the number of years added in Malaysia due to mortality reductions in this age range (1.4 years). The Republic of Korea outpaced Malaysia in mortality reductions above age 60 as well. Both countries are on track to meet the ICPD target by 2015, but the Republic of Korea will have well surpassed it with a life expectancy of 81 years in 2010-2015, compared to 75 years in Malaysia.
- c) Since the ICPD, not only are more people surviving to age 60, they are living longer into old age as well. Worldwide, the life expectancy at age 60 increased from 18 years in 1990-1995 to 20 years in 2010-2015, but survival in old age has improved more quickly in the more developed regions than elsewhere, thereby widening the gap in life expectancy at age 60 between the more developed regions and the least developed countries from 4.5 years in 1990-1995 to 5.5 years in 2010-2015.
 - 1. In most low mortality countries, progress in longevity over the past 20 years has been almost wholly determined by success in reducing mortality at older ages. Among the 33 countries where life expectancy at birth already exceeded 75 years at the time of the ICPD, 62 per cent (2.6 years) of the total 4.2-year median gain in life expectancy over the 20 years since the ICPD was due to improvements in survival above age 60, compared to 28 per cent (1.2 years) attributable to improved survival between ages 15 and 60 and 10 per cent (0.4 years) due to improved survival among children.
 - 2. Understanding sex differences in mortality risks, particularly at older ages, is essential to interpreting the progress in life expectancy between countries. Estimates that are not disaggregated by sex indicate that Japan gained more years of life expectancy (4.1 years) since the ICPD than the Netherlands (3.7 years), but sex-disaggregated analyses reveal that while survival gains in Japan outpaced those in the Netherlands for females (4.4

years compared to 2.6 years), males in the Netherlands gained more years of life than males in Japan (4.7 years compared to 3.8 years).

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I. HEALTH AND SURVIVAL IN THE ICPD PROGRAMME OF ACTION

A. INTRODUCTION

In September 2014 United Nations Member States will mark the twentieth anniversary of the International Conference on Population and Development (ICPD), which was held in Cairo in 1994. The ICPD Programme of Action, which was adopted at the conference, is widely recognized as a ground-breaking agreement on population and development issues rooted in a human rights-based framework. Among the many goals agreed in the Programme of Action were targets for lengthening life expectancy and improving the health of populations, including by reducing disparities between and within countries and regions. The *World Mortality Report 2013* assesses the extent of improvements in survival over the 20 years that have passed since the ICPD.

B. THE ICPD PROGRAMME OF ACTION: BACKGROUND

In September 1994 thousands of delegates representing Governments, non-governmental organizations (NGOs), United Nations agencies, and various other entities gathered in Cairo, Egypt for the International Conference on Population and Development. There, they discussed the development linkages of myriad population issues such as population growth rates, infant and child mortality, fertility and family planning, maternal and reproductive health, access to education, population ageing, immigration and urbanization, among others. At the closing of the conference the outcome of the discussions, the ICPD Programme of Action, was adopted by 179 countries (United Nations, 1994). It continues to be heralded widely as a critical milestone in the history of population and development, as well as in the history of women's rights. The Programme of Action represented a new global consensus that placed human rights – including reproductive rights – at the centre of the discussion of the linkages between population growth and poverty eradication. It highlighted a woman's ability to access reproductive health and rights as both a cornerstone of her empowerment and a key element in each country's path towards sustainable development.

Although the Programme of Action is best known for its ideals related to reproductive health and rights and the empowerment of women, many other population and development concerns were advanced in the document as well, including several related to health and mortality. The ICPD Programme of Action today remains an important document within the larger history of global priority setting on health and mortality. It built upon the ideals for improved health at all ages and universal access to primary health care articulated in the Declaration of Alma Ata, adopted by the International Conference on Primary Health Care in 1978, and it provided a solid foundation on which a global consensus around the health-related Millennium Development Goals (MDGs) would coalesce just six years later in 2000.

C. CHAPTER VIII OF THE PROGRAMME OF ACTION: OBJECTIVES AND ACTIONS ON HEALTH, MORBIDITY AND MORTALITY

Chapter VIII of the ICPD Programme of Action was devoted to health, morbidity and mortality in the context of population and development. The chapter began by acknowledging that increased longevity was one of the major achievements of the twentieth century. Life expectancy at birth had increased by nearly 20 years since the 1950s. At the same time, the Programme of Action warned that there were entire national populations, as well as some population groups within many countries, that had not shared in the

global improvements in survival. In 1994 preventable or treatable illnesses were still the leading killers of young children globally. Effective, low-cost interventions such as oral rehydration therapy and childhood vaccinations were still not reaching all in need. Billions of people lacked access to clean water and sanitation, and to adequate nutrition. Infectious, parasitic and water-borne illnesses remained a major threat. In addition, the Programme of Action recognized emerging health threats caused by environmental degradation or increasing exposure to tobacco, alcohol and drugs, as well as the reversals of previous survival gains that were underway in many countries with economies in transition.

Each of the thirteen substantive chapters of the ICPD Programme of Action identifies various objectives that the delegates in Cairo agreed that the international community should aspire to achieve, as well as the specific actions to be undertaken in pursuit of those goals. Chapter VIII contains four sections: A) Primary health care and the health-care sector; B) Child survival and health; C) Women's health and safe motherhood; and D) HIV and AIDS. Under primary health care and the health care sector, the objectives were to increase access to and use of health-care services for all people and to improve healthy life-span and quality of life, including by reducing disparities in life expectancy between males and females and among geographical regions, social classes and indigenous and ethnic groups. Recommended actions highlighted the centrality of basic primary health care and health workers, technology sharing, ensuring financial sustainability and maximizing cost-effectiveness. The Programme of Action recognized the important association between environmental conditions and health risks, and called upon Governments to monitor the impacts of factors such as crowded housing conditions, air pollution, unimproved water and sanitation, and workplace hazards on the health of their people.

The objectives with respect to child survival and health were to reduce disparities between and within developed and developing countries, paying particular attention to eliminating excess and preventable mortality among girls and ways to improve the health and nutritional status of infants, including by promoting breast-feeding as a child-survival strategy. Recommended actions to improve child survival and health included promoting reproductive health care and health services, such as family planning, prenatal care, maternal nutrition, skilled delivery assistance and neonatal care. Poverty eradication and ensuring sanitary environments and adequate nutrition to reduce the major childhood diseases, especially infectious and parasitic diseases, were also emphasized.

Objectives within the women's health and safe motherhood section of chapter VIII included a rapid and substantial reduction in maternal mortality and morbidity, including a reduction of disparities in mortality risks between and within developed and developing countries. Other objectives aimed to reduce the number of deaths and morbidity from unsafe abortion and to improve the health and nutritional status of women, especially those who were pregnant or nursing. Actions emphasized the importance of expanding the provision of maternal health services within the context of primary health care. They identified high-risk pregnancies, particularly those to adolescents and late-parity women, as in need of special attention. The benefits of encouraging men to share in the responsibility for sexual and reproductive health, including for family planning and the prevention and control of sexually transmitted diseases, were acknowledged as well.

HIV/AIDS was still a relatively new global health threat at the time of the 1994 ICPD. The international community was only beginning to understand the magnitude of the epidemic and the potential for the virus to spread rapidly. Drugs to prevent mother-to-child transmission were still in development and highly-active antiretroviral treatment (ART) had not yet moved beyond research laboratories to become the standard for HIV patient care that it is today (Palmisano and Vella, 2011). The objectives under this section of the Programme of Action therefore focused on minimizing the future spread and impact of HIV, eliminating discrimination and ensuring access to high-quality medical care. The section also included a strong call to intensify research aimed at controlling the epidemic and identifying an effective treatment for the disease.

D. SURVIVAL TARGETS IN THE PROGRAMME OF ACTION

Several of the Programme of Action's health, morbidity and mortality objectives outlined specific numerical targets for improving survival. Some of those targets reiterated or extended those that had been put forth in a 1977 resolution of the World Health Assembly (WHA). Others were later incorporated into the Millennium Development Goals framework. A summary of the mortality reduction targets associated with the WHA resolution "Health for All by 2000" of 1977, the ICPD Programme of Action of 1994, and the Millennium Declaration of 2000 is shown in box 1.

1. Life expectancy

Chapter VIII of the ICPD Programme of Action called upon countries to set targets for improved survival across the lifespan, aiming to achieve a life expectancy at birth greater than 70 years by 2005 and greater than 75 years by 2015. Recognizing that the targets might prove daunting for countries with the highest levels of mortality in 1994, the Programme of Action suggested that countries with the highest levels of mortality aim to increase their life expectancy to greater than 65 years by 2005 and greater than 70 years by 2015. These survival goals were more ambitious than those advanced 17 years earlier in the WHA resolution, which had aimed for all countries to achieve life expectancy at birth of at least 60 years in 2000. The MDGs later omitted a life expectancy target in favour of setting targets based on reducing child mortality and mortality due to specific causes, such as maternal causes and HIV/AIDS.²⁶

2. Infant and child mortality

With respect to infant and child mortality, the ICPD Programme of Action embraced the absolute targets of the WHA Health for All by 2000 resolution, aiming for all countries to achieve an infant mortality rate less than 50 deaths per 1,000 live births and an under-five mortality rate less than 70 deaths per 1,000 live births by 2000. For countries that already had comparatively low levels of infant and child mortality in 1994, the Programme of Action offered relative targets: one-third reductions in infant and child mortality rates by 2000. For horizons beyond 2000, the Programme of Action again identified absolute targets, urging countries to achieve an infant mortality rate below 35 deaths per 1,000 live births and an underfive mortality rate below 45 deaths per 1,000 live births by 2015. A two-thirds reduction in the 1990 under-five mortality rate by 2015 was later adopted as a target under MDG 4.

3. Maternal mortality

On maternal mortality, the Programme of Action called for a reduction by one-half of the 1990 levels by the year 2000 and a further one-half by 2015. Countries with intermediate levels of mortality were to aim to achieve by the year 2005 a maternal mortality ratio below 100 per 100,000 live births and by 2015 a ratio below 60 per 100,000, while countries with the highest levels of mortality were urged to achieve by 2005 a maternal mortality ratio below 125 per 100,000 live births and by 2015 a ratio of below 75 per 100,000. The maternal mortality target set out following the Millennium Declaration abandoned the absolute targets specified in the Programme of Action, but appropriated the relative target, urging a three-quarters reduction in the maternal mortality ratio between 1990 and 2015.

²⁶ The life expectancy measure has recently received renewed attention as a potential target within the post-2015 development agenda currently under discussion by the United Nations system and the broader international community (e.g., Task Team for the Global Thematic Consultation on Health, 2013).

| Mortality indicator | WHA resolution "Health for All by 2000" (1977) | ICPD Programme of Action (1994) | Millennium Development Goals (2000) |
|--------------------------------|---|---|---|
| Life expectancy at birth | Achieve life expectancy at birth greater than 60 years by 2000. | Achieve life expectancy greater than 70 years by 2005 and greater than 57 years by 2015. For high mortality countries, achieve life expectancy at birth greater than 65 years by 2005 and greater than 70 years by 2000. | None |
| Infant mortality | Achieve IMR less than 50 per 1,000 live births by 2000. | Reduce IMR by one-third or to 50 per 1,000 live births, whichever is lower, by 2000. Achieve IMR less than 35 per 1,000 live births by 2015. | None |
| Under-five mortality | Achieve U5MRReduce U5MR by one-third or to 70 per 1,000 live births, whichever is lower, by 2000.veless than 70 per 1,000 live births by 2000.Achieve U5MR less than 45 per 1,000 live births by 2015. | | Reduce the 1990 U5MR by two- thirds by 2015. (MDG target 4a) |
| Maternal mortality | Reduce the 1978 maternal mortality ratio by one-half by 2000. | Reduce the 1990 maternal mortality ratio by one-half by 200 and a further one-half by 2015. For countries with intermediate levels of mortality, achieve an MMR less than 100 per 100,000 live births by 2005 and less than 60 per 100,000 live births by 2015 For countries with high levels of mortality, achieve an MMR less than 125 per 100,000 live births b 2005 and less than 75 per 100,000 live births by 2015. | 0 Reduce the 1990 MMR by three- quarters by 2015. 5. (MDG target 5a) |
| HIV/AIDS | None | None* | Have halted and reversed the spread of HIV/AIDS by 2015. (MDG targe 6a) Achieve universal access to treatmen for all who need it by 2010 (MDG |

Box 1: Targets for improved survival contained in selected international agreements

4. HIV/AIDS

The WHA Health for All resolution and the Declaration of Alma-Ata that followed preceded the advent of the global HIV/AIDS epidemic, and while extensive research into the origins, prevention and treatment of HIV was underway at the time of the ICPD, no effective vaccines or treatments had yet been identified. As a result, the ICPD Programme of Action contained no survival targets specifically aimed towards a reduction of AIDS-related mortality. Instead, the objectives and actions focused on preventing future incidence of the disease. Similarly, the 2000 Millennium Declaration pinpointed the reduction of HIV incidence as its priority, rather than the explicit reduction of AIDS-related mortality. It set a goal of having halted and begun to reverse the spread of HIV/AIDS by 2015. An additional target aimed to achieve universal access to treatment for all those who need it by 2010. ART both prolongs the lives of people living with HIV and reduces the probability of HIV transmission on contact.

E. PROGRESS TOWARDS THE ICPD SURVIVAL TARGETS

Nearly two decades have passed since the ICPD Programme of Action was adopted in Cairo and while great progress has been achieved on many fronts, the latest evidence indicates that most countries will fall short of achieving the survival goals set out in the Programme of Action by the 2015 target date. New estimates of life expectancy at birth and child mortality rates from *World Population Prospects: The 2012 Revision* permit assessment of the progress made thus far around the world along these two dimensions of survival. Other data sources can be used to evaluate progress on reducing maternal mortality and combating HIV/AIDS.

1. Life expectancy

Each of the dots shown in figure 1 represents one of the 201 countries or areas for which life expectancy at birth was estimated in the 2012 Revision. The horizontal axis reflects the estimate of the life expectancy at birth around the time of the ICPD (1990-1995), while the vertical axis indicates the estimate of life expectancy at birth for the current period (2010-2015). Countries that fall above the solid 45-degree line have increased their life expectancy at birth between 1990-1995 and 2010-2015, while those that fall on the line have seen no change in average survival, and countries that fall below the line have experienced declines in life expectancy at birth in the two decades since the ICPD. Solid dots indicate countries that will have met the ICPD life expectancy target according to the 2010-2015 estimate, while the unshaded dots indicate countries that have fallen short of the goal.

Despite the fact that the vast majority of countries added years of life expectancy over the past 20 years, just 77 of the 201 countries or areas have achieved sufficient progress so far to meet their ICPD life expectancy targets. Among those countries with the highest mortality levels in 1990-1995, which are defined for convenience here as those with life expectancy below 60 years during that period, just one country (Cambodia) is expected to achieve life expectancy greater than 70 years in 2010-2015. 76 of the 148 countries or areas (51 per cent) with low and intermediate levels of mortality at the time of the ICPD are expected to achieve the target of 75 years by 2010-2015, although this count includes 33 countries where life expectancy already exceeded 75 years in 1990-1995. The rate of success in meeting the target among the 115 countries with life expectancy between 60 and 75 years in 1990-1995 was only 37 per cent.

2. Child mortality

Compared to life expectancy at birth, more countries are on track to achieve the ICPD goals on child mortality. Figure 2 plots the under-five mortality rate (U5MR) in 1990-1995 against the rate in 2010-2015



for each of the 201 countries or areas. In this illustration, progress is indicated by placement below the 45 degree line. All 201 countries or areas fall below that line due to reductions in their under-five mortality rates since the ICPD. Close to 70 per cent of the 201 countries or areas have met the Programme of Action absolute target of 45 deaths per 1,000 live births for the period 2010-2015, including 35 of the 96 countries with U5MR greater than 45 in 1990-1995. Because the MDG for child mortality reduction has become very familiar to the world audience, figure 2 also indicates progress toward the MDG 4 target, which was defined in relative rather than absolute terms. UNICEF has identified countries as "on track" to achieve the MDG 4 target of a two-thirds reduction in the under-five mortality rate if the U5MR was less than 40 in 2011 or if the annual rate of reduction in U5MR between 1990 and 2011 was at least 4 per cent (UNICEF, 2012). These "on track" countries are indicated by the solid markers in figure 2 and account for 151 of the 201 countries or areas.

3. Maternal mortality

The estimates of the maternal mortality ratio (MMR) used for tracking progress on MDG 5 come from the Maternal Mortality Estimation Inter-agency Group, composed of the World Health Organization, UNICEF, UNFPA and the World Bank and with inputs from UN-DESA Population Division. The most recent revision, completed in 2012, yielded estimates of the maternal mortality ratio for 181 countries from 1985 to 2010, with projections to 2015. Figure 3 plots the 1990 MMR estimates against the 2015 MMR projections for each country. As with the child mortality figure, placement below the 45-degree line indicates progress towards reducing the MMR and solid markers indicate countries that are "on track" to achieve the MDG 5 target, with a projected MMR less than 60 deaths per 100,000 live births by 2015 or with an annual average reduction in the MMR of at least 5.5 per cent between 1990 and 2010. By these criteria, more than half of the 181 countries are "on track", although that includes only 37 of the 116



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml



Figure 3: Maternal mortality ratio in 1990 and 2015 for 181 countries or areas

Source: WHO, UNICEF, UNFPA and The World Bank. 2012. Trends in Maternal Mortality: 1990 to 2010. Data online at http://gamapserver.who.int/gho/MMR_data_1990_2010.zip. Accessed 9 October 2013.

countries that had MMR greater than 60 deaths per 100,000 live births in 1990. Of the 16 countries with MMR greater than 1,000 maternal deaths per 100,000 live births in 1990, just four (Bhutan, Equatorial Guinea, Lao People's Dem. Republic and Timor-Leste) had achieved a pace of progress sufficient to be on track towards a three-quarters reduction in the maternal mortality ratio by 2015.

4. HIV/AIDS

UNAIDS updates its estimates of levels and trends in HIV/AIDS annually for countries affected by the epidemic. In its 2013 revision, point estimates of the annual HIV incidence rate (the number of new HIV infections per 1,000 persons aged 15 to 49 years) over the period 1990 to 2012 were estimated for the 64 countries for which sufficient data were available. Figure 4 plots the HIV incidence rate at the time of the ICPD in 1994 against the rate in 2012 for those 64 countries. Those countries that fall below the 45-degree line have achieved reductions in HIV incidence since the ICPD. The four countries with the highest HIV incidence rates in 1994 – Lesotho, Botswana, Swaziland and Zimbabwe – each achieved substantial reductions in incidence, ranging from 37 per cent to 83 per cent, indicating a reversal in the spread of HIV in their populations. Some countries, however, have not yet halted the spread of HIV, indicated by higher HIV incidence rates in 2012 compared to 1994. Most of these countries are located in parts of Asia or Eastern Europe where incidence was low and epidemics nascent in 1994. However, a couple of countries that already had substantial HIV epidemics in 1994 have experienced increases in incidence as well–namely, Uganda, where HIV incidence in 2012 was 6 per cent higher than in 1994, and Mozambique where HIV incidence in 2012 was 39 per cent higher than in 1994.



Source: UNAIDS. AIDSInfo Online Database. http://www.aidsinfoonline.org. Accessed 9 October 2013.

Globally, there was a one third reduction in the HIV incidence rate since the ICPD, but the number of AIDS-related deaths in 2012 was nearly double that in 1994: 1.6 million compared to about 810,000. The higher number of AIDS deaths is due both to the maturity of the epidemic – nearly a decade passes, on average, between the initial HIV infection and death in the absence of treatment, thus an increase in death rates lags well behind an increase in incidence – and to delays in delivering ART to those in need.

Despite the MDG 6b target of universal access to treatment by 2010, in 2012 only 9.7 million people were receiving treatment out of the estimated 28.3 million people in need in low- and middle-income countries, for a coverage rate of 34 per cent (UNAIDS, 2013). Progress towards universal coverage has been complicated, in part, because it has been a moving target. As new research findings have revealed more about the benefits of early treatment with ART, the WHO has revised its guidelines to recommend that more people receive ART much earlier in the natural history of their HIV infections. The most recent revision to the WHO guidelines in 2013 expanded the number of people estimated to be in need of ART globally by more than 10 million. Rapid scale up in the delivery of ART to eligible HIV patients is needed to realize the potential health and survival benefits worldwide.

F. OVERVIEW OF THE WORLD MORTALITY REPORT 2013

Why have so few countries achieved the life expectancy goals outlined in the 1994 ICPD Programme of Action? Inadequate progress on reducing child mortality surely explains some of the shortfall in overall survival, but the success rate in meeting targets for under-five mortality reduction far outpaces those for life expectancy at birth, suggesting that insufficient improvement in survival at other ages is to blame as well. Persistently high mortality related to maternal causes or HIV/AIDS likely explains a portion of the lack of progress in survival among adults, although because the impact of these causes is increasingly concentrated in a relatively small number of highly-affected countries, these cannot explain the widespread failure of countries around the globe to meet the ICPD targets for life expectancy.

This report aims to explain the variable pace of progress in survival since the ICPD across countries and regions through analysis of new estimates of mortality rates by age and sex from *World Population Prospects: The 2012 Revision* (United Nations, 2013a). The focus on the life expectancy at birth metric, rather than alternative measures of survival, is motivated by a few factors. First, a measure of life expectancy at birth summarizes the mortality experience across the whole population. Mortality risks across all stages of life are represented in a way that is not sensitive to the age structure of the population, thus facilitating useful comparisons of survival prospects across countries and regions with heterogeneous demographic profiles. Second, the life expectancy targets were central to the goals laid out in the 1994 Programme of Action of the ICPD, reflecting the delegates' priorities at that time. An assessment of changes in this indicator and its components over the course of the Programme of Action implementation period can shed light on the successes and challenges of the ICPD. Third, recognizing that the potential value of the life expectancy at birth as a target indicator has been revived in considerations of the post-2015 development agenda, this report aims to contribute to that discussion by describing and analysing the levels, trends, patterns, and drivers of change in the life expectancy at birth over the past two decades.

The remainder of the report is organized as follows. Chapter II begins with a global summary of past and present mortality levels and trends reflected in the new estimates. Chapter III then describes countries' progress towards the ICPD goals on life expectancy and relates it to progress in survival at three stages of life: from birth to age 5; between ages 15 and 60; and after age 60. Chapter IV identifies the different pathways countries have taken towards increased longevity since the ICPD by decomposing the change in life expectancy in each country according to the contributions of mortality changes by age and sex. In addition, chapter IV offers a discussion of some of the political, economic, social and epidemiologic factors that have shaped some of the changes in survival observed in countries and regions over the last two decades, drawing on empirical literature in order to explain selected mortality patterns.

The mortality levels and trends estimates throughout the remainder of the report are from *World Population Prospects: The 2012 Revision* and are derived based on empirical data from a number of sources, such as vital registration systems, sample registration systems, censuses and nationally representative household surveys. The most recent sources of data included for each country or area may be found at http://esa.un.org/unpd/wpp/Excel-Data/data-sources.htm.

Variable degrees of uncertainty are associated with mortality estimates obtained from each of the types of empirical sources. Death registration, for example, varies in quality and completeness across countries and over time. Household surveys also vary in quality and coverage and tend to be much better at producing valid estimates of under-five mortality than of mortality risks at other ages. As a result, information from such surveys often must be supplemented with model age patterns of mortality to generate estimates of mortality risks across the full range of ages.

In order to produce a time series of mortality estimates by age and sex for each country or area, the Population Division uses a variety of techniques to evaluate the data quality and make adjustments where necessary, and to ensure that the estimates are consistent with information on fertility and migration trends, which together shape the size and age structure of a population at any given point in time. The specific methodologies employed, including those used to incorporate information on the mortality impact of the HIV/AIDS epidemic, are described in the report of the *Methodology of the United Nations Population Estimates and Projections* (United Nations, 2013b). Other approaches to reconcile discrepant information on mortality risks from various data sources to produce consistent time series of mortality estimates across countries and over time have been proposed (e.g., Wang et al., 2012). All approaches highlight the wide range of uncertainty that must be understood to accompany the mortality estimates for many countries, particularly those for which empirical data are sparse or widely discrepant. More and higher quality mortality surveys could help to reduce that uncertainty in the future, but ultimately systems of civil registration and vital statistics must be improved to provide each country with valid measurements of the age- and sex-specific mortality risks in their populations (iERG, 2012).

A note on data and charts: several of the charts presented in this report are accessible as interactive online tools. Readers may copy and paste or click on embedded hyperlinks below each chart (requires internet connectivity) to further explore the data on the website of the Population Division. Alternatively, readers may visit <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u> in order to access a menu of interactive charts and data files that accompany this report or readers may request a CD-ROM containing the data described in this report as well as the interactive charts by completing and returning the form on page 84 of this document.

II. GLOBAL LEVELS AND TRENDS IN MORTALITY

A. INTRODUCTION

To set the stage for more detailed discussions of countries' progress in survival since the ICPD, this chapter presents a summary of global trends in mortality. Trends in a variety of mortality indicators are discussed, including the life expectancy at birth, infant and under-five mortality rates, probabilities of dying between ages 15 and 60, and the life expectancy at age 60. Mortality trends dating back to 1950 are shown in order to situate recent trends within the larger historical context of the mortality transition, but the discussion emphasizes the last two decades that cover the Programme of Action implementation period.

To illustrate the extent of disparities in survival between countries as well as similarities and differences in their trends, mortality estimates are shown for two groupings of countries: 1) countries classified by the level of economic development; and 2) countries classified by geographical region. A comparison of mortality levels and trends across countries grouped by level of development – more developed regions, least developed countries, and other less developed countries – is instructive because progress through the mortality transition tends to be correlated with economic development. A similar comparison across countries grouped by geographical region – Africa, Asia, Europe, Latin America and the Caribbean, Northern America and Oceania – is complementary, since countries located in close proximity to one another often share similar health and mortality risks. The composition of each of the development and regional groupings can be found in the front matter of this report.

All of the estimates presented in this chapter are from *World Population Prospects: The 2012 Revision*. Mortality estimates are presented for five-year periods starting from 1950-1955 and through 2010-2015. Estimates for the 1990-1995 period reflect the mortality situation around the time of the 1994 ICPD. Estimates for the 2010-2015 period portray the current mortality situation and are used to assess countries' progress towards the ICPD survival targets. It should be noted, however, that estimates referring to 2010-2015 are in fact projections. Even in countries with up to date statistics from death registration, the most recent data that were available for the *2012 Revision* typically referred to the year 2010 or earlier. Thus recent trends in mortality estimates have to be derived from alternative data sources such as demographic surveys, the latest reference period available may be several years into the past, thus the estimates for the current period also reflect extrapolations based on past trends, as well as mortality models.

B. LIFE EXPECTANCY AT BIRTH

Life expectancy at birth summarizes mortality rates in a population across all ages for a given time period. It expresses the average number of years a person would live if he or she were exposed throughout his or her lifetime to the age-specific mortality risks of that period. In the early 1950s, global life expectancy stood at 46.9 years. At the time of the 1994 ICPD, major progress in survival had already been achieved, reflected in the global life expectancy at birth of 64.8 years in 1990-1995, a full 18 years longer than four decades earlier. Since then, another 5.2 years of life expectancy have been attained, and global life expectancy is estimated to have reached 70 years in 2010-2015.

1. Distribution of world population by life expectancy at birth

Figure 5 shows the changing proportions of world population according to the level of life expectancy since 1950. In 1950-1955, 27 per cent of the world population lived in countries that had extremely low

life expectancy, below 40 years. Another 45 per cent lived in countries that had life expectancy between 40 and 60 years. Just 28 per cent of the world's population lived in countries with life expectancy of 60 or higher, and less than 1 per cent in countries at 70 years or higher. By the time of the 1994 ICPD, substantial progress had been achieved. In 1990-1995, life expectancy levels below 40 were barely seen, and only 28 per cent of the global population lived in countries with life expectancy below 60. No country had yet achieved life expectancy of 80, but countries that had achieved 70 years or more held 26 per cent of the world population at that time.





Period

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

In the years since the ICPD, further progress has continued for a large proportion of the global population. In 2010-2015, 57 per cent of the world population lives in countries with life expectancy above 70 years, while for 9 per cent of the global population life expectancy has reached 80 or higher. Far fewer countries remain at life expectancy levels below 60, with only 9 per cent of world population living in these countries.

2. Trends in life expectancy for development groups and major areas

On average, life expectancy is highest in the richest countries, but the fastest gains in life expectancy since 1990-1995 have occurred in the poorest countries (table 1; figure 6). In the more developed regions, life expectancy rose 3 years from 74.1 years in 1990-1995 to 77.7 years in 2010-2015, while the least developed countries saw a 9 year gain in life expectancy over that period, from 51.7 years to 60.6 years. The gap between the least developed countries and the more developed regions narrowed from 22 years at the time of ICPD to 17 years in 2010-2015. The other less developed countries closely tracked the global average in life expectancy trends with a gain of 5.2 years, from 64.8 to 70 years.

| | Life expectancy at birth (years) - Both sexes combined - | | | Total gain in life expectancy (years) | | Average gain in life expectancy per decade (years) | |
|------------------------------------|---|---------------|---------------|--|-----------------------------------|--|-----------------------------------|
| Development group or major area | 1950- 1955 | 1990- 1995 | 2010- 2015 | 1950- 1955 to 1990- 1995 | 1990- 1995 to 2010- 2015 | 1950-1955 to 1990-1995 | 1990- 1995 to 2010- 2015 |
| World | 46.9 | 64.8 | 70.0 | 17.8 | 5.2 | 4.5 | 2.6 |
| More developed regions | 64.7 | 74.1 | 77.7 | 9.4 | 3.6 | 2.4 | 1.8 |
| Less developed regions | 41.6 | 62.7 | 68.3 | 21.1 | 5.6 | 5.3 | 2.8 |
| Least developed countries | 36.4 | 51.7 | 60.6 | 15.3 | 9.0 | 3.8 | 4.5 |
| Other less developed countries | 42.4 | 64.8 | 70.0 | 22.4 | 5.2 | 5.6 | 2.6 |
| Africa | 37.4 | 51.7 | 58.2 | 14.4 | 6.5 | 3.6 | 3.2 |
| Asia | 42.2 | 65.4 | 71.4 | 23.2 | 6.0 | 5.8 | 3.0 |
| Europe | 63.6 | 72.6 | 76.1 | 9.0 | 3.5 | 2.2 | 1.8 |
| Latin America and the Caribbean | 51.4 | 68.9 | 74 7 | 17.6 | 5.8 | 4.4 | 2.9 |
| Northern America | 68.6 | 75.8 | 79.1 | 7.3 | 3.3 | 1.8 | 1.6 |
| Oceania | 60.4 | 72.5 | 77.6 | 12.1 | 5.1 | 3.0 | 2.5 |

TABLE 1. LIFE EXPECTANCY AT BIRTH BY DEVELOPMENT GROUP AND MAJOR AREA, 1950-1955, 1990-1995 AND 2010-2015

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.



Figure 6. Life expectancy at birth by development group and major area, 1950-1955 to 2010-2015

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World

The ICPD took place during a period of slowdowns in survival gains that had occurred in several regions in the late 1980s and early 1990s, most notably in Africa and Europe. Trends in life expectancy for the world's major areas are shown in panel B of figure 6. In Africa, the average life expectancy stayed relatively constant from 1985-1990 to 1990-1995, and rose only slowly in the latter half of the 1990s. However, rapid improvements in the 2000s meant that Africa experienced the largest absolute gain in life expectancy during the ICPD Programme of Action implementation period, from 51.7 years in 1990-1995 to 58.2 years in 2010-2015. The European region also exhibited a relatively slow average pace of life expectancy increase in the 1990s, with a number of Eastern European countries having experienced rising mortality after the breakup of the USSR. Life expectancy gains in Europe have accelerated in the 2000s.

Gaps in life expectancy between the world's major areas persist, but have become smaller since the ICPD. In 2010-2015, life expectancy in the world's major areas ranged from 58.2 in Africa to 79.1 in Northern America. The gap between these two regions shrank to 20.9 years in 2010-2015 from 24.1 years in 1990-1995 thanks to the accelerated gains in survival in Africa since 2000. The gap between Africa and Asia, the region with the next lowest life expectancy, shrank less, from 13.7 to 13.2 years, because Asia's larger gains during the 1990s matched Africa's gains during the 2000s. Latin America and the Caribbean had the highest life expectancy among the developing regions throughout the period examined.

Where do the world's major areas stand with respect to the life expectancy targets set out in the ICPD Programme of Action? As of 2010-2015, none of the developing regions had met the target of 75 years, although the Latin American and Caribbean region was quite close at 74.7 years and was projected to surpass 75 years shortly after 2015. According to current projections (data not shown), Asia as a whole would reach the 75 year target after 2035. For countries with the highest levels of mortality in 1994, many of which are in Africa, the ICPD Programme of Action identified a somewhat less ambitious life expectancy target of 70 years by 2015. By 2010-2015, however, Africa is still nearly 12 years short of that target and progressing slowly. Projections indicate that Africa would reach the life expectancy target of 70 years only in 2050.

3. Sex differences in life expectancy

In all development groups and major areas, women have higher life expectancy than men (table 2). Worldwide, women's life expectancy advantage is 4.5 years in 2010-2015. In the more developed regions, life expectancy is 6.8 years higher for women than for men, while in the less developed regions women's life expectancy is 3.7 years higher. The difference by sex is smaller in the least developed countries, at 2.6 years. In all development groups, the sex gap in life expectancy has grown since 1950-1955. This change has been larger in the less developed regions, where the sex difference in life expectancy was quite small in 1950-1955, with less than one year of difference in life expectancy between women and men at that time. In the more developed regions, the sex difference reached a peak in the early 1990s and has declined since then in part because of increasing mortality attributable to smoking among women (Preston, Glei and Wilmoth, 2010), while in the less developed regions the female advantage in life expectancy has continued to grow.

Among the world's major areas, women's advantage in life expectancy in 2010-2015 ranges from 2.7 years in Africa to 7.8 years in Europe. In the more developed regions, the sex difference is wider in Europe (7.8 years) than in Northern America (4.8 years), stemming from much larger than average sex differences in mortality in the Eastern European region; the sex difference in other European regions²⁷ is

²⁷ Estimates for European sub-regions, as well as other regions and countries can be downloaded in Excel files from http://esa.un.org/unpd/wpp/Excel-Data/mortality.htm
| | Life expectancy at birth (years) - Both sexes combined - | | | | | | Difference (years, female - male) | | |
|-----------------------------------|---|-----------|------|--------|-----------|--------|--------------------------------------|---------------|---------------|
| – Development group or major area | | 1950-1955 | | 0-1995 | 2010-2015 | | 1950- 1955 | 1990- 1995 | 2010- 2015 |
| | Male | Female | Male | Female | Male | Female | | | |
| World | 45.9 | 47.9 | 62.5 | 67.1 | 67.8 | 72.3 | 2.0 | 4.6 | 4.5 |
| More developed regions | 62.1 | 67.2 | 70.2 | 78.0 | 74.3 | 81.1 | 5.1 | 7.8 | 6.8 |
| Less developed regions | 41.3 | 42.0 | 61.1 | 64.5 | 66.5 | 70.2 | 0.8 | 3.4 | 3.7 |
| Least developed countries | 35.5 | 37.4 | 50.6 | 52.7 | 59.3 | 62.0 | 1.9 | 2.1 | 2.6 |
| Other less developed countries | 42.1 | 42.7 | 63.1 | 66.7 | 68.1 | 72.0 | 0.6 | 3.6 | 3.9 |
| Africa | 36.2 | 38.6 | 50.2 | 53.3 | 56.9 | 59.6 | 2.3 | 3.1 | 2.7 |
| Asia | 42.1 | 42.4 | 63.8 | 67.1 | 69.6 | 73.4 | 0.3 | 3.3 | 3.9 |
| Europe | 60.9 | 66.1 | 68.3 | 76.8 | 72.2 | 80.0 | 5.2 | 8.5 | 7.8 |
| Latin America and the Caribbean | 49.7 | 53.1 | 65.6 | 72.4 | 71.5 | 77.9 | 3.4 | 6.8 | 6.4 |
| Northern America | 65.8 | 71.7 | 72.4 | 79.2 | 76.7 | 81.5 | 5.8 | 6.8 | 4.8 |
| Oceania | 58.1 | 63.1 | 69.5 | 75.7 | 75.4 | 79.9 | 4.9 | 6.1 | 4.6 |

TABLE 2. LIFE EXPECTANCY AT BIRTH BY SEX, DEVELOPMENT GROUP AND MAJOR AREA, 1950-1955, 1990-1995 AND 2010-2015

similar to that in Northern America. In both Europe and Northern America, the gap in life expectancy between males and females has narrowed since the ICPD.

Latin America and the Caribbean has the largest female advantage in life expectancy (6.4 years) among the major areas comprised by the less developed regions. In Latin America and the Caribbean, the sex difference in life expectancy has begun to decline, while in Asia it continues to grow. Table 2 shows a decline in the sex difference in life expectancy between 1990-1995 and 2010-2015 for Africa; this reflects the disproportionate impact of AIDS on female mortality in Africa, which had its maximum effect on mortality rates around 2000-2005.

4. Countries with the highest and lowest life expectancies

Table 3 shows the countries with the highest and the lowest life expectancies at the mid-century, at the ICPD and today. The ten countries with the highest life expectancies in the current period, 2010-2015, have life expectancy of 81.7 years or higher for both sexes combined. All but two of these countries are located in the more developed regions. Japan has the highest life expectancy in the world, at 83.5 years for 2010-2015. Since the time of the ICPD in 1994, the composition of the top ten countries with respect to life expectancy at birth has remained largely unchanged. Only one country, Greece, fell out of the group in 2010-2015, while Singapore joined.

The ten countries with the lowest life expectancies in 2010-2015 had values ranging from 45.3 years to 51.7 years. While these levels of life expectancy are some 20 years higher than the lowest values found in the 1950s, they are only moderately higher than those from the time of the ICPD. Most of the countries in the list of the lowest life expectancies are affected by challenges such as HIV/AIDS or conflict. At the time of the ICPD, Rwanda had the lowest life expectancy at birth, at 23.1 years for 1990-1995, reflecting the disastrous impact of the genocide. Today, Sierra Leone has the lowest life expectancy, at 45.3 years for 2010-2015. Both at the time of the ICPD and today, all 10 of the countries with the lowest life expectancies worldwide are located in Africa.

C. CHILD MORTALITY

1. Under-five mortality

The rate of under-five mortality is a closely monitored indicator of health and development. In the period covered by the ICPD Programme of Action, under-five mortality worldwide dropped from 86 deaths per 1,000 live births in 1990-1995 to 52 per 1,000 in 2010-2015 (figure 7 and table 4), a 40 per cent decline, but still short of the ICPD target of 45 per 1,000. Efforts to reduce under-five mortality received further impetus after 2000 with the inclusion of child mortality among the Millennium Development Goals, and have met considerable success since that time, including in the least developed countries. On average, the least developed countries achieved a decline from 172 per 1,000 in 1990-1995 to 99 per 1,000 in 2010-2015, but this group of countries still has a long way to go to achieve the ICPD target. In the other less developed countries, under-five mortality fell from 77 per 1,000 to 44 per 1,000 since the ICPD, meaning that these countries on average have achieved the target. The more developed regions, where under-five mortality was already quite low at 13 per 1,000 in 1990-1995, experienced a further decline to 7 per 1,000.

Among the world's major areas, the largest absolute change in under-five mortality since the ICPD occurred in Africa, which had experienced a slowdown in the decline of under-five mortality in the decade preceding the ICPD (figure 7, panel B). Since the ICPD, under-five mortality in Africa has declined from 168 per 1,000 to 101 per 1,000. Still, Africa has by far the highest under-five

| | 1950-1955 | | | 1990-1995 | | | 2010-2015 | |
|-----|-----------------|------|-----|------------------------------|---------|-----|----------------------------|------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | A Highest life expectance of | t birth | | | |
| | | | | A. Highesi üje expectancy a | ı birin | | | |
| 1. | Norway | 72.7 | 1. | Japan | 79.4 | 1. | Japan | 83.5 |
| 2. | Iceland | 72.0 | 2. | Iceland | 78.5 | 2. | China, Hong Kong SAR | 83.3 |
| 3. | Netherlands | 71.9 | 3. | China, Hong Kong SAR | 78.2 | 3. | Switzerland | 82.5 |
| 4. | Sweden | 71.7 | 4. | Sweden | 78.1 | 4. | Australia | 82.4 |
| 5. | Denmark | 70.9 | 5. | Switzerland | 77.9 | 5. | Italy | 82.3 |
| 6. | New Zealand | 69.7 | 6. | Canada | 77.7 | 6. | Singapore | 82.2 |
| 7. | Australia | 69.4 | 7. | Australia | 77.6 | 7. | Iceland | 82.0 |
| 8. | Switzerland | 69.3 | 8. | Greece | 77.4 | 8. | Spain | 82.0 |
| 9. | United Kingdom | 69.3 | 9. | Spain | 77.4 | 9. | Sweden | 81.7 |
| 10. | Channel Islands | 69.2 | 10. | Italy | 77.4 | 10. | Israel | 81.7 |
| | | | | B. Lowest life expectancy a | t birth | | | |
| 1. | Yemen | 25.3 | 1. | Rwanda | 23.1 | 1. | Sierra Leone | 45.3 |
| 2. | Mali | 27.0 | 2. | Sierra Leone | 36.0 | 2. | Botswana | 47.4 |
| 3. | Afghanistan | 27.7 | 3. | Angola | 41.4 | 3. | Swaziland | 49.2 |
| 4. | South Sudan | 27.9 | 4. | Zambia | 42.1 | 4. | Lesotho | 49.5 |
| 5. | Sierra Leone | 28.8 | 5. | Mozambique | 44.6 | 5. | Dem. Republic of the Congo | 49.8 |
| 6. | Bhutan | 29.5 | 6. | Central African Republic | 44.9 | 6. | Central African Republic | 49.9 |
| 7. | Timor-Leste | 30.0 | 7. | Somalia | 45.0 | 7. | Mozambique | 50.2 |
| 8. | Angola | 30.0 | 8. | South Sudan | 45.3 | 8. | Côte d'Ivoire | 50.5 |
| 9. | Gambia | 30.3 | 9. | Niger | 45.5 | 9. | Chad | 51.0 |
| 10. | Burkina Faso | 30.9 | 10. | Nigeria | 46.1 | 10. | Angola | 51.7 |
| | WORLD | 46.9 | | WORLD | 64.8 | | WORLD | 70.0 |

TABLE 3. TEN COUNTRIES OR AREAS WITH THE HIGHEST AND LOWEST LIFE EXPECTANCY AT BIRTH, 1950-1955, 1990-1995 AND 2010-2015

^a Countries or areas with 90,000 persons or more in 2013.





a. By development group

b. By major area

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

| | Under-five mortality rate (deaths per 1,000 live births) - Both sexes combined - | | | Average annual rate of decline (per cent) | |
|---------------------------------|--|---------------|---------------|---|-----------------------------------|
| Development group or major area | 1950- 1955 | 1990- 1995 | 2010- 2015 | 1950- 1955 to 1990- 1995 | 1990- 1995 to 2010- 2015 |
| World | 214.5 | 86.1 | 51.9 | 2.3 | 2.5 |
| More developed regions | 77.8 | 12.9 | 6.7 | 4.5 | 3.3 |
| Less developed regions | 247.0 | 94.9 | 57.0 | 2.4 | 2.5 |
| Least developed countries | 317.7 | 172.4 | 98.6 | 1.5 | 2.8 |
| Other less developed countries | 236.9 | 77.0 | 44.2 | 2.8 | 2.8 |
| Africa | 309.4 | 168.1 | 100.6 | 1.5 | 2.6 |
| Asia | 237.1 | 75.9 | 38.7 | 2.8 | 3.4 |
| Europe | 94.1 | 15.3 | 7.1 | 4.5 | 3.9 |
| Latin America and the Caribbean | 187.8 | 49.4 | 23.2 | 3.3 | 3.8 |
| Northern America | 36.5 | 10.3 | 7.0 | 3.2 | 2.0 |
| Oceania | 90.7 | 38.2 | 25.9 | 2.2 | 1.9 |

|--|

mortality of any major area in 2010-2015 and is the only major area that has not, on average, reached the ICPD target of 45 per 1,000. The area with the next highest under-five mortality in 2010-2015 is Asia, at 39 per 1,000, while Oceania and Latin America and the Caribbean have levels of 26 per 1,000 and 23 per 1,000, respectively. In Northern America and Europe, under-five mortality stands at 7 per 1,000, meaning that a child in Africa has a 14-fold higher chance of dying before age 5 than a child in those two regions.

Extremes in under-five mortality by country are an order of magnitude higher than the differences between the major areas. Within the regional and global averages, there are countries that still, despite declines, have very high levels of under-five mortality, as well as countries that have achieved very low levels (table 5). Under-five mortality levels higher than 200 are no longer found even in the countries with the highest-mortality; only 7 countries, all in Middle or Western Africa, have under-five mortality estimated at 150 per 1,000 or higher in 2010-2015. Yet under-five mortality in these countries is more than 50 times higher than in the countries with the lowest mortality. These include Singapore, Iceland, China Hong Kong SAR, and Finland, all of which have achieved levels below 3 deaths per 1,000 live births.

| | 1990-1995 | | 2010-2015 | | | | |
|------|------------------------------|---|------------|------------------------------|---|--|--|
| Rank | Country or area ^a | Under-five mortality (deaths per 1,000 live births) | Rank | Country or area ^a | Under-five mortality (deaths per 1,000 live births) | | |
| | | nortality | | | | | |
| 1. | Rwanda | 466 | 1. | Sierra Leone | 187 | | |
| 2. | Niger | 293 | 2. | Dem. Republic of the Congo | 180 | | |
| 3. | Sierra Leone | 273 | 3. | Mali | 165 | | |
| 4. | Angola | 253 | 4. | Guinea-Bissau | 156 | | |
| 5. | Mali | 246 | 5. | Angola | 156 | | |
| 6. | Liberia | 234 | 6. | Chad | 155 | | |
| 7. | Mozambique | 226 | 7. | Central African Republic | 150 | | |
| 8. | Somalia | 222 | 8. | Equatorial Guinea | 143 | | |
| 9. | South Sudan | 220 | 9. | Burundi | 139 | | |
| 10. | Guinea | 216 | 10. | Burkina Faso | 137 | | |
| | | B. Lowest und | der-five n | nortality | | | |
| 1. | Singapore | 5.8 | 1. | Singapore | 2.3 | | |
| 2. | Iceland | 5.9 | 2. | Iceland | 2.6 | | |
| 3. | Finland | 6.1 | 3. | China, Hong Kong SAR | 2.8 | | |
| 4. | Japan | 6.1 | 4. | Finland | 2.9 | | |
| 5. | Sweden | 6.3 | 5. | Japan | 3.0 | | |
| 6. | China, Hong Kong SAR | 6.9 | 6. | Sweden | 3.0 | | |
| 7. | Norway | 7.3 | 7. | Luxembourg | 3.1 | | |
| 8. | Switzerland | 7.5 | 8. | Norway | 3.1 | | |
| 9. | Netherlands | 7.6 | 9. | Czech Republic | 3.3 | | |
| 10. | Canada | 7.6 | 10. | Italy | 3.3 | | |
| | WORLD | 86 | | WORLD | 52 | | |

TABLE 5. TEN COUNTRIES OR AREAS WITH THE HIGHEST AND LOWEST UNDER-FIVE MORTALITY IN 1990-1995 AND 2010-2015

^a Countries or areas with 90,000 persons or more in 2013.

In the late 1950s and early 1960s, most children were born in contexts facing high childhood mortality risks, with under-five mortality rates above 200 deaths per 1,000 live births (figure 8). By the time of the ICPD, just 1 in 10 births took place in countries with under-five mortality rates greater than 200 per 1,000, but close to 4 in 10 babies were born in countries with under-five mortality between 100 and 200 per 1,000. In the 20 years since, child mortality rates have fallen such that no country has an under-five mortality rate greater than 200 per 1,000 and less than 1 in 10 babies worldwide are born in countries with under-five mortality between 100 and 200 per 1,000. Today the majority of births (64 per cent) take place in countries with under-five mortality rates below the ICPD target level of 45 deaths per 1,000 live births.



Figure 8. Percentage distribution of global births by level of under-five mortality, 1950-1955 to 2010-2015

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

2. Infant mortality

In nearly all populations, deaths before age one comprise the majority of deaths before age five. The infant mortality rate has been used widely as an indicator of population health. Accordingly, the Programme of Action included a target for infant mortality, 35 infant deaths per 1,000 live births by 2015. Between 1990-1995 and 2010-2015, global infant mortality fell from 59 per 1,000 to 37 per 1,000 (table 6 and figure 9). Infant mortality in the least developed countries is 63 per 1,000 in 2010-2015, not quite double the ICPD target. The other less developed countries on average have reached the ICPD target, with an average infant mortality of 33 per 1,000 in 2010-2015. Meanwhile, the more developed regions, which had already reached a low infant mortality level of 11 per 1,000 in 1990-1995, saw a further decline to 6 per 1,000 by 2010-2015.

The relative levels and changes in infant mortality amongst the world's major areas are on the whole similar to those for under-five mortality. Africa has the highest level of infant mortality in 2010-

2015 at 64 per 1,000, and has some distance to go to reach the ICPD target of 35 per 1,000. Each of the world's other major areas has, on average, met the ICPD target by 2010-2015.

| | Infan (infant death - Both . | t mortality ra s per 1,000 li sexes combin | tte ive births) ed - | Average a of de (per | ennual rate ecline cent) |
|---------------------------------|------------------------------------|--|----------------------------|-----------------------------------|-----------------------------------|
| Development group or major area | 1950- 1955 | 1990- 1995 | 2010- 2015 | 1950- 1955 to 1990- 1995 | 1990- 1995 to 2010- 2015 |
| World | 134.7 | 59.1 | 36.8 | 2.1 | 2.4 |
| More developed regions | 59.6 | 10.7 | 5.6 | 4.3 | 3.3 |
| Less developed regions | 152.5 | 64.9 | 40.3 | 2.1 | 2.4 |
| Least developed countries | 199.0 | 107.1 | 62.9 | 1.5 | 2.7 |
| Other less developed countries | 145.9 | 55.2 | 33.3 | 2.4 | 2.5 |
| Africa | 187.2 | 102.6 | 63.6 | 1.5 | 2.4 |
| Asia | 145.9 | 55.4 | 31.0 | 2.4 | 2.9 |
| Europe | 72.3 | 12.8 | 5.8 | 4.3 | 3.9 |
| Latin America and the Caribbean | 126.1 | 38.3 | 17.9 | 3.0 | 3.8 |
| Northern America | 31.2 | 8.6 | 6.0 | 3.2 | 1.8 |
| Oceania | 59.8 | 28.4 | 20.2 | 1.9 | 1.7 |

TABLE 6. INFANT MORTALITY BY DEVELOPMENT GROUP AND MAJOR AREA, 1950-1955, 1990-1995 AND 2010-2015

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.



Figure 9. Infant mortality by development group and major area, 1950-1955 to 2010-2015

D. ADULT MORTALITY

1. Mortality between ages 15 and 60

The measure used here to examine mortality in early and middle adulthood is the probability of dying between exact age 15 and exact age 60, denoted by demographers as 45q15. Globally, the chance of dying between 15 and 60 declined from 198 per 1,000 – about a 1 in 5 chance – in 1990-1995 to 157 per 1,000 in 2010-2015 (figure 10). But in the periods immediately before and after ICPD, that is from 1985-1990 until 2000-2005, trends in this indicator were relatively flat at the global level. The declines in 45q15 in each of the development groups are estimated to have accelerated between 2000-2005 and 2005-2010.



a. By development group

b. By major area



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

The world's major areas that have experienced significant mortality crises stand out in panel b of figure 5. The rising trend for Africa (red line) through the 1990s and early 2000s reflects the strong impact of HIV/AIDS on adult mortality. Also visible in the panel is the stagnant or rising trend in 45q15 in Europe (green line). Unfavourable average trends in European 45q15 had started in the late 1960s and, other than a temporary reversal in the late 1980s, continued until the early 2000s, at which time Europe's average 45q15 was similar to those for Asia and for Latin America and the Caribbean, all around 162-164 per 1,000. By 2010-2015, 45q15 in these three regions had declined to around 140 per 1,000, while Northern America and Oceania had the lowest average 45q15 at 99 and 101 per 1,000, respectively.

There are substantial sex differences in mortality in the 15-60 age range (table 7). At the world level, 45q15 is 1.5 times higher for males than for females. The ratio rises to 2.2 times higher in the more developed regions, while in the least developed countries male and female 45q15 are different only by a factor of 1.2.

Particularly notable in table 7 is the high level of male 45q15 in Europe. At 199 per 1,000 in 2010-2015, male adult mortality in Europe, on average, is higher than in all other regions except for Africa. The unusual trends for some Eastern European countries that contribute to this high average are considered in chapter IV.

| _ | Probability of dying between age 15 and 60 (45q15) (deaths under age 60 per 1,000 alive at age 15) | | | | |
|---------------------------------|---|------|--------|-----------------------|--|
| Development group or major area | Both sexes | Male | Female | Ratio male/ female | |
| World | 157 | 188 | 125 | 1.5 | |
| More developed regions | 121 | 166 | 75 | 2.2 | |
| Less developed regions | 165 | 192 | 137 | 1.4 | |
| Least developed countries | 251 | 271 | 232 | 1.2 | |
| Other less developed countries | 153 | 182 | 123 | 1.5 | |
| Africa | 296 | 317 | 275 | 1.2 | |
| Asia | 139 | 166 | 110 | 1.5 | |
| Europe | 141 | 199 | 82 | 2.4 | |
| Latin America and the Caribbean | 141 | 183 | 99 | 1.9 | |
| Northern America | 99 | 125 | 74 | 1.7 | |
| Oceania | 101 | 121 | 81 | 1.5 | |

TABLE 7. PROBABILITY OF DYING BETWEEN AGES 15 AND 60 BY SEX, DEVELOPMENT GROUP AND MAJOR AREA, 2010-2015

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations.

2. Life expectancy at age 60

Since the ICPD, not only are more people surviving to age 60, they are living longer in old age as well. The measure used here to describe mortality among older adults is life expectancy at age 60. Worldwide, life expectancy at age 60 increased by 1.8 years since the ICPD, from 18.2 years in 1990-1995 to 20 years in 2010-2015 (figure 11 and table 8). Older adults in the less developed regions, and particularly in the least developed countries, are disadvantaged in survival compared to older adults in the more developed regions. Moreover, life expectancy at age 60 in the more developed regions increased more quickly than the world average, widening the gap in survival at age 60 between the more developed regions and the least developed countries from 4.5 years in 1990-1995 to 5.5 years in 2010-2015.

Similarly, among major areas, the area with the highest life expectancy at age 60 also gained the most years of expected life at that age (figure 11), widening the gap between the major areas with highest and lowest life expectancies at age 60. Oceania gained 3.2 years of life expectancy at age 60 between 1990-1995 and 2010-2015, surpassing Northern America for the highest life expectancy at age 60 in 2010-2015, 23.8 years. Africa has the lowest life expectancy at age 60 in 2010-2015, 16.4 years, having gained only 1 year since 1990-1995. The gap between the major areas with highest and lowest life expectancy at age 60 rose from 5.8 years in 1990-1995 to 7.4 years in 2010-2015. This is in contrast to the narrowing gaps in overall life expectancy that were described above. The second highest life expectancy at age 60 in 2010-2015 is in Northern America, at 23.4 years. Latin America and the Caribbean have the third highest estimate, at 21.9 years, followed by Europe at 21.5 years, and Asia at 19.3 years.





Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

| | Life expectancy at age60 (years) - Both sexes combined - | | | Years gained between periods | | |
|--------------------------------------|---|---------------|---------------|-----------------------------------|-----------------------------------|--|
| – Development group or major area | 1950- 1955 | 1990- 1995 | 2010- 2015 | 1950- 1955 to 1990- 1995 | 1990- 1995 to 2010- 2015 | |
| World | 14.2 | 18.2 | 20.0 | 4.0 | 1.8 | |
| More developed regions | 16.8 | 20.0 | 22.6 | 3.2 | 2.6 | |
| Less developed regions | 12.4 | 17.1 | 18.8 | 4.7 | 1.7 | |
| Least developed countries | 12.6 | 15.6 | 17.1 | 3.0 | 1.5 | |
| Other less developed countries | 12.3 | 17.2 | 18.9 | 4.9 | 1.7 | |
| Africa | 12.5 | 15.3 | 16.4 | 2.8 | 1.1 | |
| Asia | 12.3 | 17.5 | 19.3 | 5.2 | 1.8 | |
| Europe | 16.8 | 19.2 | 21.5 | 2.4 | 2.3 | |
| Latin America and the Caribbean | 15.4 | 19.4 | 21.9 | 4.0 | 2.5 | |
| Northern America | 17.4 | 21.1 | 23.4 | 3.7 | 2.2 | |
| Oceania | 16.3 | 20.6 | 23.8 | 4.2 | 3.2 | |

TABLE 8. LIFE EXPECTANCY AT AGE 60 BY DEVELOPMENT GROUP AND MAJOR AREA, 1950-1955, 1990-1995 AND 2010-2015

E. CONCLUSIONS

This chapter reviewed global and regional trends in mortality since 1950, with special attention to the trends since the 1994 ICPD. Since the ICPD, the world has gained 5.6 years of life expectancy. The pace of gains achieved in the group of least developed countries exceeded the global average, narrowing the gap in life expectancy between this group and the more developed regions. However, large disparities in life expectancy remain between the regions and countries with the highest and lowest life expectancies, and Africa and Asia still are far from achieving the life expectancy targets set out in the ICPD Programme of Action.

Declines in under-five and infant mortality were achieved in all major areas, yet the global averages for these indicators have not met the targets of the Programme of Action, held back particularly by high levels of infant and child mortality still prevailing in parts of Africa. Meanwhile, some major areas have experienced temporary increases in adult mortality since ICPD, slowing progress toward life expectancy goals.

Global and regional trends, however, mask considerable diversity between countries both in levels of life expectancy and in the trajectories of mortality at different ages. The next chapter explores countries' progress towards the ICPD goals on life expectancy and relates it to progress in survival at three stages of life: from birth to age 5; between ages 15 and 60; and after age 60.

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III. PROGRESS TOWARDS THE ICPD SURVIVAL TARGETS

A. INTRODUCTION

Chapter I of this report showed that a minority of countries has achieved the life expectancy targets laid out in the ICPD Programme of Action in 1994. Only 76 out of 201 countries or areas have achieved life expectancy greater than 75 years in 2010-2015, and 33 of these are countries where average survival already exceeded 75 years in 1990-1995. Only 35 per cent of countries with life expectancy between 60 and 75 years at the time of the ICPD have surpassed 75 years in 2010-2015. Just one of the 53 countries with life expectancy less than 60 years at the time of the ICPD has since surpassed 70 years. Clearly, progress in average survival has fallen far short of that to which ICPD delegates aspired twenty years ago.

This chapter examines the variability across countries in their progress in life expectancy and in survival probabilities at three stages of life: between birth and age five; between age 15 and age 60; and after age 60. All estimates are from *World Population Prospects: The 2012 Revision*.

B. CHANGES IN LIFE EXPECTANCY AT BIRTH SINCE THE ICPD

In the two decades since the ICPD, an overwhelming majority of countries has achieved improvements in the life expectancy at birth. Figure 12 shows the distribution of 201 countries or areas according to the change in life expectancy at birth between 1990-1995 and 2010-2015. The modal gain in life expectancy was 4 years, accounting for 50 countries. Another 56 countries achieved a gain in average survival from 1 to 3 years. 18 countries have gained 10 or more years of life expectancy over the past two decades, while 8 countries have experienced a net loss in life expectancy of at least one year since the ICPD.





Marked gains in the average length of life have occurred in each of the six major areas. Figure 13 shows the life expectancy at birth in 2010-2015 plotted against the starting point in 1990-1995 for 201 countries or areas, with different colours representing the five geographical groupings and solid shading indicating that the country has met the ICPD life expectancy targets. All of the geographic regions are represented among those having achieved targets, but Europe and Northern America and Latin America and the Caribbean saw a larger proportion of their constituent countries meeting the targets compared to Oceania, Asia and Africa. All of the countries that saw loss of life expectancy between 1990-1995 and 2010-2015 (those below the 45 degree line) are located in Africa. Those countries that saw no change in life expectancy over the twenty-year period, and thus fall on the 45 degree line in figure 13, can be found in Africa and Asia, as well as in Europe.



Figure 13. Life expectancy at birth in 1990-1995 and 2010-2015 in 201 countries or areas, shown by major area

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

Figure 13 hints at the wide variability in progress towards the ICPD life expectancy targets both within and across the geographic regions. Figure 14 more clearly depicts that variability by plotting each of the 201 countries' change in life expectancy at birth between 1990-1995 and 2010-2015 according to the major geographical area. Green lines indicate countries that have increased life expectancy by more than one year since the ICPD; red lines indicate countries that have suffered reductions in life expectancy is essentially unchanged since the ICPD, with less than one year change in either direction.

Immediately apparent is the great heterogeneity in average survival within each of the regions around the time of the ICPD. In Africa, for example, the two countries or areas with the lowest life expectancies at birth in 1990-1995 were Rwanda (23 years) and Sierra Leone (36 years), while the two countries or areas with the highest life expectancies were Mayotte (73 years) and Réunion (74 years). The breadth of mortality levels around the ICPD was only somewhat narrower in Asia, where life

expectancies at birth ranged from a low of 50 years in Timor-Leste and Afghanistan to a high of 79 years in Japan. Among the 42 countries or areas located in Europe or Northern America, life expectancy around the time of the ICPD ranged from 64 years in Bosnia and Herzegovina to 78 years in Sweden and Iceland. In Latin America and the Caribbean, life expectancy in 1990-1995 ranged from 55 years in Haiti to 76 years in Costa Rica, and in Oceania the spread of life expectancy levels at the ICPD was similarly broad, from 57 years in Papua New Guinea to 78 years in Australia.





Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

Progress towards improved survival since the ICPD varied widely both across and within the major geographic areas. In Africa, four countries experienced losses of life expectancy since the ICPD, including Botswana, Lesotho, South Africa and Swaziland, represented by the red lines in figure 14. Two others – Côte d'Ivoire and Togo – saw a less than one year change in life expectancy between 1990-1995 and 2010-2015, represented by the yellow lines. Overall, among the 56 countries or areas in Africa, the median increase in life expectancy over the past two decades was 5.6 years, as shown by the bold horizontal bars in the box plots in figure 15. Three-quarters of countries or areas in Africa experienced a change in the average length of life between 3.5 and 8.1 years, as indicated by the boxed area in figure 15. Three African countries are outliers given their exceptional progress in survival since the ICPD, represented by the circles above the box plot in figure 15: Ethiopia and Zambia each gained about 15 years of life expectancy over the past 20 years, while Rwanda gained around 40 years in its recovery from the 1994 genocide.

Three countries in Asia – Democratic People's Republic of Korea, Iraq and Kazakhstan – saw life expectancy at birth change less than one year over the two decades since the ICPD, but the remainder of

the region's 51 countries or areas achieved gains in life expectancy of at least one year between 1990-1995 and 2010-2015. Three-quarters of Asia's populations achieved gains in average survival between 3.6 years and 7.3 years, with a median increase of 4.6 years. Four countries in Asia stood out for their exceptional progress in longevity over the past two decades: Bhutan, Cambodia, Maldives and Timor-Leste are each estimated to have achieved gains in life expectancy of more than 13 years between 1990-1995 and 2010-2015.

In Europe and Northern America the patterns of progress in longevity were less diverse compared to Africa and Asia. Three-quarters of the 42 countries or areas in Europe or Northern America increased life expectancy by between 3.5 years and 4.9 years between 1990-1995 and 2010-2015. However, three countries in Europe – Belarus, Montenegro and Ukraine – saw essentially no change in life expectancy during that period and are indicated by the low outlying circles for the region in figure 15. The lone outlier on the upper end in Europe and Northern America – Bosnia and Herzegovina – gained nearly 13 years of life expectancy at birth in the 20 years since the ICPD, during which the country recovered from the excess mortality associated with the Bosnian war of 1992-1995.

While average life expectancy in Latin America and the Caribbean was lower at the time of the ICPD compared to Europe and Northern America, the distributions of change in life expectancy over the past two decades were similar. All of the 39 countries or areas in the Latin America and Caribbean regions saw increases in life expectancy at birth between 1990-1995 and 2010-2015, and three-quarters saw increases of between 3.6 years and 5.6 years. Similarly, all 13 countries or areas of Oceania experienced increases in life expectancy since the ICPD, with changes ranging from 2.4 years to 9.2 years over the period 1990-1995 to 2010-2015.





The solid line marks the median for the region, while the box marks the range between the 25th percentile and the 75th percentile. The whisker bars are 1.5 times the range of the box. Outliers are shown as open circles. *Source:* Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision.* New York: United Nations. The observed heterogeneity within geographical areas – especially in Africa and Asia – in progress in life expectancy indicates that these regional groupings are of limited utility to explain differential progress towards the ICPD survival targets. An alternative grouping that delineates countries according to the levels of life expectancy around the time of the ICPD proves more useful in this regard, since the pathways towards progress in longevity have been predicted in large part by the prevailing mortality regimes already established twenty years earlier.

Figure 16 again shows the change in life expectancy since the ICPD in the 201 countries or areas, but this time they are grouped according to the level of mortality around the time of the ICPD. The low-mortality group comprises the 33 countries where life expectancy at birth already exceeded 75 years for the period 1990-1995. The low-intermediate mortality group includes the 54 countries with life expectancy between 70 and 75 years in 1990-1995, while the high-intermediate mortality group contains the 61 countries with life expectancy between 60 and 70 years in that period. The fourth group, classified as high mortality, contains the 53 countries that had life expectancy less than 60 years at the time of the ICPD.





Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-</u>2013.shtml

Over the twenty years since the ICPD, all 33 low-mortality countries achieved gains in life expectancy at birth. In 1990-1995, the median life expectancy among the 33 countries was 76.3 years, with a range from 75.2 in Denmark to 79.5 years in Japan (figure 16). By 2010-2015, the median life expectancy has risen to 80.9 years, with a range from 78.3 years in Qatar to 83.5 years in Japan. Today the life expectancy in 27 of the 33 countries has surpassed 80 years. The pace of progress in average survival was fairly similar across the 33 low mortality countries: the largest increase in life expectancy





The solid line marks the median for the group of countries, while the box marks the range between the 25th percentile and the 75th percentile. The whisker bars are 1.5 times the range of the box. Outliers are shown as open circles. *Source:* Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision.* New York: United Nations.

has occurred in Martinique with a gain of 5.6 years, while the smallest change has occurred in Qatar, with a gain of 2.7 years (figure 17).

Among the 54 low-intermediate mortality countries with life expectancy at birth between 70 and 75 years in 1990-1995, the median increase in life expectancy at birth was likewise just over 4 years by 2010-2015, although life expectancies in the latter period were more widely dispersed than in the former, ranging from a low of 69.4 years in Iraq to a high of 81.4 years in the Republic of Korea. In three of the 54 countries (Democratic People's Republic of Korea, Iraq, and Montenegro) no progress in life expectancy at birth was observed over the 20 years from 1990-1995 to 2010-2015. The most progress in survival was achieved by the Republic of Korea and Lebanon, with gains in life expectancy at birth of 8.5 years and 8.8 years, respectively. Again, the pace of improvement in life expectancy over the past 20 years was similar within this group of low-intermediate mortality countries: 39 of the 54 countries had gains in life expectancy of between 3 and 6 years.

In 1990-1995, 61 countries had life expectancy at birth between 60 and 70 years. While many of these high-intermediate mortality countries saw gains to life expectancy over the past 20 years, three (Belarus, Kazakhstan and Ukraine) saw essentially no progress, and three others (Botswana, Lesotho and South Africa) suffered a shortening of average length of life, primarily due to HIV/AIDS. Among the high-intermediate mortality countries, a great deal of heterogeneity is observed in the starting and ending points and in the pace of advancement in life expectancy, but similar to the two groups of countries with higher life expectancy at the time of the ICPD, the median expectation of life among these 61 countries increased by just over 4 years between 1990-1995 and 2010-2015. Among the 61 countries with high-intermediate mortality levels at the time of the ICPD, Bosnia and Herzegovina and Maldives had achieved

the most progress by 2010-2015, with gains of 12.6 years and 15.0 years, respectively. Three-quarters of the countries in this group saw improvements in life expectancy ranging from 2.7 years to 6.7 years.

The highest mortality group of countries saw the greatest diversity in paths towards improved longevity since the ICPD. In 1990-1995, average survival was less than 60 years in 53 countries or areas. Rwanda averaged the lowest life expectancy in the world for this period, driven by the 1994 genocide. Excluding Rwanda, life expectancy for this group ranged from 35.9 years in Sierra Leone to 59.6 years in Myanmar, with a median of 51.4 years. By 2010-2015, that median would rise to 59.8 years, and the median gain was 6.8 years over the two decades since the ICPD, considerably higher than in the other three groups of countries. Sixteen of the countries would increase life expectancy by more than 10 years, and in five (Cambodia, Ethiopia, Rwanda, Timor-Leste and Zambia) life expectancy at birth would increase by more than 15 years between 1990-1995 and 2010-2015. However, despite the significant gains in survival in many of the high mortality countries, in 27 of the 53 countries life expectancy would remain below 60 years in 2010-2015.

C. CHANGING PROBABILITIES OF SURVIVAL AT DIFFERENT STAGES OF LIFE

Life expectancy at birth is a metric that summarizes the mortality risks across all ages in a population at a given point in time. Changes over time in the level of life expectancy at birth can result from changes in mortality risks at different stages of life. One feature of the life expectancy metric is that deaths averted at younger ages result in larger increases to life expectancy at birth compared to deaths averted at older ages. Consequently, a one year increase in the life expectancy at birth could result from a small number of child deaths averted, a large number of adult deaths averted, or some combination of the two. An examination of changes in survival probabilities at different stages of the life course can shed light on the sources of differential progress towards the ICPD survival goals. The following sections review the changes since the ICPD in survival probabilities at three stages of life: between birth and age 5; between ages 15 and 60; and after age 60.

1. Association between survival at three stages of life and life expectancy at birth

Figure 18 shows the association between the life expectancy at birth and survival at three stages represented by three different metrics: the probability of survival between birth and age 5, expressed per 1,000 live births; the probability of survival between age 15 and age 60, expressed per 1,000 15-year-olds; and the life expectancy at age 60, expressed in years. Charts in the first column plot the values of the respective age-specific survival metrics for 201 countries or areas in 2010-2015 against the life expectancy at birth for the same period. Charts in the second column plot the absolute change in the three respective age-specific survival metrics since the ICPD against the absolute change in life expectancy. Different colours are used to represent the four groups of countries classified by the level of mortality around the time of the ICPD.

The associations between the life expectancy at birth and each of the three survival metrics are strong and positive. The association between child survival and life expectancy is strongest among countries with the highest mortality levels, shown in red, and declines in importance as life expectancy at birth improves (charts A and B). In contrast, the strength of the association between survival at ages 15 to 60 and life expectancy at birth is similar across all levels of mortality, shown by the similar slopes of the different coloured markers shown in charts C and D. The influence of improvement in survival at older ages (60 and over) on the life expectancy at birth increases with the level of life expectancy: the slope of the blue markers in chart F is much steeper than the slope of the orange or red markers. The illustration is clear: changes in child survival are more important in impacting improvements in longevity when the level of life expectancy at birth is low, while improvements in survival at older ages are more important to achieving further increases in longevity at higher levels of life expectancy at birth.



Figure 18. Associations between survival at three stages of life and the life expectancy at birth for 201 countries or areas

Red: High-mortality countries; **Orange**: High-intermediate mortality countries; **Green**: Low-intermediate mortality countries; **Blue**: Low mortality countries.

2. Progress in survival from birth to age 5

Figure 19 shows the distribution of countries in each mortality level group according to the probability of survival from birth to age 5. Among the 33 countries with life expectancy greater than 75 years in 1990-1995, death before age 5 was rare and would become even rarer by 2010-2015: the median probability of survival in the earlier period was 992 per 1,000 and in the latter period it is 996 per 1,000. Twenty countries or areas in this group saw no appreciable change in survival to age 5 (defined as a change of greater than 5 per 1,000), in part because their child mortality rates were so low to begin with.

The probability of survival to age 5 was somewhat lower among countries with life expectancy between 70 and 75: a median of 977 per 1,000 in 1990-1995, ranging from 943 per 1,000 in Ecuador to 991 per 1,000 in Slovenia. By 2010-2015, the distribution of probabilities of survival to age 5 would become more condensed among this group, with a median of 989 per 1,000 and a range of 968 per 1,000 in Iraq to 997 per 1,000 in Czech Republic, Portugal and Slovenia. Nine countries in this group achieved gains in the probability of survival to age 5 of more than 20 per 1,000 (Albania, Belize, Democratic People's Republic of Korea, Ecuador, Georgia, Lebanon, Mexico, Viet Nam and Tunisia). Progress was fastest in Ecuador, with an additional 36 out of 1,000 children born surviving to the fifth birthday compared to 1990-1995.

Figure 19. Probability of survival to age 5 in 1990-1995 and 2010-2015 for 201 countries or areas, grouped by mortality level around the time of the ICPD



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-</u> 2013.shtml

Countries with life expectancy below 70 years at the time of the ICPD had more ground to make up with respect to improvements in child survival and, for the most part, were able to shrink the gaps with countries that had lower mortality in 1990-1995. Among the 61 countries with life expectancy between 60 and 70 years at the ICPD, the median probability of survival to age five increased from 945 per 1,000 in 1990-1995 to 976 per 1,000 in 2010-2015, which is nearly the same absolute increase as Ecuador. Just one high-intermediate mortality country (Trinidad and Tobago) failed to achieve at least a 5 per 1,000 gain in survival to age five. Half of the 61 countries achieved at least a 25 per 1,000 increase in the probability of survival to age five and seven countries achieved a gain of at least 50 per 1,000 (Azerbaijan, Bangladesh, Egypt, Maldives, Mongolia, Peru and Turkey). Of these, Bangladesh had the largest gain in the survival of children over the past 20 years, with an increase of 83 per 1,000 in the probability of survival to age five.

Many of the high mortality countries – those with life expectancy at birth less than 60 years at the time of the ICPD – were faced with extremely poor survival prospects among children. In 1990-1995, the median probability of survival to age 5 among the 53 countries was 844 per 1,000 and in 16 countries fewer than 800 of 1,000 children born survived to celebrate their fifth birthdays. By 2010-2015, all of these countries have surpassed 800 children alive at age 5 per 1,000 live births and the median probability of survival to age five has risen to 908 per 1,000. Rwanda, in its recovery from the genocide period, showed the most dramatic increase in child survival, followed by Niger (where the probability of survival to age 5 increased from 707 per 1,000 to 873 per 1,000) and Liberia (where the probability of survival to age 5 rose from 766 per 1,000 to 915 per 1,000). In this group of high-mortality countries, only Swaziland did not achieve at least a 5 per 1,000 increase in the probability of survival to age 5.

Despite special challenges faced by some countries and regions, none of the 201 countries or areas depicted in figure 19 experienced an overall decline in child survival in the two decades since the ICPD.

3. Survival from age 15 to age 60

The probability that a person aged 15 will survive until at least age 60 describes the mortality experience of the population of working and reproductive ages and is denoted 45p15 (15 as the starting age and 45 as the width of the age range covered).

Among countries with life expectancy greater than 75 years at the ICPD, the likelihood that a 15year-old would survive to age 60 was fairly high in 1990-1995, with a median value of 901 per 1,000, and would grow even higher by 2010-2015, to a median of 936 per 1,000 (figure 20). Japan was the country with the highest 45p15 in 1990-1995, at 921 per 1,000, but despite an increase to 939 per 1,000, Japan would rank 12th in adult survival in 2010-2015, behind countries or areas where 45p15 would exceed 940 per 1,000, including Australia, Channel Islands, Cyprus, Hong Kong, Iceland, Israel, Italy, Macao, Singapore, Sweden and Switzerland.

In two low-intermediate mortality countries (Belize and Montenegro) no appreciable change in adult survival was observed over the 20 years since ICPD. In both the Democratic People's Republic of Korea and Iraq, *45p15* declined by more than 30 per 1,000 between 1990-1995 and 2010-2015. All other countries with life expectancy between 70 and 75 years at the ICPD achieved increases in adult survival in the 20 years since, with the median probability of survival between ages 15 and 60 rising from 852 per 1,000 to 892 per 1,000, but still falling short of even the 1990-1995 median of the highest life expectancy group. The largest increases in the probability of survival between ages 15 and 60 among the 54 low-intermediate mortality countries were observed in Guadeloupe, Lebanon, Mayotte, the Republic of Korea and Reunion, all of which had increases of more than 60 per 1,000 between 1990-1995 and 2010-2015.

A greater diversity of change in adult survival was observed among countries with life expectancy less than 70 years at the ICPD. Among the 61 high-intermediate mortality countries *45p15* ranged from a low of 688 per 1,000 (Botswana) to a high of 857 per 1,000 (Saudi Arabia) with a median of 788 per 1,000. By 2010-2015, the median probability of survival between ages 15 and 60 in this group would increase to 833 per 1,000 and range from 280 per 1,000 in Botswana to 934 per 1,000 in Maldives.

Figure 20. Probability of survival from age 15 to 60 in 1990-1995 and 2010-2015 for 201 countries or areas, grouped by mortality level around the time of the ICPD





In nine of these high-intermediate mortality countries, 45p15 declined by more than 5 per 1,000 between 1990-1995 and 2010-2015 (Botswana, Belarus, Gabon, Kazakhstan, Kyrgyzstan, Lesotho, Namibia, South Africa and Ukraine). The largest declines were observed in Botswana, Lesotho and South Africa, three countries that have been highly affected by HIV/AIDS. An additional two high-intermediate countries (Russian Federation and Turkmenistan) saw essentially no change in 45p15 over the 20 years since the ICPD. The remaining 50 countries all saw increases of at least 5 per 1,000 in the probability of surviving from age 15 to 60. The greatest progress was observed in Maldives, where 45p15 increased from 808 per 1,000 in 1990-1995 to 934 per 1,000 in 2010-2015 and Bosnia and Herzegovina, with an increase in 45p15 from 711 per 1,000 to 900 per 1,000 over the same period.

A wide range of adult mortality risks were also observed among the 53 countries with life expectancy below 60 years at the ICPD. Among the high mortality group, 45p15 in 1990-1995 ranged from 314 per 1,000 in Rwanda to 761 per 1,000 in Mauritania, with a median value of 672 per 1,000. The median increased to 729 per 1,000 by 2010-2015, but the range shrank only slightly, with a minimum survival from 15 to 60 of 432 in Swaziland and a maximum of 824 per 1,000 in Nepal. Progress in adult survival was extremely rapid in some countries: 14 high mortality countries increased 45p15 by more than 100 per 1,000 and two (Rwanda and Zambia) had increases of more than 200 per 1,000 in the probability of survival between ages 15 and 60. Other high mortality countries, however, achieved no progress in adult survival or even experienced declines. One country (Malawi) had no net change in 45p15 in the two decades since the ICPD and six countries (Cameroon, Côte d'Ivoire, Guinea, Mozambique, Swaziland and Togo) had reversals of previous progress in adult survival. Among this group of high mortality countries, Swaziland experienced the biggest reversal in progress in adult

survival, with 45p15 declining from 707 per 1,000 in 1990-1995 to 432 per 1,000 in 2010-2015, indicating that less than half of 15-year-olds are expected to survive to their 60th birthdays.

4. Life expectancy at age 60

The expectation of life at age 60 (denoted *e60*) indicates the average number of additional years a cohort of 60-year-old persons would be expected to live if exposed throughout the remainder of their lives to the age-specific mortality risks of a given period. Among countries with life expectancy at birth greater than 75 years at the ICPD, the median expectation of life at age 60 was 20.9 years (figure 21), indicating that the average 60-year-old would be expected to survive nearly to age 81. 60-year old persons in Japan were expected to live the longest, with *e60* equal to 22.8 years, followed by France at 22.1 years. By 2010-2015, the median value of *e60* among the 33 low mortality countries increased to 23.8 years and Japan remained the leader with *e60* of 26.1 years, followed by Hong Kong, Australia, France, and Switzerland, all of which achieved *e60* greater than 25 years by 2010-2015. All 33 low mortality countries achieved at least a 1-year increase in the expectation of life at age 60. The largest increase over the 20-year-period, at 4.2 years, was achieved in Ireland, where *e60* increased from 19.2 years in 1990-1995 to 23.4 years in 2010-2015.





Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-</u> 2013.shtml

All but three of the countries with life expectancy at birth between 70 and 75 years at the ICPD achieved increases in the expectation of life at age 60 of at least 0.5 years over the 20 years since. The median change among low-intermediate mortality countries (2.2 years) was somewhat smaller than the median change among the low mortality group (3.0 years), but countries made substantial progress

nonetheless. In both Lebanon and the Republic of Korea, *e60* increased by more than 4 years in the two decades since the ICPD. Democratic People's Republic of Korea, Iraq and Montenegro each experienced a decline in the expectation of life at age 60 ranging from -0.7 years to -1.3 years. By 2010-2015 the median expectation of life at age 60 among these 54 countries had risen from 18.8 years to 21.1 years, which surpasses the median 1990-1995 *e60* of the higher life expectancy group.

Like progress in adult survival, progress in survival at older ages was more mixed among countries that had higher mortality levels at the ICPD. Among the 61 countries with life expectancy at birth between 60 and 70 years in 1990-1995, the median expectation of life at age 60 increased by just 1.2 years in the two decades since the ICPD, from 17.3 years in 1990-1995 to 18.5 years in 2010-2015. Six high-intermediate mortality countries (Cabo Verde, French Polynesia, Guatemala, Maldives, Nicaragua and Oman) achieved increases in *e60* greater than 3 years over this period, but 11 countries (Belarus, Botswana, Egypt, Lesotho, Lithuania, Pakistan, Republic of Moldova, Russian Federation, Turkmenistan, Ukraine and Uzbekistan) saw essentially no change (absolute value of change in *e60* <0.5 years) and in Kazakhstan and Kyrgyzstan *e60* was observed to decline by 0.9 years and 1.3 years, respectively.

Comparatively little progress was made in survival at older ages among countries with life expectancy below 60 years at the ICPD, with a couple of notable exceptions. In Cambodia, the expectation of life at age 60 increased from 18.2 years in 1990-1995 to 23.8 years in 2010-2015 and in Rwanda it increased from 10.0 years to 17.8 years, reflecting the recovery from the genocide. The median *e60* across the 53 high mortality countries increased by just over one year in the two decades since the ICPD, from 15.2 years in 1990-1995 to 16.3 years in 2010-2015. In nine high mortality countries (Benin, Democratic Republic of the Congo, Ghana, Guinea, Guinea-Bissau, Nigeria, Senegal, Swaziland and Yemen), no appreciable change was observed in the expectation of life at age 60, while in two countries (Côte d'Ivoire and Togo) *e60* was estimated to have declined.

D. CONCLUSIONS

Over the course of the ICPD Programme of Action implementation period a great diversity of experience with respect to changing mortality levels has been observed across 201 countries or areas. Gains to life expectancy at birth averaged 4 years between 1990-1995 and 2010-2015, with some populations achieving much greater success and extending the average length of life by upwards of 10 years, while others—particularly those highly affected by HIV/AIDS—saw life expectancy shortened since the ICPD. Success in extending the average length of life was not proscribed by geography. On the contrary, heterogeneity of experience was observed across each of the five major geographic areas of the world. To a larger extent, the level of mortality at the time of the ICPD was proscriptive of the pace of advancement in the ensuing two decades, although considerable heterogeneity was observed across groups of countries classified by the level of life expectancy in 1990-1995 as well.

Examination of changes in survival at three stages of life (in childhood from birth to age 5; in the reproductive and working ages from 15 to 60; and at advanced ages above 60 years) pointed to the sources of heterogeneity in trends in the life expectancy at birth observed across countries and areas. All of the world's countries achieved gains in child survival between 1990-1995 and 2010-2015. The greatest gains were made among those countries with the highest mortality levels around the time of the ICPD, where the median probability of survival to age five increased from 844 per 1,000 in 1990-1995 to 908 per 1,000 in 2010-2015, although despite this progress, the high mortality group of countries continues to lag well behind the other groups in terms of child survival. The vast majority of countries or areas achieved advances in the probability of survival between ages 15 and 60 since the ICPD, but several countries saw no progress or even reversals of earlier progress. These tended to be former-Soviet countries or countries highly-affected by HIV/AIDS. On average, countries with the lowest mortality levels at the time of the ICPD achieved the most progress in survival at advanced ages, with an increase in

the median life expectancy at age 60 of close to 3 years, compared to around 2 years for low-intermediate mortality countries and just 1 year for high-intermediate and high mortality countries.

The success of populations towards achieving the life expectancy targets outlined in the ICPD Programme of Action has hinged on their success in improving survival at the various stages of life. Among countries for which low mortality had already been achieved at the ICPD, further gains in longevity rested on improvements in survival at advanced ages, while among countries with high-mortality at the ICPD gains in the average length of life depended especially on progress in child survival. This chapter has reviewed the similarities and differences in improving survival at three stages of life among four groups of countries delineated by the level of life expectancy at the time of the ICPD. The following chapter, chapter IV, pursues a more detailed analysis of the age patterns of changes in mortality that have determined countries' successes and failures towards achieving the ICPD life expectancy targets.

IV. COMPONENTS OF CHANGE IN LIFE EXPECTANCY OVER THE ICPD PROGRAMME OF ACTION IMPLEMENTATION PERIOD

A. INTRODUCTION

Chapter III explored the variability across geographic regions and countries in the progress towards longer lives since the adoption of the Programme of Action of the 1994 International Conference on Population and Development. In addition, it described the extent of the variability across countries in success in improving survival at three stages of life: during childhood; during the working and reproductive ages; and at older ages. This chapter turns to link changes in survival at different stages of life in a country to the progress achieved in extending the average length of life – the life expectancy at birth. The contributions of changes in survival at different ages to the overall progress in life expectancy since the ICPD are examined to explain differences across countries in progress towards longer lives.

One approach to explain differences in progress toward longer life across countries entails decomposing the change in life expectancy within each country into the components that are attributable to mortality decline at various ages. Demographers Arriaga (1984) and Pollard (1988) each developed equivalent equations for decomposing the difference in life expectancy between two discrete life tables. In the analysis that follows, the formulae developed by Arriaga (1984) and described in Preston et al. (2001) are used to identify the contribution of changing mortality risks at each age to the overall change in life expectancy at birth since the ICPD by comparing life table values from *World Population Prospects: The 2012 Revision* for each country corresponding to the period 2010-2015 to those that refer to the period 1990-1995.

B. CONTRIBUTION OF IMPROVED SURVIVAL BY AGE TO OVERALL CHANGE IN LIFE EXPECTANCY AT BIRTH

Figure 22 shows the number of years of life expectancy at birth that were added in each of the 201 countries or areas due to mortality changes that occurred among three age groups: 0 to 15 years, 15 to 60 years and 60 years and over. The discussion that follows evaluates the age patterns of contribution to gains in life expectancy within each of the four groups of countries classified according to the levels of life expectancy at birth at the time of the ICPD. Within each group, it highlights the specific health challenges facing countries or groups of countries where progress has lagged, such as persistent high child mortality, premature mortality due to non-communicable diseases (NCDs) and HIV/AIDS, and mortality associated with conflict. While a full review of the literature on reasons for age-specific mortality change in each of the different countries and regions is beyond the scope of this report, the sections below identify some of the key findings from the literature that can offer insights into the observed trends.

To shed light on the specific trends in mortality that have determined progress towards the ICPD survival targets, or lack thereof, results of the decomposition analysis are illustrated graphically for selected pairs of countries. Interested readers may explore their own country comparisons using an interactive tool contained on the World Mortality Data CD-ROM and available on the website of the Population Division at <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>.



Figure 22. Contribution of three age groups to change in life expectancy between 1990-1995 and 2010-2015 for 201 countries or areas, grouped by mortality level around the time of the ICPD

Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

1. Low-mortality countries

Among the low mortality group of countries, most of the observed progress in survival between 1990-1995 and 2010-2015 was due to declining mortality at advanced ages. Improved survival at age 60 and above contributed a median 2.6 additional years of life expectancy at birth, compared to 1.2 years attributable to improved survival between ages 15 and 60 and just 0.4 years attributable to improved survival between ages 15 and 60 and just 0.4 years attributable to improved survival among children. In 32 of the 33 low-mortality countries the age pattern of contribution to overall change in life expectancy follows the same pattern as the group median: the contribution of mortality reduction at age 60 and above to the net change in life expectancy at birth was greater than that due to mortality reduction at ages 15 to 60, which, in turn, was greater than that due to mortality reduction at ages 0 to 14 (figure 22). The one exception is Qatar, where improved survival among children and older persons each contributed more (0.9 years and 1.2 years, respectively) to the net change in life expectancy at birth than the 15 to 60 age group (0.6 years).

In turn, variability in extent of improvement in life expectancy at birth across the 33 low mortality countries is driven primarily by differential progress in reducing mortality risks above age 60. Figure 23 details the age-specific contribution to the changes in life expectancy at birth since the ICPD in two low mortality countries: Ireland and the United States of America. In 1990-1995 both countries had life expectancies of around 75 years. In the two decades that followed, Ireland experienced fairly rapid gains in survival, improving life expectancy by 5.3 years, while the United States had relatively slow gains, improving life expectancy by 3.2 years over the same period of time. The top chart of figure 23 shows the age patterns of mortality in the two countries for the periods 1990-1995 and 2010-2015. In the earlier period, the age patterns of mortality differed somewhat between the two countries, with the United

States showing higher mortality rates than Ireland up to age 50, while Ireland had higher mortality rates than the United States at ages 60 and higher. In both countries, mortality risks fell since the ICPD across the full age range. In 2010-2015, age-specific mortality risks up to age 60 were higher in the United States relative to Ireland, while above age 60 the mortality rates in the two countries were similar.

Figure 23. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Ireland and the United States of America decomposed by age (both sexes combined)

United States of America 1990-1995: 75.6 years 2010-2015: 78.9 years Change: 3.2 years Ireland 1990-1995: 75.3 years 2010-2015: 80.6 years Change: 5.3 years

Age-specific mortality rates



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision.* New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

Decomposing the change over time in the life expectancies at birth in Ireland and the United States clearly illustrates that Ireland's faster progress in life expectancy over the past 20 years is due to the country's greater success in reducing mortality risks at older ages. The middle chart of figure 23 shows the number of years of life expectancy at birth added between 1990-1995 and 2010-2015 due to changes in mortality risks at each age. Above age 45, the gains to life expectancy at birth due to mortality reduction at each age recorded by Ireland were substantially higher than those recorded by the United States. At age 70-74, for example, mortality reductions contributed nearly one whole additional year of life expectancy at birth in Ireland, but only around 0.4 additional years in the United States. Looking at three broad age ranges in the bottom chart of figure 23, we see that Ireland and the United States achieved similar gains in life expectancy due to reduced mortality risks at ages 0 to 15 and ages 15 to 60. However, reduced mortality risks above age 60 added 3.8 years to the life expectancy at birth in Ireland and just 1.9 years in the United States, virtually fully accounting for the 2.1-year difference in change in life expectancy between the two countries.

A comparison of the sources of change in life expectancy in Singapore and Cyprus – two of the 11 low mortality countries located outside of Europe and Northern America – similarly points to differential progress in reducing mortality at older ages as the primary explanation for differences in the pace of improvement of average survival (figure 24). Both countries had life expectancy at birth very close to 77 years at the time of the ICPD. By 2010-2015, Cyprus added 2.8 years to its life expectancy at birth, while Singapore added 5.2 years. Reductions in child mortality among children aged 0-15 added more years of life expectancy in Cyprus than in Singapore (0.5 years compared to 0.3 years), but at ages 15-60 and 60 and above, mortality reductions contributed more years of life expectancy at birth in Singapore than in Cyprus. Mortality reductions above age 60 added 3.5 years to the life expectancy at birth in Singapore since the ICPD, compared to just 1.5 years in Cyprus.

Sex differences in improvements in survival at older ages are especially relevant to understanding trends in the life expectancy at birth among low mortality countries. Meslé and Vallin (2006) noted a slowing in the pace of mortality reduction among older females in the United States and the Netherlands, in contrast to countries like France and Japan which had maintained their pace of increase in survival among older females. Indeed the more rapid decrease in mortality among older females in Japan relative to those in the Netherlands explains most of Japan's faster progress in life expectancy at birth overall (figure 25). Since the ICPD, Japan added 4.1 years to the life expectancy at birth for both sexes combined, increasing it from 79.4 years in 1990-1995 to 83.5 years in 2010-2015. Progress in the Netherlands was somewhat less: life expectancy at birth for both sexes combined increased 3.7 years from 77.3 years in 1990-1995 to 80.9 years in 2010-2015. Examining the trends in life expectancy in the two countries by sex gives a more nuanced picture of the drivers of change in life expectancy since the ICPD. A comparison of the change in male life expectancy in the Netherlands and Japan leads to a conclusion that is opposite that from the comparison of both sexes combined: male life expectancy at birth in the Netherlands increased more than that in Japan over the two decades since the ICPD (4.7 years vs. 3.8 years). Mortality reductions between ages 20 and 80 added more years of life expectancy among males in the Netherlands than in Japan and taken together, exceeded Japan's superior progress in life expectancy in males above age 80. For females, Japan added more years of life expectancy due to reductions in mortality especially above age 60 compared to the Netherlands. Improved survival above age 60 added close to 4 years to female life expectancy in Japan, but only around 2 years to female life expectancy in the Netherlands.

Figure 24. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Cyprus and Singapore decomposed by age (both sexes combined)

 Cyprus 1990-1995: 76.9 years
 2010-2015: 79.8 years
 Change: 2.8 years

 Singapore 1990-1995: 77 years
 2010-2015: 82.2 years
 Change: 5.2 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Age

Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

Figure 25. Change in life expectancy at birth between 1990-1995 and 2010-2015 in the Netherlands and Japan decomposed by age (both sexes combined, males and females)

Both sexes combined

Netherlands 1990-1995: 77.3 years 2010-2015: 80.9 years Change: 3.6 years Change: 4.1 years Japan 1990-1995: 79.4 years 2010-2015: 83.5 years

Males

Netherlands 1990-1995: 74.2 years 2010-2015: 78.9 years Change: 4.7 years Japan 1990-1995: 76.3 years 2010-2015: 80 years Change: 3.7 years

Females

Netherlands 1990-1995: 80.2 years 2010-2015: 82.8 years Change: 2.6 years Japan 1990-1995: 82.4 years 2010-2015: 86.9 years Change: 4.5 years















Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

Examining the sex-specific changes in life expectancy in Denmark and France also reveals differences in the trends between the two countries that are not evident when looking at both sexes combined (figure 26). Life expectancy at birth for both sexes combined in 1990-1995 was 75.2 years in Denmark and 77.3 years in France. In the ensuing two decades, both countries would add just over 4 years to average survival and the age patterns of contribution to the increases in life expectancy at birth were similar, with more than two years of the gain attributable to mortality reductions above age 60, another 1.5 years due to mortality decline between ages 15 and 59, and the remaining 0.5 years due to mortality reductions in childhood (top charts of figure 26). But in fact, while the magnitude of the increase in female life expectancy was similar in Denmark and France (3.4 years and 3.7 years, respectively) the age pattern of increase in life expectancy at birth for females was quite different for the two countries. Specifically, France increased female life expectancy through reductions in mortality at older ages relative to Denmark (bottom charts of figure 26). In France, the five-year age group that contributed most to improvements in female life expectancy was 80-84 years, while in Denmark it was 65-69 years.

Explanations for differential progress in survival at older ages for low-mortality countries.

Among high-income countries, the life expectancy at age 50 (both sexes combined) shows a fairly strong association with per capita gross domestic product and that association has strengthened since the mid-20th century as improvements in survival at older ages have come to hinge less on the prevention and treatment of infectious diseases and more on the reduction of mortality associated with non-communicable diseases (Glei, Meslé and Vallin, 2010). In the late stages of this epidemiological transition, advances in treatment and lifestyle changes result in large declines in mortality risks, in particular those stemming from cardiovascular diseases (Olshansky and Ault, 1986). The successes of mortality reduction in the low-mortality countries extend even to the very old ages (Rau et al., 2008) and have been observed to be quite rapid in high-income countries in recent years (Mackenbach et al., 2013).

Yet several countries in the low-mortality group lag behind others in reducing mortality at older ages. Detailed comparative studies of the causes of such lags are available only for a selection of countries with high-quality data on causes of death. Smoking, the effects of which follow trends in smoking prevalence with a lag of decades, is the most well-identified cause of divergent trends (e.g., Glei, Meslé and Vallin, 2010; Janssen, Kunst and Mackenbach, 2007; Staetsky, 2009). The damage caused by smoking was estimated to account for 78 per cent of the gap in life expectancy at age 50 for women and 41 per cent of the gap for men between the United States and other high-income countries in 2003 (Preston, Glei and Wilmoth, 2010). Netherlands and Denmark were noted as two other countries with poor life expectancy trends relative to other high-income countries, and where again smoking was identified as a factor (National Research Council, 2011). The causes of death for which smoking has an obvious impact in determining overall trends in mortality are lung cancer and respiratory diseases (Glei, Meslé and Vallin, 2010).

Other risk factors have also been examined for their influence on differential pace of mortality decline across countries, but the results are less conclusive. Obesity, for example, was estimated to account for one-fifth to one-third of the gap in life expectancy at age 50 between the United States and other high-income countries, but other factors such as physical activity and health care systems are thought to play an important role as well (National Research Council, 2011). In the Netherlands, increases in health care expenditures that improved the availability of health care for older persons may have played a role in accelerating improvements in old-age survival in the early 2000s (Mackenbach and Garssen, 2010).

Figure 26. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Denmark and France decomposed by age (both sexes combined, males and females)

Both sexes combinedDenmark 1990-1995: 75.2 years
France 1990-1995: 77.3 years2010-2015: 79.3 years
2010-2015: 81.7 yearsChange: 4.1 years
Change: 4.4 yearsDenmark 1990-1995: 72.5 years
France 1990-1995: 73.1 yearsMales
2010-2015: 77.2 years
2010-2015: 78.2 yearsChange: 4.7 years
Change: 5.1 years

Denmark 1990-1995: 78 years France 1990-1995: 81.4 years
 Females
 Change: 3.4 years

 2010-2015: 81.4 years
 Change: 3.7 years

 2010-2015: 85.1 years
 Change: 3.7 years

Both sexes combined



Verse of life expectancy at pittered at pi





Age





Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

2. Low-intermediate mortality countries

The age patterns of contribution to the total change in life expectancy to 2010-2015 are more varied among the 54 low-intermediate mortality countries compared to the low mortality countries (figure 22). For 29 of the 54 countries, the pattern is similar to that of the low-mortality group: mortality reductions at age 60 and above contributed the most to overall change in life expectancy, followed by ages 15 to 60 and ages 0 to 15. The median for the group reflects this pattern: 1.8 years of life expectancy at birth were gained through improved survival at ages 60 and above; an additional 1.4 years were added due to improved survival at ages 15 through 60; and 0.9 years of the total gain was achieved through gains in survival among children. In contrast, in six of the countries in the low-intermediate mortality group (Barbados, Jamaica, Malaysia, Mauritius, Seychelles and Sri Lanka) the contribution of the 15 to 60 year age group to overall change in life expectancy at birth exceeded that of the other two age groups.

Figure 27 illustrates the implications of these patterns for improvements in life expectancy in two low-intermediate mortality countries: Malaysia and the Republic of Korea. In 1990-1995 the levels and age patterns of mortality in the two countries were similar: life expectancy at birth for both sexes combined in Malaysia was 71.3 years, while in the Republic of Korea it was 72.9 years. By 2010-2015, Malaysia had added 3.6 years of life expectancy, just below the median 4 year increase among low-intermediate mortality countries, but the Republic of Korea had improved life expectancy at more than double that pace, adding 8.5 years by 2010-2015.

Decomposing the contributions to changes in life expectancy by age in Malaysia and the Republic of Korea shows that Korea's superior progress was due to its larger reductions in mortality above age 15. Reductions in child mortality were similar in the two countries, with both adding just under one year of life expectancy at birth as the result of improved survival between ages 0 and 14. Mortality reductions between age 15 and 60, however, yielded an improvement in life expectancy in the Republic of Korea that was more than double that in Malaysia (3.3 years versus 1.4 years). The disparity in survival gains above age 60 were even greater, with the Republic of Korea adding 4.2 years of life expectancy due to improved survival at older ages compared to Malaysia's 1.3 years.

With life expectancy at birth for both sexes combined of 74.9 years in 2010-2015, Malaysia is well within reach of the ICPD target of 75 years by 2015. Notably, life expectancy among females in Malaysia has already surpassed that target, having increased from 73.3 years in 1990-1995 to 77.3 years in 2010-2015, but life expectancy among males has fallen just short of the target, having increased from 69.5 years to 72.7 years over the same period. In the Republic of Korea, female life expectancy at 84.6 years in 2010-2015 is among the highest in the world²⁸. In the twenty years since the ICPD male life expectancy has increased faster than female life expectancy in the Republic of Korea (9.2 years versus 7.6 years), shrinking the female advantage in survival from 8.3 years to 6.7 years.

A comparison of the age decomposition in life expectancy change since the ICPD for Bulgaria and Slovakia again illustrates the differences in the age patterns of mortality risk reduction (figure 28). Both countries had low-intermediate levels of mortality at the time of the ICPD, with life expectancy at birth of 71.1 years in Bulgaria and 71.6 years in Slovakia for the period 1990-1995. In the ensuing two decades, Slovakia gained 3.7 years of life expectancy, inching just beyond the ICPD target of 75 years by 2015, and Bulgaria gained 2.3 years, falling just short of the target. The numbers of added years of life expectancy attributed were generally similar for the two countries up to age 40. However, the number of years of average survival gained due to mortality reductions above age 40 was substantially larger for Slovakia compared to Bulgaria. In particular between ages 45 and 64 Bulgaria's gains to life expectancy at birth were less than half those in Slovakia. Estimates from the Global Burden of Disease suggest that

²⁸ Behind Japan, Hong Kong, Spain, France, Italy, Switzerland and Australia.

Slovakia was more successful at lowering death rates from cardiovascular diseases and cancer, while in Bulgaria death rates from these causes remained largely stagnant (IHME, 2013).



Malaysia 1990-1995: 71.3 years 2010-2015: 74.9 years Change: 3.6 years Republic of Korea 1990-1995: 72.9 years 2010-2015: 81.4 years Change: 8.5 years



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>
Figure 28. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Bulgaria and Slovakia decomposed by age (both sexes combined)

 Bulgaria 1990-1995: 71.1 years
 2010-2015: 73.5 years
 Change: 2.3 years

 Slovakia 1990-1995: 71.6 years
 2010-2015: 75.3 years
 Change: 3.7 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

Among the 54 low-intermediate mortality countries, the second most common pattern of age contributions to changes in life expectancy at birth is similar to what was observed for Qatar among the low mortality countries, where the contributions of mortality reductions in both childhood and older ages were greater than the contribution of mortality reductions at ages 15-60. In Panama, for example, improved survival among children added 1.3 years to the life expectancy at birth between 1990-1995 and 2010-2015 and improved survival among older adults added another 2.3 years, but lower mortality between ages 15 and 60 contributed only 0.4 additional years to the life expectancy at birth. Other countries in this group and with a similar age pattern include Albania, Argentina, Belize, Ecuador, Kuwait, Saint Lucia, Syrian Arab Republic, TFYR Macedonia, Thailand, Tunisia, Viet Nam, and Venezuela.

Belize stands out among the low-intermediate mortality countries in that the contribution of mortality change in the 15-60 age group to overall changes in life expectancy was negative (-0.3 years). Only two other countries in this group – Iraq and the Democratic People's Republic of Korea – also had negative gains to life expectancy due to increased mortality risks between ages 15 and 60. The impact of the higher adult mortality rates on Belize's progress in life expectancy since the ICPD is evident in a comparison of the age-decomposition of changes in life expectancy for Belize and Mexico (figure 29). The two countries had similar gains in life expectancy attributable to decreasing mortality risks in childhood and above age 60, but while Belize lost 0.3 years of life expectancy at birth due to changing mortality risks at ages 15-60, Mexico gained 1.8 years of life expectancy at birth. Thus while Mexico met and surpassed the ICPD target of 75 years, increasing life expectancy at birth from 71.8 years to 77.4 years in the 20 years since the Programme of Action was adopted, Belize has thus far fallen short of that target with an increase in average survival from 70.6 years to 73.8 years over the same period. The centre chart of figure 29 indicates that losses of life expectancy in Belize were primarily due to increasing mortality risks between ages 20 and 44, with higher mortality rates in the 25-29 age group contributing the greatest loss in average survival between the ICPD period and today. Heightened mortality risks due to violence (IHME, 2013) as well as a rise in deaths due to HIV/AIDS (UNAIDS, 2013) likely account for much of the estimated increase in young adult mortality Belize.

Three countries in the low-intermediate mortality group— Democratic People's Republic of Korea, Iraq and Montenegro—saw no appreciable change in the life expectancy at birth between 1990-1995 and 2010-2015. The age-decomposition in change in life expectancy for Iraq and Montenegro (figure 30) illustrates that while the net impact on life expectancy was generally neutral, important changes did occur in mortality risks by age. In Iraq, improvements in the survival of infants (ages 0-1) and young children (ages 1-4) together contributed more than one additional year of life expectancy at birth since 1990-1995, but increases in mortality risks above age 5 negated that progress such that the overall impact on life expectancy at birth was negative (-0.8 years). Lower survival prospects today relative to the ICPD period within the 15-60 year age range contributed to a loss of 1.2 years of life expectancy at birth by 0.6 years. The patterns estimated for Iraq reflect the heightened mortality risks that directly or indirectly relate to the invasion, occupation and insurgency since 2003 and the associated political, economic and social turmoil, although studies estimating excess mortality due to the conflict vary widely in their findings (Hagopian et al., 2013; Tapp et al., 2008).

In Montenegro, mortality reductions among infants alone contributed and added 0.6 years of life expectancy at birth, but mortality risks between ages 5 and 44 changed very little, and above age 45 mortality risks increased, contributing to losses of life expectancy. The net result is no change in life expectancy at birth in Montenegro between 1990-1995 and 2010-2015, since gains achieved in childhood survival were effectively cancelled out by reduced survival prospects at older ages.

3. High-intermediate and high mortality countries

For both the high-intermediate and high mortality groups of countries, the modal age pattern of gains in life expectancy is the reverse of what is observed for the other two groups with mortality reductions among children contributing more to overall change in life expectancy than both mortality reductions

among adults of working and reproductive ages and mortality reductions at advanced ages. Among the high-intermediate mortality group, where life expectancy ranged between 60 and 70 years at the time of

Figure 29. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Belize and Mexico decomposed by age (both sexes combined)

 Belize 1990-1995: 70.6 years
 2010-2015: 73.8 years
 Change: 3.2 years

 Mexico 1990-1995: 71.8 years
 2010-2015: 77.4 years
 Change: 5.5 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml

Figure 30. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Iraq and Montenegro decomposed by age (both sexes combined)

Iraq 1990-1995: 70.3 years 2010-2015: 69.4 years Change: -0.8 years Montenegro 1990-1995: 74.7 years 2010-2015: 74.8 years Change: 0 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

the ICPD, the median contribution of the 0-14 age group to gains in life expectancy at birth was 2.1 years, which is greater than the median contributions of both the 15-60 age group (1.3 years) and the 60 and over age group (1.1 years). This pattern was observed for 32 of the 61 countries in this group. Among the high mortality group, where life expectancy was below 60 years in 1990-1995, the median contribution of the 0-15 year age group was 4.7 years, which is substantially greater than the 1.8 years contributed by the 15-60 year age group and the 0.5 years contributed by the 60 and over age group. This pattern was observed in 47 of the 53 high mortality countries.

a. Differential progress in child mortality

The degree to which high-intermediate and high mortality countries succeeded in extending life expectancy at birth in the two decades since the ICPD hinged to a large extent on their success in improving the survival of children. The importance of child survival to progress towards the ICPD life expectancy targets is evident in a comparison of the age-specific contributions to gains in the length of life in Pakistan and Bangladesh in figure 31. In 1990-1995 the life expectancy at birth was similar in the two countries at 61.9 years in Pakistan and 61.3 years in Bangladesh. The top chart in figure 31 suggests that the age patterns of mortality were similar in the two countries as well. However, success in extending life expectancy at birth differed substantially in the 20 years since the ICPD with Pakistan adding 4.6 years and Bangladesh adding 9.2 years. The middle and bottom charts of figure 31 describe how Bangladesh's superior progress relative to Pakistan was due to larger mortality reductions at all ages, but especially in childhood and, specifically, among infants in the first year of life. Of Bangladesh's 9.2-year gain in the life expectancy at birth, 4 years are attributable to reductions in infant mortality. In contrast, Pakistan gained less than 2 years of life expectancy due to reductions in infant mortality alone.

This is not to say that improvements in adult survival were not powerful determinants of progress towards the ICPD life expectancy targets among high-intermediate and high mortality countries as well. At the time of the ICPD both Nigeria and Ethiopia were in the early stages of the demographic transition with high mortality rates at all ages and life expectancy at birth below 50 years (46.1 years in Nigeria and 47.9 years in Ethiopia) (figure 32). In the ensuing two decades Ethiopia achieved remarkable progress, extending the average length of life by more than 15 years to reach 63.3 years in 2010-2015. Progress was much slower in Nigeria, which added 6.2 years to the life expectancy at birth over the same period, failing even to surpass 60 years by 2010-2015. Much of the gap in progress between the two countries was due to differential success in improving child survival: Nigeria gained 5.5 years of life expectancy (accounting for close to 90 per cent of the total gain) due to mortality reductions between ages 0 and 14 while Ethiopia gained close to 10 years of life expectancy due to mortality reductions in that age range. An additional 4.5 years of Ethiopia's total gain in life expectancy was achieved through mortality reductions between aged 15 and 60, but in Nigeria mortality risks remained nearly unchanged in this age range between 1990-1995 and 2010-2015, contributing only 0.5 years to the total gain in average survival.

The reduction of child mortality has attracted massive global commitment as part of the Millennium Development Goals (MDG), and international monitoring and advocacy has intensified as the 2015 deadline of the MDGs approaches (e.g., iERG, 2012; UNICEF, 2013). The most common causes of childhood mortality in the high-mortality countries are well identified, as are the most successful and promising interventions (Bryce et al., 2013). But determining why some countries have achieved success in improving intervention coverage and lowering under-five mortality while others have not is less than straightforward. Systematically identifying determinants of change in health service coverage has been difficult (Feng et al., 2012; Peters et al., 2009; Walker et al., 2013), and thus much recent literature has focused on case studies of successful countries, a few of which are highlighted here.

Figure 31. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Pakistan and Bangladesh decomposed by age (both sexes combined)

Pakistan 1990-1995: 61.9 years 2010-2015: 66.5 years Change: 4.6 years Bangladesh 1990-1995: 61.3 years 2010-2015: 70.5 years Change: 9.2 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml

Figure 32. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Nigeria and Ethiopia decomposed by age (both sexes combined)

 Nigeria 1990-1995: 46.1 years
 2010-2015: 52.3 years
 Change: 6.2 years

 Ethiopia 1990-1995: 47.9 years
 2010-2015: 63.3 years
 Change: 15.4 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision.* New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

For example, in a recent review by Balabanova et al. (2013), Bangladesh's successes in mortality reduction were attributed to high level political commitment, to effective policies including family planning, distribution of essential medicines, and innovations in human resources development and service delivery. An analysis by Gill et al. (2013) found that Bangladesh was particularly successful in improving case management of pneumonia and diarrhoea among children. In Ethiopia, the Balabanova et al. review found that effective leadership and peace and stability enabled the country to effectively use international aid to scale up a health extension programme to train community health workers, and prioritized investment in primary care infrastructure, essential drugs supplies, and management information.

In Niger (Amouzou et al., 2012), child mortality was reduced through improved access to health care – a combination of building more health posts, better ensuring their functionality, and removing user fees – together with mass campaigns for selected interventions (immunizations, insecticide treated bednets) and nutrition policies that included the building nutritional rehabilitation centres, targeted cash transfers and food for work initiatives. Distal determinants such as biodemographic variables, GDP and poverty did not play an identifiable role. Little progress was achieved in Niger toward the reduction of neonatal mortality, illustrating the difficulty and priority of getting at this more stubborn challenge.

For the United Republic of Tanzania, Masanja et al. (2008) identified increased health expenditures, decentralization of the health system, and improved intervention coverage with sharp reductions in under-five mortality between 2000 and 2004. According to Farmer et al. (2013), Rwanda ensured that funding provided for disease-specific programmes also supported strengthening of the health system, has begun the task of increasing its health workforce, instituted nationwide community-based health insurance, and is an early adopter of innovative technology, clinical interventions, and programmes.

Pison et al. (2013), using cause of death data from three long-established demographic surveillance sites (DSS) in Senegal, were able to pinpoint faltering vaccination coverage and the resurgence of chloroquine-resistant malaria resurgence as causes of stalled decline in under-five mortality in the 1990s. Recent rapid declines in under-five mortality in Senegal are attributed to strengthened vaccination programmes and malaria control programmes, including artemisinin-based combination therapy, rapid diagnostic tests, and mass distribution of insecticide-treated nets.

Frost and Pratt (2012) qualitatively synthesized studies of mortality decline in country contexts to ascertain whether common factors could be identified for those countries that were successful in reducing child mortality²⁹. The factors they identified were: rollout of key cost-effective interventions, which was managed by some countries even in difficult economic or political circumstances, or when other indicators of social progress have stalled; expansion or improvement of health workforce or facilities; favourable policy environment and leadership; improved financing mechanisms and removing payment barriers to health services; and social factors such as female education. They also found that the most important factors contributing to child mortality reductions could vary by time and context.

b. HIV/AIDS

Among many of the high-intermediate and high mortality countries, specific challenges to improved survival in the working and reproductive ages shaped progress towards the ICPD life expectancy targets. HIV/AIDS is a prominent example, having reversed previous gains in survival among adults in numerous highly affected countries, especially in Southern Africa. While HIV/AIDS causes increases in child mortality as well, its impact on adult mortality is proportionately far greater (Sharrow et al., 2013), although rapid recuperation in survival can be achieved with wide coverage of ART (Bor et al.,

²⁹ The report examined case studies of maternal mortality as well.

2013). The variable impact of AIDS mortality on countries' progress towards the ICPD targets is evident in a comparison of the age decomposition of changes in life expectancy in Uganda and South Africa (figure 33), two countries highly affected by the epidemic. HIV arrived in Uganda early in the course of the global epidemic, such that at the time of the ICPD adult HIV prevalence in Uganda was 12.1 per cent (UNAIDS, 2013) and life expectancy at birth had declined by several years since the 1980s, reaching a very low 46.5 years in 1990-1995. By 2010, however, adult HIV prevalence in Uganda had fallen to 7.0 per cent as the result of both prevention and treatment initiatives, and life expectancy at birth for the 2010-2015 period was estimated at 59 years. While this progress falls well short of the target of 70 years that ICPD delegates aspired to for high mortality countries, Uganda's 12.6-year absolute change in life expectancy puts it among the world's top achievers for the 20 years since the ICPD. Of Uganda's total gain in life expectancy, 5.6 years (45 per cent) was due to mortality reductions between ages 15 and 60 (bottom chart of figure 33).

South Africa's HIV/AIDS epidemic began later than Uganda's and while some benefits of prevention and treatment have begun to be realized, HIV prevalence has not yet declined in the country. At the time of the ICPD, adult HIV prevalence in South Africa was 3.1 per cent, but in 2010 it stood at 17.6 per cent (UNAIDS, 2013). Mortality rates between ages 20 and 50 in South Africa are considerably higher than they were in 1990-1995 (top chart of figure 33) and life expectancy in the country is 5.2 years lower³⁰. Changing mortality risks in the working and reproductive ages 15-60 years contributed a 5.6 year reduction in the life expectancy at birth in South Africa, which was offset slightly by improvements in survival at older ages.

Kenya and the United Republic of Tanzania are two neighbouring AIDS-affected countries that experienced different trajectories of mortality reduction since the ICPD. In 1990-1995 Kenya was farther along in its mortality transition with a life expectancy at birth of 58.1 years, compared to 49.7 years in the United Republic of Tanzania. In the 20 years since, progress in survival in Kenya was more modest than that in the United Republic of Tanzania, with a 3.5-year gain in life expectancy at birth in the former, compared to 11.7 years in the latter. In both countries, generalized HIV/AIDS epidemics took hold in the late 1980's and by the time of the ICPD in 1994 adult HIV prevalence had reached 8.4 per cent in Kenya and 7.8 per cent in the United Republic of Tanzania (UNAIDS, 2013). Prevalence peaked in both countries in 1996-1997 and has since declined to 6.1 per cent and 5.1 per cent, respectively.

Given the similar experiences with respect to HIV/AIDS in Kenya and the United Republic of Tanzania, differences in the course of mortality reduction during the post-ICPD period are likely to be the result of differences in the age-specific risks of death from non-AIDS causes. The age decomposition of changes in life expectancy at birth in the two countries over time (figure 34) indicates that the United Republic of Tanzania added more years of life expectancy due to mortality reductions at each age relative to Kenya. As noted above, the United Republic of Tanzania has made substantial gains in child survival, gaining close to 7 additional years of life expectancy at birth due to improvements in survival between birth and age 15, compared to a gain of 2.1 years in Kenya. The number of years of life expectancy added due to improved survival at ages 15-60 in Tanzania was nearly four times that in Kenya (3.6 years vs. 0.9 years), and Tanzania outpaced Kenya in added life expectancy due to mortality reduction above age 60 as well (1.1 years vs. 0.5 years). The differential pace of progress in life expectancy between the two countries means that by 2010-2015, the United Republic of Tanzania is estimated to have caught up to Kenya with respect to average survival. Both countries are estimated to have life expectancy at birth around 61 years.

³⁰ This represents a recovery since 2000-2005, at which point the loss of life expectancy since 1990-1995 had reached 10 years.

Figure 33. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Uganda and South Africa decomposed by age (both sexes combined)

Uganda 1990-1995: 46.5 years 2010-2015: 59 years Change: 12.6 years South Africa 1990-1995: 62.3 years 2010-2015: 57.1 years Change: -5.2 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

Figure 34. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Kenya and United Republic of Tanzania decomposed by age (both sexes combined)

Kenya 1990-1995: 58.1 years 2010-2015: 61.6 years Change: 3.5 years United Republic of Tanzania 1990-1995: 49.7 years 2010-2015: 61.4 years Change: 11.7 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision*. New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml</u>

c. Premature deaths from NCDs

Eastern Europe

While AIDS-related mortality was chiefly responsible for the negative progress in countries that lost years of life expectancy at birth in the 20 years since the ICPD, premature mortality due to noncommunicable diseases and associated risk factors are blamed for stalled progress in survival in several countries. Particularly in several former Soviet republics such as Kazakhstan, the Russian Federation and Ukraine, increased mortality risks following the breakup of the Soviet Union associated with noncommunicable diseases and external causes have led to deterioration in survival prospects of working and reproductive aged adults, cancelling out gains achieved in child and old-age survival.

Figure 35 illustrates this phenomenon by comparing the results of the age decomposition of change in life expectancy in the 20 years since the ICPD in Ukraine and neighbouring Romania. In 1990-1995 life expectancy at birth in the two countries was similar, at around 69 years. In the ensuing 20 years Romania added 4.1 years of life expectancy at birth, but average survival in Ukraine remained essentially unchanged with a net loss of 0.3 years. Romania's success in increasing life expectancy resulted from mortality reduction at all ages: each of the three broad age ranges (0-15 years, 15-60 years and 60+ years) contributed about 1.4 additional years of life expectancy in Romania. In contrast, while Ukraine achieved reductions in child mortality—the reduction of infant mortality alone contributed close to 0.4 years of life expectancy at birth. The bottom chart of figure 35 shows that the net contribution of the 15-60 age group to the overall change in life expectancy at birth in Ukraine was -0.9 years.

The Russian Federation experienced a deterioration in survival prospects among adults in the years since the ICPD similar to that of Ukraine, although unlike Ukraine where survival probabilities between ages 15 and 60 have held relatively unchanged since around 1995, the Russian Federation has seen a rebound in adult survival prospects over the past 10 years, returning close to the 1990-1995 levels. Figure 36 compares the age components of change in life expectancy at birth in the Russian Federation from 1990-1995 to 2010-2015 to those in Estonia, a former Soviet republic where the deterioration in adult survival in the wake of the breakup of the Soviet Union was relatively brief and where improvements in adult mortality have been sustained since the ICPD. Between 1990-1995 and 2010-2015, Estonia added 5.8 years to average survival, increasing the life expectancy at birth from 68.5 years to 74.3 years. The survival gains in Estonia occurred throughout the age range: 1.3 years of life expectancy at birth were added due to improved survival at ages 0-15, 2.6 years at ages 15-60, and 2.0 years at ages 60 and over. In the Russian Federation, however, the net change in life expectancy at birth in the 20 years since the ICPD was only 1.3 years. While the added life expectancy attributable to improved survival at ages 0 to 15 was similar to that in Estonia (1.1 years), the Russian Federation recorded zero gains to life expectancy attributable to the broad age range 15-60 and only 0.3 years due to improved survival above age 60.

The experience of the Russian Federation and Ukraine contrasts to other Eastern European countries that began to see a downward trend in adult mortality rates starting in the early 1990s, just before ICPD (Rechel et al., 2013; Vallin and Mesle, 2004). Differences were due primarily to divergent trends in deaths from cardiovascular disease (Luy et al., 2011), but also to rising rates of external causes of death. The main proximal driver of these trends was excessive alcohol consumption (Leon et al., 2010; Rechel et al., 2013). Alcohol control policies have been weak in both the Russian Federation and Ukraine, and illegal production is widespread (Neufeld and Rehm, 2013). Additional important proximal causes of adult mortality that have shaped the trends observed in Eastern Europe include tobacco consumption, unhealthy diets, and lack of quality health care (Rechel et al., 2013). However, Murphy (2011)

emphasizes that it is not possible to disentangle the effects of social and economic disruption after the break-up of the USSR from longer-term trends in the proximal causes just mentioned.

Figure 35. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Ukraine and Romania decomposed by age (both sexes combined)





Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision.* New York: United Nations. Access interactive chart online: <u>http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-</u>2013.shtml

Figure 36. Change in life expectancy at birth between 1990-1995 and 2010-2015 in Russian Federation and Estonia decomposed by age (both sexes combined)

Russian Federation 1990-1995: 66.6 years 2010-2015: 67.9 years Change: 1.3 years Estonia 1990-1995: 68.5 years 2010-2015: 74.3 years Change: 5.8 years



Age-specific mortality rates

Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at different ages



Change in life expectancy at birth between 1990-1995 and 2010-2015 due to change in mortality risks at three broad age ranges



Source: Results of age-decomposition of life tables from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations. Access interactive chart online: http://www.un.org/en/development/desa/population/publications/mortality/world-mortality-report-2013.shtml

While the lack of progress in life expectancy over the aggregate implementation period of the Programme of Action appears dire, the most recent trends give reason for optimism. The Russian Federation and other states of the former USSR have experienced clear progress in life expectancy improvement since about 2004 (Shkolnikov et al., 2013). Recent improvements have been driven mainly by decreases in cardiovascular mortality and in deaths due to external causes, supported by favourable declining trends in other causes of death, including tuberculosis. Improvements in blood pressure control are a contributing factor to the reductions in cardiovascular mortality. However, these countries still lag behind Western Europe in tobacco and alcohol control policy measures that could contribute to further improvements in adult survival into the future (Mackenbach et al., 2013).

Other intermediate and high mortality countries

While the best-documented increases in NCD mortality have occurred in countries of the former USSR, premature mortality from NCDs is a concern throughout the high-intermediate, low-intermediate, and high mortality groups. While rates of deaths from most NCDs are not necessarily increasing, the number of deaths and burden of disability from NCDs are increasing as infectious diseases are conquered, and more people survive to the ages where NCDs set in (Lozano et al., 2012; United Nations, 2012). Almost 80 per cent of global NCD deaths occur in low- and middle-income countries (IHME, 2013; WHO, 2013) and age-standardized NCD death rates are higher in these countries than in high-income countries.

NCD burdens are rising at a time when health systems still must devote considerable resources to infectious disease control. For example, Mayosi et al. (2009, 2012) describe how South Africa faces myriad challenges to health: the HIV/AIDS epidemic noted above and related burden of tuberculosis; persistent child health issues such as pneumonia and malnutrition; worsening risk factors for NCDs; and injuries and interpersonal violence. In sub-Saharan Africa overall, while communicable diseases, maternal, perinatal, and nutritional conditions remain leading causes of the disease burden, NCDs are responsible for the majority of deaths over age 45 (Farrington and Marquez, 2013) and age-standardized NCD death rates are higher than in any other region (WHO, 2011).

Biological risk factors for cardiovascular disease, including body mass index, blood glucose, systolic blood pressure and serum total cholesterol are a major concern in low- and middle-income countries. Body mass index has been rising since 1980 throughout the world (Finucane et al., 2011), as have average fasting plasma glucose levels and age-standardized rates of diabetes (Danaei et al., 2011a). Average serum cholesterol levels have risen in East Asia and the Pacific while remaining essentially unchanged in most developing regions (Farzadfar et al., 2011). Systolic blood pressure has been rising in several regions, including South-eastern and Southern Asia and in parts of Africa (Danaei et al., 2011b). Combined with trends in behaviours such as tobacco use and unhealthy diets, these factors could create an environment where rapid progress against NCD mortality will be hard to achieve without significant expansion of prevention efforts and treatment availability.

Tobacco smoking is now a leading risk factor for death and disability in most world regions (Lim et al., 2012). Studies quantifying the impact of tobacco use on life expectancy in developing countries are only emerging (Jha, 2009). Palloni (2013) found that smoking has already had a measurable impact on life expectancy at advanced ages in several countries in Latin America and the Caribbean where data on smoking trends and causes of death were available, and the effect varies with the length and size of the tobacco epidemic in each country. He estimated that smoking had curtailed the rise in life expectancy at age 50 by between four and six years in Argentina, Cuba and Uruguay (about 20 per cent of their current life expectancy at age 50), somewhat less than four years in Chile (about 15 per cent), and less than two years in Brazil and Mexico (about 8 per cent). This dampening effect of smoking is likely to grow larger in the near future as the smoking epic matures, similar to what was seen several decades ago in Northern America and Europe.

d. Conflict and violence

While some high-intermediate and high mortality countries experienced stalled or reversed progress in adult survival as a result of HIV/AIDS or premature mortality risks associated with noncommunicable diseases, in several others the trajectories towards the ICPD life expectancy targets were shaped by the experience of conflict-related mortality. In Rwanda, for example, which was rocked by genocide in 1994, life expectancy at the time of the ICPD at 23 years was lower than it had been at any point in the previous half century (figure 37). In Bosnia and Herzegovina the period surrounding the ICPD was also a time of conflict: the Bosnian War spanned from 1992 to 1995. Life expectancy in the population in 1990-1995 was just under 64 years, having fallen to a level last seen 30 years prior. Excess mortality associated with the Indonesian occupation of Timor-Leste began well before the ICPD period, in the mid-1970's, but continued through 1999. Because the post-ICPD marked the conflict recovery period, Rwanda, Bosnia and Herzegovina and Timor-Leste achieved among the largest absolute increases in life expectancy at birth globally between 1990-1995 and 2010-2015 (41 years, 17 years and 13 years, respectively). In other countries where conflict has been ongoing in the period since the ICPD, such as the Democratic Republic of the Congo and the Central African Republic, progress towards the ICPD life expectancy targets appears to have stalled. In both countries, life expectancy at birth in 2010-2015 is estimated to remain below 50 years.





Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

While the mortality estimates in *World Population Prospects* attempt to account for the mortality impact of major conflicts, quantifying the impacts of conflict on mortality is quite difficult. Many conflicts occur in countries that lack civil registration systems. Even where established data collection programmes exist, conflict can disrupt civil registration or prevent survey data collection in affected zones (United Nations, 2011). Country-specific studies of the mortality impact of conflict typically employ one of three methods: fielding sample surveys during or shortly after wars; demographic

reconstructions from censuses taken before and after conflicts; or alternative sources of information on deaths such as passive surveillance or eyewitness accounts (Obermeyer et al., 2008; United Nations, 2011). Estimates from all of these sources may be subject to various biases and have wide ranges of uncertainty. Furthermore, for the purposes of analysing effects on life expectancy assumptions must be made about the age and sex patterns of excess deaths and about the baseline level of mortality. Thus, estimates from conflict affected countries must be viewed with caution and further work is needed on the direct and indirect impact of conflict on deaths, and patterns of post-conflict recovery.

C. CONCLUSIONS

The contribution of different age groups to countries' progress in life expectancy varies in large part according to the level of life expectancy at birth. The country examples highlighted in this chapter illustrated the different pathways of mortality change experienced by countries with similar starting levels of life expectancy in 1990-1995. Among countries with the highest mortality at the time of ICPD, variation in gains in life expectancy by 2010-2015 was determined mainly by difference in mortality reduction among children. In contrast, among countries with lowest mortality in 1990-1995, progress was concentrated among the oldest segments of the population. Countries with intermediate levels of mortality saw considerable diversity in their pathways of change over the past 20 years, with variable patterns in the relative contributions of changing survival at ages 0-15, 15-60 and 60 and over.

Some determinants of better or worse progress in mortality reduction in individual countries or groups of countries – such as effects of specific health policies or programmes, or of the impact of specific causes of death, or of specific risk factors such as tobacco smoking – have been identified, as have best-practice, cost-effective interventions and policies in the vast range of medical and public health domains, and general relationships between mortality decline and other indicators of economic and social development. Despite such knowledge, it is not yet possible to fully account for the many influences on wide variations in country progress in survival at different ages, even in high-income countries with good-quality data on mortality. The task is further complicated by the low quality of data on deaths by age and sex for many developing countries, which adds a large degree of uncertainty even to the estimation of levels and trends in mortality, let alone to the determinants of mortality trends.

A key finding of this report is the importance of strengthening gains in adult survival to further progress toward the ICPD life expectancy goals. Success in reducing mortality risks between ages 15 and 60 was highly predictive of progress achieved towards the ICPD life expectancy targets, particularly for countries with intermediate levels of mortality at the time of the ICPD. The increasing disease burdens from NCDs in countries with high and intermediate levels of mortality, even as many of these countries grapple with continued burdens of infectious, maternal, perinatal and nutritional causes of illness and death, presents challenges in priority setting and resource allocation that future global goal-setting must address.

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| | | | | Life | expectancy | at birth (ye | ears) | | Unde | r-five | Probab dying bet | ility of ween ages | Life expe | ctancy at |
|------------------------|-------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------------|---------------------|-----------------------|---------------|---------------|
| | | | Both s | sexes ined | Ma | les | Fem | nales | 1,000 liv | rate (per e births) | 15 and 1,0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Afghanistan | Asia | High | 50.7 | 60.7 | 49.6 | 59.5 | 51.7 | 62.0 | 172.6 | 92.3 | 366.7 | 257.8 | 14.5 | 15.9 |
| Albania | Europe | Low-intermediate | 71.7 | 77.3 | 68.9 | 74.5 | 74.9 | 80.5 | 37.1 | 15.7 | 115.6 | 72.2 | 18.6 | 21.1 |
| Algeria | Africa | High-intermediate | 67.2 | 70.9 | 65.6 | 69.4 | 68.8 | 72.6 | 60.2 | 31.9 | 171.6 | 142.7 | 17.3 | 17.9 |
| Angola | Africa | High | 41.4 | 51.7 | 39.5 | 50.2 | 43.4 | 53.2 | 253.4 | 155.7 | 437.5 | 352.4 | 13.8 | 15.7 |
| Antigua and Barbuda | LAC | Low-intermediate | 71.9 | 75.9 | 69.3 | 73.4 | 74.4 | 78.2 | 22.6 | 10.6 | 172.9 | 134.0 | 19.4 | 21.5 |
| Argentina | LAC | Low-intermediate | 72.1 | 76.2 | 68.6 | 72.5 | 75.8 | 79.8 | 28.2 | 13.4 | 150.7 | 118.5 | 19.2 | 21.4 |
| Armenia | Asia | High-intermediate | 68.1 | 74.5 | 64.5 | 71.2 | 71.5 | 77.9 | 52.7 | 21.5 | 185.8 | 120.3 | 17.6 | 20.0 |
| Aruba | LAC | Low-intermediate | 73.6 | 75.4 | 71.1 | 72.9 | 76.0 | 77.8 | 22.0 | 17.2 | 115.3 | 96.0 | 19.0 | 19.9 |
| Australia | Oceania | Low | 77.6 | 82.4 | 74.6 | 80.2 | 80.6 | 84.7 | 8.4 | 4.6 | 90.7 | 59.8 | 21.5 | 25.1 |
| Austria | Europe | Low | 76.1 | 81.0 | 72.6 | 78.5 | 79.2 | 83.5 | 8.6 | 3.8 | 112.9 | 70.3 | 20.5 | 23.9 |
| Azerbaijan | Asia | High-intermediate | 63.8 | 70.6 | 59.4 | 67.5 | 68.5 | 73.8 | 100.0 | 47.1 | 192.8 | 132.9 | 17.4 | 18.3 |
| Bahamas | LAC | Low-intermediate | 71.1 | 75.1 | 67.7 | 72.0 | 74.5 | 78.1 | 23.2 | 13.3 | 201.4 | 162.9 | 19.9 | 22.3 |
| Bahrain | Asia | Low-intermediate | 72.9 | 76.5 | 72.0 | 75.8 | 74.1 | 77.4 | 18.6 | 9.3 | 111.1 | 69.2 | 17.6 | 19.5 |
| Bangladesh | Asia | High-intermediate | 61.3 | 70.5 | 61.5 | 69.8 | 61.1 | 71.3 | 125.0 | 41.8 | 194.9 | 141.8 | 17.4 | 18.4 |
| Barbados | LAC | Low-intermediate | 71.7 | 75.3 | 69.2 | 72.9 | 73.8 | 77.7 | 24.3 | 11.6 | 145.1 | 103.0 | 18.2 | 19.5 |
| Belarus | Europe | High-intermediate | 69.5 | 69.8 | 64.0 | 64.1 | 74.8 | 75.7 | 18.2 | 7.3 | 217.1 | 223.4 | 17.6 | 17.1 |
| Belgium | Europe | Low | 76.3 | 80.4 | 73.0 | 77.9 | 79.6 | 83.0 | 9.4 | 3.9 | 105.7 | 78.2 | 20.7 | 23.6 |
| Belize | LAC | Low-intermediate | 70.6 | 73.8 | 68.2 | 70.8 | 73.1 | 77.0 | 36.5 | 15.4 | 167.6 | 167.5 | 19.2 | 21.5 |

VI. ANNEX: Table of mortality indicators in 1990-1995 and 2010-2015, by country or area

| | | | | Life | expectancy | at birth (ye | ears) | | Unde | r-five | Probab dying bety | ility of ween ages | Life expe | ctancy at |
|---------------------------------|---------------------|----------------------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|------------------------|----------------------|-----------------------|---------------|---------------|
| | | | Both comb | sexes bined | Ma | les | Fem | nales | 1,000 liv | rate (per e births) | 15 and 1,0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Benin | Africa | High | 54.8 | 59.2 | 52.4 | 57.8 | 57.0 | 60.6 | 168.4 | 108.2 | 261.9 | 251.2 | 15.5 | 15.6 |
| Bhutan | Asia | High | 54.5 | 68.0 | 54.5 | 67.7 | 54.4 | 68.4 | 124.8 | 48.0 | 364.8 | 216.1 | 16.1 | 19.5 |
| Bolivia (Plurinational State | LAC | High-intermediate | 60.1 | 67.1 | 58.3 | 64.9 | 61.8 | 69.3 | 99.0 | 51.8 | 263.6 | 202.1 | 17.1 | 18.6 |
| Bosnia and Herzegovina | Europe | High-intermediate | 63.7 | 76.3 | 55.8 | 73.7 | 73.2 | 78.8 | 24.4 | 9.0 | 289.2 | 100.3 | 17.7 | 20.2 |
| Botswana | Africa | High-intermediate | 61.2 | 47.4 | 58.6 | 48.0 | 63.8 | 46.5 | 66.3 | 40.7 | 312.5 | 719.9 | 16.4 | 16.4 |
| Brazil | LAC | High-intermediate | 67.5 | 73.8 | 63.7 | 70.2 | 71.5 | 77.5 | 54.0 | 24.2 | 218.9 | 165.2 | 19.0 | 21.8 |
| Brunei Darussalam | Asia | Low-intermediate | 74.2 | 78.4 | 72.5 | 76.6 | 76.2 | 80.4 | 13.4 | 4.9 | 119.8 | 73.6 | 19.3 | 21.4 |
| Bulgaria | Europe | Low-intermediate | 71.1 | 73.5 | 67.7 | 69.9 | 74.8 | 77.2 | 19.2 | 10.8 | 164.9 | 146.8 | 17.6 | 18.8 |
| Burkina Faso | Africa | High | 49.3 | 56.1 | 48.1 | 55.5 | 50.4 | 56.7 | 203.9 | 136.9 | 328.0 | 272.8 | 14.3 | 15.1 |
| Burundi | Africa | High | 46.2 | 53.9 | 44.7 | 52.0 | 47.7 | 55.8 | 203.3 | 139.4 | 414.1 | 330.6 | 14.8 | 16.0 |
| Cabo Verde | Africa | High-intermediate | 66.8 | 74.9 | 63.3 | 70.9 | 70.1 | 78.7 | 54.1 | 20.2 | 187.2 | 104.4 | 16.9 | 19.9 |
| Cambodia | Asia | High | 56.3 | 71.6 | 53.5 | 68.8 | 58.9 | 74.2 | 117.7 | 51.1 | 322.5 | 182.6 | 18.2 | 23.8 |
| Cameroon | Africa | High | 53.6 | 54.9 | 52.2 | 53.7 | 55.1 | 56.0 | 144.0 | 115.5 | 329.7 | 366.0 | 15.9 | 16.4 |
| Canada | Northern America | Low | 77.7 | 81.4 | 74.6 | 79.3 | 80.8 | 83.5 | 7.6 | 5.1 | 96.4 | 68.1 | 21.7 | 24.4 |
| Central African Republic | Africa | High | 44.9 | 49.9 | 42.7 | 48.0 | 47.2 | 51.8 | 186.9 | 150.4 | 487.5 | 414.0 | 15.2 | 15.9 |
| Chad | Africa | High | 46.3 | 51.0 | 45.2 | 50.1 | 47.5 | 51.9 | 199.7 | 154.8 | 417.9 | 381.0 | 14.8 | 15.6 |
| Channel Islands | Europe | Low | 76.1 | 80.2 | 73.3 | 78.2 | 78.8 | 82.2 | 15.9 | 9.4 | 91.4 | 56.3 | 20.4 | 23.0 |
| Chile | LAC | Low-intermediate | 74.5 | 79.8 | 71.5 | 77.0 | 77.4 | 82.6 | 16.9 | 7.2 | 128.4 | 85.8 | 20.1 | 23.6 |
| China | Asia | High-intermediate | 70.0 | 75.2 | 68.4 | 74.0 | 71.6 | 76.6 | 40.0 | 16.4 | 146.3 | 90.3 | 17.7 | 19.5 |

| | | | | Life | expectancy | at birth (ye | ears) | | Unde | r-five | Probab dying bet | vility of ween ages | Life expe | ctancy at |
|--------------------------------|-------------------|----------------------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|-------------------------|---------------------|---------------------|---------------|---------------|
| | | | Both comb | sexes bined | Ma | les | Fem | nales | 1,000 liv | rate (per ve births) | 15 and 1.0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| China, Hong Kong SAR | Asia | Low | 78.2 | 83.3 | 75.3 | 80.3 | 81.2 | 86.4 | 6.9 | 2.8 | 89.9 | 51.1 | 21.8 | 25.4 |
| China, Macao SAR | Asia | Low | 76.0 | 80.3 | 73.6 | 78.1 | 78.3 | 82.5 | 14.1 | 5.5 | 101.6 | 59.8 | 20.6 | 22.9 |
| Colombia | LAC | High-intermediate | 68.7 | 73.9 | 64.5 | 70.3 | 73.0 | 77.6 | 38.0 | 22.7 | 198.4 | 144.6 | 18.9 | 21.3 |
| Comoros | Africa | High | 56.1 | 60.8 | 54.3 | 59.4 | 58.0 | 62.2 | 126.8 | 92.2 | 308.0 | 257.3 | 15.2 | 15.9 |
| Congo | Africa | High | 53.9 | 58.6 | 52.4 | 57.2 | 55.4 | 60.1 | 120.9 | 97.5 | 383.3 | 303.7 | 16.3 | 17.1 |
| Costa Rica | LAC | Low | 76.2 | 79.8 | 74.0 | 77.7 | 78.6 | 82.1 | 17.1 | 9.9 | 104.9 | 82.4 | 21.3 | 23.8 |
| Côte d'Ivoire | Africa | High | 51.4 | 50.5 | 49.7 | 49.7 | 53.5 | 51.4 | 149.0 | 107.5 | 357.8 | 421.2 | 15.1 | 13.9 |
| Croatia | Europe | Low-intermediate | 72.8 | 77.0 | 69.0 | 73.6 | 76.5 | 80.3 | 11.9 | 6.1 | 149.2 | 98.9 | 18.3 | 20.6 |
| Cuba | LAC | Low-intermediate | 74.8 | 79.2 | 72.9 | 77.2 | 76.7 | 81.2 | 14.0 | 5.7 | 128.0 | 91.5 | 20.5 | 22.9 |
| Curaçao | LAC | Low-intermediate | 74.5 | 77.0 | 71.5 | 73.6 | 77.5 | 80.1 | 17.5 | 13.3 | 126.5 | 107.1 | 20.5 | 22.1 |
| Cyprus | Asia | Low | 76.9 | 79.8 | 74.9 | 77.8 | 79.0 | 81.8 | 10.9 | 4.4 | 78.9 | 56.8 | 20.3 | 22.0 |
| Czech Republic | Europe | Low-intermediate | 72.3 | 77.6 | 68.6 | 74.5 | 76.1 | 80.6 | 11.1 | 3.3 | 152.8 | 99.9 | 17.6 | 21.1 |
| Dem. People's Rep. of Korea | Asia | Low-intermediate | 70.0 | 69.9 | 65.8 | 66.3 | 73.3 | 73.3 | 56.4 | 27.9 | 116.4 | 147.3 | 18.1 | 16.8 |
| Dem. Republic of the Congo | Africa | High | 47.4 | 49.8 | 46.0 | 48.1 | 48.9 | 51.6 | 201.5 | 180.0 | 374.1 | 352.0 | 14.9 | 15.2 |
| Denmark | Europe | Low | 75.2 | 79.3 | 72.5 | 77.2 | 78.0 | 81.4 | 7.9 | 4.0 | 122.8 | 83.6 | 19.8 | 22.4 |
| Djibouti | Africa | High | 57.0 | 61.6 | 55.4 | 60.0 | 58.7 | 63.2 | 120.0 | 83.4 | 291.3 | 258.8 | 16.5 | 17.5 |
| Dominican Republic | LAC | High-intermediate | 69.0 | 73.3 | 66.5 | 70.3 | 71.9 | 76.6 | 54.7 | 28.5 | 197.7 | 167.3 | 20.2 | 21.9 |
| Ecuador | LAC | Low-intermediate | 70.0 | 76.4 | 67.6 | 73.6 | 72.6 | 79.3 | 57.0 | 21.0 | 166.1 | 132.3 | 20.7 | 23.6 |
| Egypt | Africa | High-intermediate | 65.5 | 71.1 | 63.1 | 68.7 | 67.9 | 73.5 | 80.3 | 24.2 | 185.0 | 156.5 | 17.1 | 17.5 |

| | | | | Life | expectancy | at birth (ye | ears) | | Unde | r-five | Probab dying bet | ility of ween ages | Life expe | ectancy at |
|-------------------|-------------------|-------------------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|-------------------------|---------------------|-----------------------|---------------|---------------|
| | | | Both comb | sexes bined | Ma | les | Fem | ales | 1,000 liv | rate (per ve births) | 15 and 1,0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| El Salvador | LAC | High-intermediate | 68.0 | 72.5 | 63.3 | 67.7 | 72.9 | 77.0 | 48.5 | 21.5 | 232.4 | 196.9 | 20.4 | 22.0 |
| Equatorial Guinea | Africa | High | 47.2 | 52.9 | 45.7 | 51.5 | 48.9 | 54.5 | 198.9 | 142.9 | 387.9 | 346.0 | 14.9 | 15.9 |
| Eritrea | Africa | High | 50.3 | 62.6 | 48.1 | 60.2 | 52.5 | 64.9 | 130.1 | 55.7 | 464.8 | 286.5 | 12.5 | 15.1 |
| Estonia | Europe | High-intermediate | 68.5 | 74.3 | 62.9 | 68.9 | 74.1 | 79.5 | 19.8 | 5.4 | 236.4 | 166.8 | 17.5 | 20.2 |
| Ethiopia | Africa | High | 47.9 | 63.3 | 46.6 | 61.7 | 49.3 | 65.0 | 190.8 | 73.6 | 386.8 | 237.6 | 15.0 | 17.8 |
| Fiji | Oceania | High-intermediate | 66.1 | 69.7 | 64.0 | 66.9 | 68.3 | 72.9 | 34.5 | 19.9 | 227.7 | 193.4 | 15.4 | 17.0 |
| Finland | Europe | Low | 75.7 | 80.5 | 71.8 | 77.3 | 79.5 | 83.6 | 6.1 | 2.9 | 119.5 | 86.0 | 20.2 | 23.8 |
| France | Europe | Low | 77.3 | 81.7 | 73.1 | 78.2 | 81.4 | 85.1 | 8.2 | 3.9 | 116.6 | 81.9 | 22.1 | 25.1 |
| French Guiana | LAC | Low-intermediate | 72.7 | 77.0 | 70.0 | 73.8 | 76.0 | 80.8 | 24.4 | 14.2 | 126.2 | 82.1 | 18.7 | 20.9 |
| French Polynesia | Oceania | High-intermediate | 69.5 | 76.1 | 67.7 | 74.0 | 71.6 | 78.6 | 19.7 | 7.6 | 198.8 | 108.7 | 17.1 | 20.2 |
| Gabon | Africa | High-intermediate | 61.4 | 63.3 | 59.9 | 62.3 | 62.9 | 64.3 | 89.4 | 65.1 | 242.8 | 261.7 | 17.2 | 18.2 |
| Gambia | Africa | High | 52.7 | 58.7 | 51.5 | 57.4 | 54.1 | 60.1 | 155.7 | 100.4 | 321.5 | 269.0 | 14.4 | 15.2 |
| Georgia | Asia | Low-intermediate | 70.1 | 74.2 | 66.1 | 70.5 | 73.8 | 77.7 | 49.0 | 22.1 | 150.9 | 117.6 | 18.6 | 19.8 |
| Germany | Europe | Low | 75.9 | 80.7 | 72.5 | 78.2 | 79.0 | 83.1 | 7.7 | 3.8 | 114.9 | 72.9 | 20.3 | 23.5 |
| Ghana | Africa | High | 57.8 | 61.0 | 56.6 | 60.0 | 58.9 | 61.9 | 114.3 | 77.5 | 271.4 | 254.3 | 15.3 | 15.5 |
| Greece | Europe | Low | 77.4 | 80.7 | 74.8 | 78.3 | 80.1 | 83.0 | 9.3 | 4.2 | 86.6 | 68.0 | 21.2 | 23.5 |
| Grenada | LAC | High-intermediate | 69.0 | 72.7 | 66.7 | 70.2 | 71.3 | 75.2 | 23.6 | 12.2 | 193.0 | 154.8 | 16.6 | 18.5 |
| Guadeloupe | LAC | Low-intermediate | 74.6 | 80.8 | 71.1 | 77.4 | 78.1 | 84.0 | 16.4 | 6.3 | 146.7 | 86.2 | 21.3 | 24.8 |
| Guam | Oceania | Low-intermediate | 72.5 | 78.7 | 70.4 | 76.1 | 75.0 | 81.5 | 24.5 | 11.2 | 126.2 | 67.9 | 18.4 | 22.0 |

| | | | | Life | expectancy | v at birth (ye | ears) | | Unde | r-five | Probab dying bet | vility of ween ages | Life expe | ectancy at |
|-------------------------------|-------------------|----------------------------|---------------|----------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------------|---------------------|---------------|---------------|
| | | | Both comb | sexes pined | Ma | les | Ferr | nales | 1,000 liv | ve births) | 15 and 1,0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Guatemala | LAC | High-intermediate | 63.5 | 72.0 | 60.5 | 68.4 | 66.8 | 75.5 | 74.3 | 31.1 | 253.2 | 178.7 | 18.0 | 21.5 |
| Guinea | Africa | High | 51.3 | 55.9 | 50.5 | 55.2 | 52.0 | 56.7 | 215.9 | 127.1 | 270.0 | 290.0 | 15.3 | 14.8 |
| Guinea-Bissau | Africa | High | 49.9 | 54.2 | 47.8 | 52.7 | 52.2 | 55.7 | 204.5 | 155.8 | 315.6 | 289.5 | 14.6 | 14.9 |
| Guyana | LAC | High-intermediate | 62.4 | 66.2 | 58.8 | 63.5 | 66.4 | 68.9 | 57.3 | 34.5 | 275.0 | 231.7 | 15.7 | 16.6 |
| Haiti | LAC | High | 55.3 | 63.0 | 53.7 | 61.1 | 56.8 | 64.9 | 126.6 | 66.8 | 318.7 | 248.2 | 15.5 | 17.2 |
| Honduras | LAC | High-intermediate | 67.7 | 73.7 | 65.4 | 71.3 | 70.1 | 76.2 | 60.0 | 32.4 | 198.8 | 146.0 | 19.8 | 22.1 |
| Hungary | Europe | High-intermediate | 69.4 | 74.5 | 65.0 | 70.4 | 74.1 | 78.5 | 15.1 | 5.8 | 228.1 | 160.9 | 17.2 | 19.9 |
| Iceland | Europe | Low | 78.5 | 82.0 | 76.2 | 80.2 | 80.9 | 83.8 | 5.9 | 2.6 | 86.0 | 54.1 | 22.0 | 24.3 |
| India | Asia | High | 59.3 | 66.3 | 58.6 | 64.6 | 60.0 | 68.1 | 107.2 | 55.8 | 260.7 | 200.5 | 15.2 | 17.0 |
| Indonesia | Asia | High-intermediate | 64.5 | 70.7 | 62.6 | 68.7 | 66.5 | 72.8 | 63.9 | 30.7 | 220.6 | 149.2 | 16.3 | 17.8 |
| Iran (Islamic Republic of) | Asia | High-intermediate | 66.4 | 73.9 | 65.8 | 72.1 | 67.1 | 75.9 | 57.1 | 21.7 | 189.2 | 118.9 | 17.0 | 19.9 |
| Iraq | Asia | Low-intermediate | 70.3 | 69.4 | 68.1 | 66.0 | 72.6 | 73.1 | 47.8 | 32.3 | 135.8 | 171.6 | 18.2 | 17.5 |
| Ireland | Europe | Low | 75.3 | 80.6 | 72.6 | 78.4 | 78.2 | 82.7 | 8.1 | 3.6 | 102.6 | 67.6 | 19.1 | 23.4 |
| Israel | Asia | Low | 77.1 | 81.7 | 75.2 | 79.8 | 79.0 | 83.5 | 10.1 | 4.1 | 88.9 | 59.1 | 20.9 | 24.3 |
| Italy | Europe | Low | 77.4 | 82.3 | 74.0 | 79.5 | 80.7 | 84.9 | 8.8 | 3.3 | 93.7 | 56.3 | 21.4 | 24.7 |
| Jamaica | LAC | Low-intermediate | 70.4 | 73.5 | 67.9 | 70.9 | 73.1 | 76.0 | 34.6 | 24.8 | 180.0 | 153.7 | 20.0 | 21.3 |
| Japan | Asia | Low | 79.4 | 83.5 | 76.3 | 80.0 | 82.4 | 86.9 | 6.1 | 3.0 | 79.0 | 61.1 | 22.8 | 26.1 |
| Jordan | Asia | Low-intermediate | 70.4 | 73.8 | 69.1 | 72.2 | 71.9 | 75.5 | 34.2 | 19.8 | 148.0 | 113.8 | 17.7 | 19.0 |
| Kazakhstan | Asia | High-intermediate | 65.5 | 66.4 | 60.5 | 60.9 | 70.3 | 72.3 | 60.6 | 29.9 | 237.7 | 257.4 | 17.4 | 16.5 |

| | | | | Life | expectancy | at birth (ye | ars) | | Unde | r-five | Probab dying bety | ility of ween ages | Life expe | ctancy at |
|-------------------------------|-------------------|-------------------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|------------------------|----------------------|-----------------------|---------------|---------------|
| | | | Both comb | sexes vined | Ma | les | Fem | ales | 1,000 liv | rate (per e births) | 15 and 1,0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Kenya | Africa | High | 58.1 | 61.6 | 56.3 | 59.7 | 59.9 | 63.5 | 107.2 | 77.0 | 294.7 | 270.7 | 17.0 | 17.8 |
| Kiribati | Oceania | High-intermediate | 61.5 | 68.8 | 58.6 | 65.9 | 64.5 | 71.6 | 87.9 | 42.1 | 249.5 | 170.1 | 16.1 | 17.4 |
| Kuwait | Asia | Low-intermediate | 72.4 | 74.2 | 71.7 | 73.4 | 73.6 | 75.5 | 16.5 | 11.2 | 102.2 | 82.7 | 16.6 | 17.6 |
| Kyrgyzstan | Asia | High-intermediate | 66.3 | 67.5 | 62.1 | 63.4 | 70.3 | 71.8 | 72.4 | 41.6 | 203.1 | 212.1 | 18.0 | 16.8 |
| Lao People's Dem. Republic | Asia | High | 56.2 | 68.1 | 54.9 | 66.7 | 57.4 | 69.4 | 126.6 | 44.8 | 307.1 | 177.2 | 15.2 | 17.1 |
| Latvia | Europe | High-intermediate | 67.7 | 72.1 | 61.7 | 66.6 | 73.7 | 77.5 | 21.4 | 8.7 | 258.3 | 199.5 | 17.5 | 19.1 |
| Lebanon | Asia | Low-intermediate | 71.0 | 79.8 | 69.6 | 77.9 | 72.5 | 82.1 | 30.0 | 9.7 | 141.9 | 59.1 | 17.8 | 22.7 |
| Lesotho | Africa | High-intermediate | 60.0 | 49.5 | 58.5 | 49.2 | 61.4 | 49.6 | 93.7 | 82.0 | 277.3 | 583.7 | 16.0 | 15.5 |
| Liberia | Africa | High | 47.7 | 60.3 | 45.7 | 59.3 | 49.8 | 61.2 | 233.6 | 85.2 | 325.0 | 257.2 | 14.4 | 15.4 |
| Libya | Africa | High-intermediate | 69.3 | 75.2 | 67.8 | 73.4 | 71.2 | 77.2 | 39.2 | 16.2 | 159.7 | 99.4 | 17.3 | 19.7 |
| Lithuania | Europe | High-intermediate | 69.7 | 72.1 | 64.2 | 66.0 | 75.3 | 78.1 | 19.6 | 6.7 | 226.1 | 203.9 | 18.6 | 19.1 |
| Luxembourg | Europe | Low | 75.8 | 80.5 | 72.2 | 77.9 | 79.1 | 83.0 | 8.8 | 3.1 | 118.3 | 74.5 | 20.5 | 23.4 |
| Madagascar | Africa | High | 52.7 | 64.5 | 51.4 | 63.0 | 54.0 | 66.0 | 152.3 | 54.5 | 324.5 | 232.3 | 15.6 | 16.9 |
| Malawi | Africa | High | 47.3 | 55.1 | 46.2 | 54.9 | 48.3 | 55.2 | 209.1 | 118.5 | 384.7 | 383.8 | 14.9 | 17.0 |
| Malaysia | Asia | Low-intermediate | 71.3 | 74.9 | 69.5 | 72.7 | 73.3 | 77.3 | 15.6 | 5.1 | 156.3 | 114.5 | 17.5 | 19.0 |
| Maldives | Asia | High-intermediate | 62.7 | 77.7 | 62.7 | 76.7 | 62.7 | 78.8 | 94.4 | 12.6 | 192.4 | 66.1 | 14.9 | 21.0 |
| Mali | Africa | High | 47.3 | 54.8 | 47.5 | 54.9 | 47.2 | 54.7 | 246.3 | 164.6 | 314.8 | 264.4 | 14.5 | 15.4 |
| Malta | Europe | Low | 75.8 | 79.7 | 73.4 | 77.4 | 78.2 | 82.0 | 13.0 | 6.7 | 89.7 | 63.1 | 19.6 | 22.3 |
| Martinique | LAC | Low | 75.7 | 81.3 | 72.7 | 77.9 | 78.5 | 84.4 | 16.5 | 7.3 | 120.9 | 71.7 | 21.4 | 24.8 |

| | | | | Life | expectancy | / at birth (ye | ears) | | Unde | r-five | Probab dying bet | oility of ween ages | Life expe | ectancy at |
|--------------------------------|-------------------|----------------------------|---------------|----------------|---------------|----------------|---------------|---------------|---------------|------------------------|---------------------|------------------------|---------------|---------------|
| | | | Both coml | sexes pined | Ma | ales | Ferr | nales | 1,000 liv | rate (per e births) | 15 and 1.0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Mauritania | Africa | High | 58.9 | 61.5 | 57.5 | 59.9 | 60.2 | 63.0 | 122.5 | 107.2 | 239.1 | 210.6 | 15.8 | 16.4 |
| Mauritius | Africa | Low-intermediate | 70.3 | 73.5 | 66.6 | 70.2 | 74.1 | 77.0 | 21.2 | 13.1 | 195.8 | 150.2 | 17.7 | 19.3 |
| Mayotte | Africa | Low-intermediate | 73.1 | 79.0 | 69.6 | 76.0 | 77.5 | 82.9 | 16.9 | 4.8 | 168.1 | 104.7 | 20.1 | 23.2 |
| Mexico | LAC | Low-intermediate | 71.8 | 77.4 | 69.0 | 74.9 | 74.6 | 79.7 | 40.3 | 17.3 | 155.8 | 105.6 | 20.5 | 22.7 |
| Micronesia (Fed. States of) | Oceania | High-intermediate | 66.5 | 68.9 | 65.9 | 68.0 | 67.0 | 69.9 | 53.8 | 40.0 | 194.5 | 167.3 | 16.8 | 17.3 |
| Mongolia | Asia | High-intermediate | 60.8 | 67.4 | 58.2 | 63.6 | 63.5 | 71.5 | 91.4 | 31.4 | 264.2 | 229.4 | 14.3 | 16.3 |
| Montenegro | Europe | Low-intermediate | 74.8 | 74.8 | 71.4 | 72.4 | 78.0 | 77.1 | 20.3 | 10.4 | 120.6 | 121.0 | 20.3 | 19.2 |
| Morocco | Africa | High-intermediate | 66.0 | 70.8 | 64.3 | 69.0 | 67.7 | 72.6 | 68.2 | 32.0 | 183.7 | 145.6 | 17.1 | 17.9 |
| Mozambique | Africa | High | 44.6 | 50.2 | 43.0 | 49.2 | 46.0 | 51.1 | 226.4 | 115.6 | 405.5 | 481.2 | 14.4 | 16.8 |
| Myanmar | Asia | High | 59.6 | 65.1 | 57.4 | 63.0 | 61.8 | 67.1 | 100.8 | 63.4 | 269.7 | 210.1 | 15.7 | 16.6 |
| Namibia | Africa | High-intermediate | 61.2 | 64.3 | 58.8 | 61.6 | 63.6 | 67.0 | 80.5 | 42.0 | 277.3 | 285.8 | 16.2 | 17.3 |
| Nepal | Asia | High | 57.0 | 68.2 | 56.4 | 67.1 | 57.6 | 69.3 | 119.6 | 43.9 | 297.9 | 175.6 | 15.3 | 17.1 |
| Netherlands | Europe | Low | 77.3 | 80.9 | 74.2 | 78.9 | 80.2 | 82.8 | 7.6 | 4.3 | 90.1 | 62.8 | 20.9 | 23.5 |
| New Caledonia | Oceania | Low-intermediate | 71.5 | 76.2 | 68.8 | 73.6 | 74.6 | 79.3 | 29.0 | 15.2 | 139.5 | 88.4 | 18.1 | 20.3 |
| New Zealand | Oceania | Low | 76.3 | 81.0 | 73.4 | 79.1 | 79.1 | 82.9 | 9.3 | 5.5 | 108.0 | 68.6 | 20.8 | 24.1 |
| Nicaragua | LAC | High-intermediate | 66.1 | 74.7 | 63.5 | 71.6 | 68.7 | 77.7 | 61.9 | 20.1 | 218.1 | 154.6 | 18.3 | 22.2 |
| Niger | Africa | High | 45.5 | 58.1 | 45.2 | 58.0 | 45.7 | 58.4 | 293.2 | 126.6 | 292.5 | 248.1 | 14.9 | 15.5 |
| Nigeria | Africa | High | 46.1 | 52.3 | 45.1 | 52.0 | 47.2 | 52.6 | 213.3 | 122.2 | 387.1 | 367.4 | 13.4 | 13.7 |
| Norway | Europe | Low | 77.1 | 81.4 | 74.0 | 79.3 | 80.2 | 83.5 | 7.3 | 3.1 | 94.6 | 62.4 | 20.9 | 24.0 |

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| | | | | Life | expectancy | at birth (ye | ears) | | Under | r-five | Probab dying bety | ility of ween ages | Life expe | ctancy at |
|------------------------|-------------------|-------------------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------------|-----------------------|---------------|---------------|
| | | | Both : comb | sexes vined | Ma | les | Fem | ales | 1,000 liv | e births) | 15 and 1.0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Oman | Asia | High-intermediate | 68.5 | 76.4 | 66.7 | 74.7 | 70.7 | 78.9 | 40.2 | 8.9 | 174.5 | 100.0 | 17.3 | 20.5 |
| Pakistan | Asia | High-intermediate | 61.9 | 66.5 | 61.2 | 65.6 | 62.6 | 67.4 | 116.5 | 71.0 | 202.6 | 172.8 | 17.3 | 17.4 |
| Panama | LAC | Low-intermediate | 73.6 | 77.5 | 70.8 | 74.7 | 76.5 | 80.4 | 32.7 | 18.5 | 132.6 | 119.1 | 21.2 | 23.9 |
| Papua New Guinea | Oceania | High | 56.5 | 62.3 | 53.9 | 60.3 | 59.5 | 64.5 | 91.5 | 62.0 | 370.7 | 281.6 | 13.6 | 14.9 |
| Paraguay | LAC | High-intermediate | 68.5 | 72.2 | 66.3 | 70.0 | 70.8 | 74.5 | 54.7 | 36.6 | 176.0 | 153.8 | 18.9 | 20.8 |
| Peru | LAC | High-intermediate | 66.7 | 74.7 | 64.4 | 72.0 | 69.2 | 77.4 | 77.3 | 26.2 | 176.6 | 127.3 | 18.7 | 21.5 |
| Philippines | Asia | High-intermediate | 65.6 | 68.6 | 62.8 | 65.3 | 68.5 | 72.2 | 46.3 | 27.4 | 234.4 | 204.9 | 16.4 | 17.0 |
| Poland | Europe | Low-intermediate | 71.1 | 76.3 | 66.8 | 72.2 | 75.7 | 80.5 | 18.4 | 6.3 | 180.4 | 130.0 | 18.0 | 21.1 |
| Portugal | Europe | Low-intermediate | 74.7 | 79.8 | 71.1 | 76.8 | 78.3 | 82.8 | 12.3 | 3.5 | 124.7 | 81.7 | 20.1 | 23.2 |
| Puerto Rico | LAC | Low-intermediate | 73.8 | 78.8 | 69.3 | 75.0 | 78.5 | 82.5 | 13.7 | 8.1 | 162.1 | 109.1 | 20.8 | 23.5 |
| Qatar | Asia | Low | 75.6 | 78.3 | 75.0 | 77.7 | 76.5 | 79.4 | 18.5 | 7.9 | 82.5 | 61.4 | 19.9 | 21.2 |
| Republic of Korea | Asia | Low-intermediate | 72.9 | 81.4 | 68.7 | 77.9 | 77.0 | 84.6 | 12.9 | 4.3 | 153.3 | 61.6 | 18.9 | 24.0 |
| Republic of Moldova | Europe | High-intermediate | 67.3 | 68.8 | 63.6 | 64.9 | 70.9 | 72.8 | 34.6 | 17.3 | 224.3 | 218.2 | 16.4 | 16.2 |
| Réunion | Africa | Low-intermediate | 73.6 | 79.5 | 69.6 | 76.0 | 77.5 | 82.9 | 16.9 | 4.8 | 162.0 | 99.0 | 20.5 | 23.5 |
| Romania | Europe | High-intermediate | 69.6 | 73.7 | 66.1 | 70.2 | 73.3 | 77.4 | 28.7 | 12.5 | 189.3 | 150.1 | 17.5 | 19.4 |
| Russian Federation | Europe | High-intermediate | 66.6 | 67.9 | 60.6 | 61.7 | 72.8 | 74.3 | 26.1 | 11.9 | 270.1 | 272.9 | 17.0 | 17.5 |
| Rwanda | Africa | High | 23.1 | 63.6 | 21.4 | 61.9 | 24.8 | 65.3 | 466.4 | 73.8 | 686.5 | 229.4 | 10.0 | 17.8 |
| Saint Lucia | LAC | Low-intermediate | 71.3 | 74.7 | 69.2 | 72.1 | 73.5 | 77.4 | 24.2 | 14.2 | 171.8 | 144.1 | 19.1 | 21.0 |
| Samoa | Oceania | High-intermediate | 66.2 | 73.0 | 63.1 | 70.0 | 69.7 | 76.4 | 45.3 | 23.4 | 223.5 | 133.4 | 16.0 | 18.9 |

| | | | | Life | expectancy | at birth (ye | ears) | | Under | r-five | Probab dying bety | ility of ween ages | Life expe | ctancy at |
|--------------------------------|-------------------|----------------------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------------|-----------------------|---------------|---------------|
| | | | Both comb | sexes bined | Ma | les | Fem | nales | 1,000 liv | e births) | 15 and 1,0 | 60 (per 00) | age 60 (| (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Sao Tome and Principe | Africa | High-intermediate | 62.2 | 66.2 | 60.4 | 64.2 | 64.0 | 68.2 | 87.4 | 62.6 | 231.9 | 193.3 | 17.4 | 18.2 |
| Saudi Arabia | Asia | High-intermediate | 69.9 | 75.4 | 68.3 | 73.8 | 72.0 | 77.5 | 38.7 | 12.3 | 142.8 | 80.3 | 17.4 | 19.2 |
| Senegal | Africa | High | 57.6 | 63.3 | 56.0 | 61.8 | 59.2 | 64.7 | 137.9 | 74.9 | 246.1 | 216.2 | 15.7 | 16.2 |
| Serbia | Europe | Low-intermediate | 71.7 | 74.0 | 68.8 | 71.2 | 74.7 | 76.8 | 20.2 | 12.9 | 151.1 | 124.9 | 17.7 | 18.7 |
| Seychelles | Africa | Low-intermediate | 70.6 | 73.1 | 65.8 | 68.9 | 75.9 | 78.0 | 15.5 | 10.2 | 205.5 | 173.7 | 18.2 | 19.4 |
| Sierra Leone | Africa | High | 36.0 | 45.3 | 35.2 | 45.1 | 36.7 | 45.6 | 272.8 | 186.6 | 554.9 | 435.5 | 10.7 | 12.5 |
| Singapore | Asia | Low | 77.0 | 82.2 | 74.8 | 79.7 | 79.2 | 84.6 | 5.8 | 2.3 | 98.8 | 57.8 | 20.6 | 24.5 |
| Slovakia | Europe | Low-intermediate | 71.6 | 75.3 | 67.4 | 71.5 | 75.9 | 79.2 | 13.5 | 6.6 | 172.3 | 129.0 | 17.7 | 19.8 |
| Slovenia | Europe | Low-intermediate | 73.7 | 79.5 | 69.7 | 76.2 | 77.6 | 82.7 | 8.8 | 3.4 | 146.7 | 88.4 | 19.1 | 22.8 |
| Solomon Islands | Oceania | High | 58.3 | 67.5 | 57.9 | 66.2 | 58.8 | 69.0 | 109.2 | 47.4 | 283.6 | 183.2 | 15.4 | 16.9 |
| Somalia | Africa | High | 45.0 | 54.9 | 43.5 | 53.3 | 46.5 | 56.5 | 221.9 | 131.2 | 406.0 | 320.8 | 14.5 | 16.1 |
| South Africa | Africa | High-intermediate | 62.3 | 57.1 | 58.8 | 54.9 | 66.0 | 59.1 | 62.7 | 50.8 | 286.6 | 434.4 | 15.2 | 16.0 |
| South Sudan | Africa | High | 45.3 | 55.0 | 44.0 | 53.9 | 46.7 | 56.0 | 219.5 | 122.8 | 398.5 | 344.0 | 14.5 | 16.4 |
| Spain | Europe | Low | 77.4 | 82.0 | 73.8 | 78.8 | 81.1 | 85.2 | 8.5 | 4.1 | 101.8 | 63.8 | 21.8 | 24.8 |
| Sri Lanka | Asia | Low-intermediate | 70.0 | 74.2 | 66.9 | 71.1 | 73.5 | 77.4 | 25.6 | 11.3 | 186.7 | 133.6 | 18.4 | 19.6 |
| St. Vincent and the Grenadines | LAC | Low-intermediate | 70.5 | 72.4 | 68.4 | 70.3 | 72.6 | 74.7 | 28.0 | 21.4 | 182.1 | 162.5 | 18.7 | 19.7 |
| State of Palestine | Asia | High-intermediate | 68.9 | 73.1 | 67.3 | 71.4 | 70.4 | 74.9 | 40.5 | 23.0 | 169.0 | 118.4 | 17.3 | 18.7 |
| Sudan | Africa | High | 56.0 | 61.9 | 54.5 | 60.2 | 57.6 | 63.8 | 129.7 | 86.2 | 297.1 | 245.3 | 16.3 | 17.4 |
| Suriname | LAC | High-intermediate | 67.6 | 70.9 | 64.4 | 67.8 | 71.1 | 74.2 | 44.8 | 23.2 | 202.6 | 176.0 | 17.5 | 18.5 |

| | | | | Life | expectancy | at birth (ye | ears) | | Unde | r-five | Probab dying bet | ility of ween ages | Life expe | ectancy at |
|-----------------------------|-------------------|----------------------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|------------------------|---------------------|-----------------------|---------------|---------------|
| | | | Both com | sexes pined | Ma | les | Fem | nales | 1,000 liv | rate (per e births) | 15 and 1.0 | 60 (per 00) | age 60 | (years) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| Swaziland | Africa | High | 59.0 | 49.2 | 57.5 | 49.7 | 60.4 | 48.5 | 95.1 | 92.0 | 293.0 | 567.6 | 16.0 | 16.3 |
| Sweden | Europe | Low | 78.1 | 81.7 | 75.3 | 79.7 | 80.8 | 83.8 | 6.3 | 3.0 | 86.6 | 57.9 | 21.5 | 24.1 |
| Switzerland | Europe | Low | 77.9 | 82.5 | 74.5 | 80.1 | 81.3 | 84.9 | 7.5 | 4.2 | 93.4 | 57.4 | 22.0 | 25.0 |
| Syrian Arab Republic | Asia | Low-intermediate | 71.1 | 74.4 | 70.2 | 71.6 | 72.1 | 77.6 | 31.7 | 20.6 | 138.1 | 110.4 | 17.9 | 19.9 |
| Tajikistan | Asia | High-intermediate | 62.2 | 67.1 | 58.6 | 64.0 | 66.0 | 70.7 | 114.5 | 73.0 | 212.1 | 171.2 | 17.4 | 18.2 |
| TFYR Macedonia | Europe | Low-intermediate | 71.5 | 75.1 | 69.5 | 72.9 | 73.7 | 77.5 | 29.5 | 10.7 | 131.8 | 105.9 | 17.6 | 19.1 |
| Thailand | Asia | Low-intermediate | 70.4 | 74.3 | 67.1 | 71.0 | 73.9 | 77.7 | 27.3 | 11.6 | 185.1 | 159.9 | 19.4 | 21.4 |
| Timor-Leste | Asia | High | 50.4 | 67.3 | 49.0 | 65.8 | 52.0 | 68.9 | 174.0 | 49.1 | 370.0 | 186.1 | 14.4 | 16.9 |
| Togo | Africa | High | 55.8 | 56.4 | 54.9 | 55.5 | 56.6 | 57.3 | 142.0 | 103.1 | 274.6 | 308.3 | 15.2 | 14.5 |
| Tonga | Oceania | High-intermediate | 69.9 | 72.6 | 68.4 | 69.7 | 71.4 | 75.6 | 32.0 | 24.4 | 170.1 | 137.4 | 17.3 | 18.6 |
| Trinidad and Tobago | LAC | High-intermediate | 68.2 | 69.8 | 65.4 | 66.3 | 71.3 | 73.6 | 34.4 | 30.5 | 201.1 | 179.7 | 16.7 | 17.8 |
| Tunisia | Africa | Low-intermediate | 70.3 | 75.8 | 68.1 | 73.5 | 72.7 | 78.2 | 40.5 | 17.0 | 146.5 | 93.4 | 17.9 | 20.2 |
| Turkey | Asia | High-intermediate | 65.5 | 75.1 | 61.8 | 71.7 | 69.4 | 78.5 | 72.7 | 17.6 | 174.3 | 109.2 | 18.4 | 20.9 |
| Turkmenistan | Asia | High-intermediate | 62.7 | 65.4 | 58.8 | 61.3 | 66.6 | 69.7 | 95.7 | 59.5 | 232.6 | 227.9 | 16.9 | 17.0 |
| Uganda | Africa | High | 46.5 | 59.0 | 45.3 | 57.8 | 47.7 | 60.2 | 168.4 | 86.1 | 492.1 | 317.1 | 15.4 | 17.5 |
| Ukraine | Europe | High-intermediate | 68.7 | 68.5 | 63.6 | 62.8 | 73.7 | 74.3 | 21.0 | 13.9 | 224.7 | 254.2 | 17.3 | 17.4 |
| United Arab Emirates | Asia | Low-intermediate | 72.2 | 76.7 | 71.3 | 76.1 | 73.6 | 78.1 | 19.3 | 6.7 | 131.0 | 76.2 | 17.7 | 19.8 |
| United Kingdom | Europe | Low | 76.2 | 80.4 | 73.4 | 78.5 | 78.8 | 82.4 | 8.2 | 4.9 | 99.5 | 73.5 | 20.0 | 23.5 |
| United Republic of Tanzania | Africa | High | 49.7 | 61.4 | 48.2 | 60.0 | 51.1 | 62.7 | 163.5 | 72.0 | 396.9 | 287.2 | 15.6 | 17.9 |

| | | | Both | Life | expectancy | at birth (ye | ears) | _ | Under mortality | r-five rate (per | Probab dying bet 15 and | vility of ween ages 60 (per | Life expe | ectancy at (years) |
|---------------------------------|---------------------|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------|---------------------|-------------------------------|-----------------------------------|---------------|-----------------------|
| | | | com | oined | Ma | lles | Fem | nales | 1,000 liv | e births) | 1,0 | 00) | 8 | ()) |
| Country or area | Geographic region | Mortality level at ICPD | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 | 1990- 1995 | 2010- 2015 |
| United States of America | Northern America | Low | 75.6 | 78.9 | 72.2 | 76.4 | 79.0 | 81.2 | 10.6 | 7.1 | 130.2 | 102.8 | 21.1 | 23.2 |
| United States Virgin Islands | LAC | Low | 75.5 | 80.0 | 71.8 | 77.2 | 79.5 | 82.9 | 17.9 | 10.9 | 106.3 | 65.0 | 20.2 | 23.2 |
| Uruguay | LAC | Low-intermediate | 73.0 | 77.1 | 69.2 | 73.6 | 76.9 | 80.5 | 23.1 | 14.1 | 144.6 | 103.9 | 19.5 | 21.8 |
| Uzbekistan | Asia | High-intermediate | 66.2 | 68.2 | 63.0 | 64.9 | 69.4 | 71.6 | 71.5 | 53.3 | 200.6 | 187.3 | 18.1 | 18.3 |
| Vanuatu | Oceania | High-intermediate | 64.2 | 71.5 | 62.9 | 69.6 | 65.8 | 73.6 | 67.6 | 28.4 | 220.0 | 137.0 | 16.3 | 18.0 |
| Venezuela (Bolivarian | LAC | Low-intermediate | 71.5 | 74.5 | 68.7 | 71.7 | 74.5 | 77.6 | 29.4 | 19.4 | 160.9 | 135.8 | 19.3 | 21.1 |
| Viet Nam | Asia | Low-intermediate | 71.5 | 75.9 | 66.9 | 71.2 | 76.0 | 80.4 | 43.0 | 20.4 | 147.7 | 129.5 | 20.6 | 22.4 |
| Western Sahara | Africa | High | 58.7 | 67.6 | 57.3 | 65.9 | 60.6 | 69.8 | 105.9 | 46.1 | 280.5 | 183.5 | 15.5 | 16.9 |
| Yemen | Asia | High | 58.6 | 63.0 | 57.1 | 61.7 | 60.0 | 64.4 | 118.9 | 76.3 | 267.2 | 232.1 | 15.7 | 16.2 |
| Zambia | Africa | High | 42.1 | 57.7 | 41.5 | 55.9 | 42.7 | 59.5 | 181.8 | 101.8 | 603.4 | 306.5 | 14.8 | 17.0 |
| Zimbabwe | Africa | High | 56.0 | 59.8 | 54.5 | 58.8 | 57.5 | 60.8 | 85.2 | 52.8 | 408.2 | 368.7 | 18.1 | 18.8 |

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