Age- and Cause-specific Contributions to the Increase in High Life Expectancy

Abstract

The trend of life expectancy from 1950 to 2019 reveals a gradual slowdown as countries reach higher ranges. While optimistic projections suggest continued increases in life expectancy, the exact path and magnitude of these increases remain uncertain. This study explores the mortality patterns driving high life expectancy, focusing on changes in age- and cause-specific mortality. It finds that reductions in elderly mortality, particularly from cardiovascular diseases (CVD), remain the primary factor driving life expectancy growth. While countries like Singapore and South Korea, which achieved high life expectancy quickly, did so through evenly distributed reductions across multiple causes of death. In contrast, regions heavily reliant on cardiovascular disease (CVD) reductions, particularly aging populations, experience slower progress. Although the study does not determine an upper limit for life expectancy, it highlights that stagnation in high life expectancy countries is due to slower declines in certain disease mortalities rather than a fixed ceiling. Rapid gains are more likely to be achieved through reductions in multiple causes than by focusing on CVD alone.

Keywords: **Mortality and Longevity, Mathematical demography, Population Ageing, Comparative methods**

1 Introduction

1.1 Research Background

Life expectancy at birth (LEB) stands as a comprehensive metric, offering a nuanced assessment of the overall health and developmental status of a population by considering mortality across different age groups(Auger et al., 2014). According to World Population Prospects 2022, in 1960, among 236 countries globally, none boasted a life expectancy exceeding 75 years, with 21.6% surpassing 60 years, and 51.7% falling below 50 years (United Nations, 2022). Fast forward to 2019, and the landscape has drastically transformed: 21.18 % now enjoy a life expectancy surpassing 80 years, and a staggering 96.2% surpass 60 years, with none falling below 50 years (United Nations, 2022).This continuous upward trajectory in global life expectancy signifies a remarkable improvement in population health across diverse age groups, primarily attributable to advancements in medical technology (Boudoulas et al., 2017; Catillon et al., 2018).

As shown in Figure 1, the median life expectancy at birth (LEB) continues to increase with a decelerated pace observed from 1950 to 2019. Although many countries have achieved notable advancements in life expectancies, reaching an even higher life expectancy demands more time and effort compared to the progression from 50 to 60 years old. Consequently, there remains ample room for discussion on how to achieve higher life expectancies, and the study of mortality patterns still need to be continued.

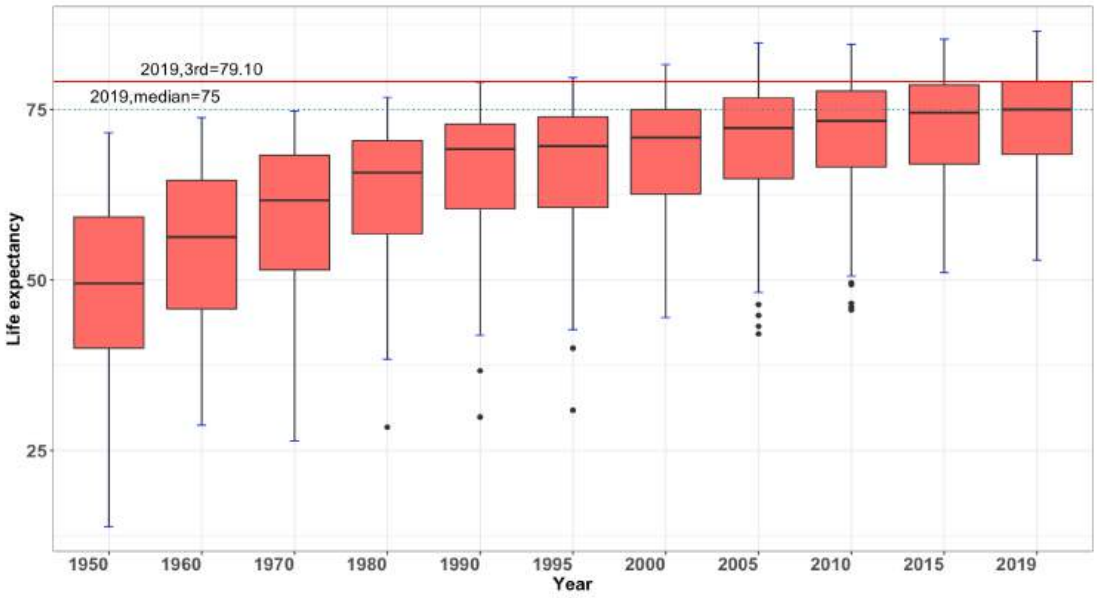

Figure 1. Life expectancy at birth for 236 counties from 1950-2019

Many studies express an optimistic outlook on the possibility of achieving higher life expectancy in the future. France is anticipated to reach 82.0 years for males and 89.4 years for females by 2050, while Japan is projected to attain 87.0 years for males and 94.5 years for females (Babel et al., 2007). Another optimistic forecast suggests that several countries with high life expectancies are poised to break significant barriers by 2050. For instance, Sweden is projected to achieve 87.84 years for males and 90.41 years for females (Pascariu et al., 2018). Vaupel contends that advancements in health are delaying death, allowing people to reach advanced ages in better conditions. He notes that the mortality rate does not increase uniformly with age but rather slowly increases and even decelerates at the oldest ages, suggesting the potential for unlimited human life expectancy (Vaupel, 2010). Additionally, he illustrates a linear increase in female life expectancy of three months per year between 1840 and 2000 in high life expectancy countries such as Australia, Iceland, Japan, New Zealand, Norway, and Sweden (Oeppen & Vaupel, 2002). The average life expectancy for women is projected to reach 100 years by 2060 (Oeppen & Vaupel, 2002). Similarly, Tuljapurkar's research on a universal pattern of mortality decline in G7 countries reveals a constantly exponential increase in the rate of decline in each age-specific mortality. Projections

based on this rate of decline indicate a life expectancy at birth higher than the official conservative estimate (Tuljapurkar et al., 2000).

However, the majority of projections rely on past trends and assume a consistent rate of decline in mortality. Moreover, the global growth in life expectancy has started to decelerate (Kim et al., 2020a; Lopez & Adair, 2019b; Ramsay et al., 2020). Bongaarts criticizes the assumption of invariance in the rate of mortality decline, highlighting that such an assumption produces unconvincing results after only a few decades of verification (Bongaarts, 2005). To what extent, the LEB would increase is difficult to assess, because it depends on how we understand the decline in mortality. In those optimistic mortality projection models, people assume that life expectancy will increase, but how and why it will increase is still vague and unknown (Rabbi & Mazzuco, 2018).

Some studies have shown that increases in life expectancy are associated with a range of variables (Ebenstein et al., 2015; Gürler & Özsoy, 2019). However, the universal pattern of mortality decline in the G7 countries demonstrates a continuously exponential increase in the rate of decline in each age-specific mortality, which weakens the explanatory power of the theory of socially driven mortality rate reduction (Tuljapurkar et al., 2000). Therefore, there are other researchers try to understand increase in life expectancy from changes in cause-specific mortality (Bahk & Jung-Choi, 2020; H. Chen et al., 2020; Khang & Bahk, 2019; Yang et al., 2010; Zheng et al., 2019a). However, these studies primarily focused on how life expectancy at birth (LEB) changes within specific periods (e.g., from 1990 to 2016 in China) rather than addressing how life expectancy grows across different levels. Each period is characterized by different and evolving social conditions, making it challenging to extrapolate these experiences to explain increases at different life expectancy stages for other countries. And the conclusions can obscure changes in mortality patterns.

Moreover, changes in mortality patterns contributing to the increase in high life expectancy are not entirely clear and might vary across countries. For some countries with high LEB, the decline in heart diseases mortality explains gains in life expectancy at age 65 for the U.S. and Netherlands during 1984 to 2000, while declines in mortality

from other diseases of the circulatory system mainly explain the gains for France and Japan (Meslé & Vallin, 2006). Furthermore, while gender life expectancy gaps are notable in numerous countries, their differences in life expectancy growth patterns have not been systematically described (Rochelle et al., 2015a).

Additionally, during the transition to becoming higher life expectancy countries, Singapore achieved an increase in life expectancy from 78 years to 83 years in a mere 13 years, whereas South Korea required 14 years for a similar increment (United Nations, 2022). However, earlier European countries that attained high life expectancy, such as Switzerland, Italy, and Spain, underwent a more prolonged period, necessitating 28 years, 22 years, and 21 years, respectively. There is a scarcity of studies providing explanations for this phenomenon, indicating the existence of distinct decline patterns in mortality behind high life expectancy.

1.2 Research Objectives

The purpose of this study is to explore changes in mortality pattern contributing to the increase in high life expectancy. Specifically, an increase from 78 to 83 years old is chosen for analysis. This range is selected for its representation of a relatively high level at the current stage while still providing a sufficient research sample, given that only a few countries reach extremely high level of life expectancy. In 2019, approximately 28.81% of countries exceed the threshold of 78 years old, and 6.35% surpass 83 years old (United Nations, 2022). Consequently, about one third of countries are striving to achieve a high life expectancy stage (exceeding 78 years old) before reaching an extremely high stage (exceeding 83 years old). The range and the potential research findings serve as a meaningful reference for countries with middle life expectancy to achieve a higher life expectancy.

Meanwhile, mortality patterns are determined by age-specific mortality and cause-specific mortality. Also, heterogeneity may exist in such patterns. Therefore, the objectives of this study are to explore: 1) whether there is a consistent pattern of age- and cause-specific contributions to high life expectancy (from 78 to 83 years) and its

commonalities, 2) whether this pattern differs based on pace of life expectancy growth, 3) whether the pattern differs by geographical location, and 4) whether the pattern differs by gender.

1.3 Research Significance

Medical scientists have studied that achieving longevity depends on accumulation of damage, genes and the innate immune system (Candore et al., 2006; Partridge, 2010). Nevertheless, these studies primarily focus on the exploration of individual life limits, rather than conducting research at the national level on health improvement.

The significance of the study lies in its analysis of the growth patterns of high life expectancy, which provides valuable insights for countries with lower life expectancy and helps their policymakers formulate more effective public health policies. Meanwhile, understanding the growth of high life expectancy is beneficial for us to better build a healthy aging society. With the improvement of medical technology, the continuous decline in elderly mortality rates will extend our life expectancy. As the current younger generation ages, they will be healthier than the older generation, will have higher levels of education, and will contribute more to productivity (Li et al., 2017). At the same time, comprehending the changes in this mortality pattern is essential for understanding the pace of an aging society. Population projection models optimistically estimate potential life expectancy attainment, yet precise forecasts regarding the time required to reach this life expectancy remain elusive. As Vaupel points out, the changing pace of ageing and its consequences have not been fully understood. This may because the verdict does not come from any laboratory or medical institution, while this fact provides a basis for gerontological research, demographic study and policy reform (Vaupel, 2010). Once the government has effective medical interventions to improve mortality patterns, the elderly population is expected to grow rapidly. How to predict this scene and supporting the pension system is also what we should continue to pay attention to.

2 Literature Review

The research aims to explore mortality patterns associated with high life expectancy, focusing particularly on the transitions in mortality and related health transition. This section reviews theories that elucidate the changes in cause-specific mortality contributing to life expectancy improvements. Additionally, this section examines researches on how different causes of death contribute to increases in high life expectancy and how them vary due to other factors.

2.1 Theoretical Foundation

2.1.1 Epidemiological Transition Theory

Based on the demographic transition theory, Abdel Omran introduced the epidemiological transition theory to elucidate mortality transitions (Omran, 1971). With the increase in life expectancy, there is a significant shift in disease patterns. Omran originally categorized the disease transition into three stages, each accompanied by different increases in life expectancy.

In the initial stage (lasting until 1875), labeled the Age of Pestilence and Famine, factors such as a lack of food resources, malnutrition, war, and infectious diseases drive high and fluctuating mortality. Infants and women of childbearing age face significant mortality risks. Average life expectancy varies from 20 to 40 years.

During the second stage (around 1875 to 1930), called the Age of Receding Pandemics, infectious diseases remain prominent, but non-communicable diseases show a rising trend. However, improved sanitation contributes to mortality decline, steadily raising average life expectancy at birth from approximately 30 to about 50 years

Entering the last stage (from 1930 to 1980), known as the Age of Degenerative and Man-Made Diseases, the mortality rate stabilizes at a low level. Non-communicable diseases, especially cardiovascular disease, chronic respiratory disease, and cancer,

replace infectious diseases as the main causes of death. Life expectancy at birth exceeds 50 years and peaks at 70 years.

Eventually, one population will complete the transition process from infectious diseases dominance to chronic degenerative diseases. However, the elimination of one disease may result in people succumbing to other diseases. The transition in disease patterns does not come to a halt. The three-stage theory has faced questioning, particularly in light of the decline in mortality from cardiovascular disease.

A fourth stage of the epidemiologic transition, the Age of Delayed Degenerative Diseases was then proposed by Olshansky (Olshansky & Ault, 1986). The advancement and implementation of medical technology and healthcare programs contribute to the postponement of mortality to an advanced age. During this period, the concept of the cardiovascular revolution was introduced (Vallin & Meslé, 2004), describing a significant decline in mortality from cardiovascular diseases and contributing to the increase in life expectancy at birth. Meanwhile, Rogers also believe that a new fourth stage should be identified as it is influenced by individual behaviors and life-styles (Rogers & Hackenberg, 1987). Omran therefore, later updated a new age of declining cerebrovascular mortality, ageing, lifestyle modifications and resurgent diseases (Omran, 1983). Meanwhile, a fifth stage was proposed with the emergence of new diseases (HIV/AIDS, hepatitis) and re-emergence of infectious diseases (Omran, 1998; Santosa et al., 2014).

In contrast, the fourth stage raises uncertainties about when it will conclude and how much further life expectancy will increase. The ongoing debate questions whether there is an upper limit to average life expectancy, determining the potential extent of human life expectancy (Oeppen & Vaupel, 2002; Olshansky et al., 1990, 2005; Vaupel, 2010). Clearly, we are entering a new era where the elderly constitute the primary population facing mortality risks, and the continuous rise in life expectancy is accompanied by intricate changes in mortality that require further theoretical development for explanation.

2.1.2 Health Transition Theory

Epidemiological transition was primarily formulated based on the experiences of European industrial nations. This aspect is also the reason why it has faced criticism, as not all countries adhere to this linear pattern and pace of transition. Especially in sub-Saharan Africa and Eastern Europe, during the second and third stages of epidemiology respectively, mortality rates have rebounded and remained high.

With the aim of revising the epidemiological transition, Vallin proposed a comprehensive theory, known as the health transition. This theory also aims to reveal the characteristics of epidemiological transitions across different periods, but with a greater emphasis on highlighting the divergence and convergence of mortality during this transition. (Vallin & Meslé, 2004) .

Vallin outlined three stages of health transition, with the first stage encompassing Omran's three stages during the epidemiological transition. This initial stage propagated from developed to developing countries, marked by a shift in life expectancy from divergence to convergence, gradually converging to approximately 75 years. The second stage, termed the cardiovascular revolution, highlights contributions of declining cardiovascular mortality to the increase in life expectancy. Advanced medical technologies led to a faster increase in life expectancy in Western countries, creating a gap with Eastern European nations, which failed to benefit from these advancements for nearly 40 years after 1960. Fortunately, Russia, Poland, and Romania started experiencing increased life expectancy due to the cardiovascular revolution around the year 2000. However, the divergence in life expectancy has not yet shifted to convergence, with the highest life expectancy around 80 years and the lowest around 66 years during the second stage. The third stage involves slowing the aging process, with the primary contributions to the increase in life expectancy coming from the oldest age groups. The 85+ age group holds a crucial position in this stage. Simultaneously, significant gender differences are observed, with females experiencing more extended improvements in health and achieving a higher life expectancy than males. Notably, Japan stands out as a remarkable country during this period, with a life expectancy of

around 78 for males and over 84 for females.

The theory of health transition offers a framework for explaining the ongoing increase in high life expectancy, building upon epidemiological theory. It specifically reveals that the growth in life expectancy is a continuous process of divergence-convergence-divergence. It places the study of mortality within a framework of comparative analysis involving multiple populations. Through such comparative research, the specificity of changes in mortality rates becomes more pronounced.

2.2 Researches on High Life Expectancy

2.2.1 Causes of Death Among High Life Expectancy Countries

Multiple studies have investigated cause-specific contributions to changes in life expectancy among pioneers (i.e., countries or regions with high life expectancy). Hypertensive diseases and cerebrovascular diseases were the main positive contributors to the increase in life expectancy in South Korea during 1983-2005, while ischemic heart disease had a negative effect during these years (Yang et al., 2010). Similarly, in Japan, ischemic heart disease and stroke accounted for nearly 47.4% of the increase in life expectancy during 1997-2017 (Jung et al., 2020). Whether in the early or recent stages, cardiovascular diseases have played a crucial role in the high life expectancy growth. Meanwhile cardiovascular diseases are also the contributors to the life expectancy gaps between counties with high life expectancy. For example, declines in mortality rates from ischaemic heart disease among Australian males contributed to their higher life expectancy compared to males in other high-income countries before 2003. However, since 2003, the deceleration in declines in mortality rates from cardiovascular disease and cancer has resulted in a slower increase in life expectancy for both sexes. (Lopez & Adair, 2019b). Similarly, the stagnation of the decline in cardiovascular disease mortality is also a primary reason for the lower life expectancy in the United States to other peer countries. Alcohol abuse and obesity are potential risk factors associated with cardiovascular disease, and their cumulative effects may impact

future health (Acosta et al., 2022a).

Additionally, there are significant changes in other cause-specific mortalities such as lung cancer, stomach cancer, breast cancer, colorectal cancer, and prostate cancer in high life expectancy countries (C. Chen et al., 2023; La Vecchia et al., 2015; Park & Jang, 2016). However, fewer studies have explored their impacts on the increase in high life expectancy. Furthermore, there are studies on changes in age- and cause-specific mortality patterns contributing to high life expectancy gains (Yang et al., 2010; Zheng et al., 2019a). Although these studies have shown differences in mortality patterns, the studies are conducted over different time periods and focus on different intervals of increase, making the differences incomparable.

The mortality pattern behind the increase in high life expectancy is still unknown and the study needs to be continued. if there is a consistent mortality pattern, the potential findings are crucial for the efficient allocation of health resources in lagging countries in the future.

2.2.2 Pace Differences in High Life Expectancy Growth

Leon's research shows that there are significant differences in life expectancy growth rates between Europe and Japan and the United States from 1970 to 2008. These differences in growth rates are also attributed to distinct patterns of mortality change. For instance, the rapid increase in life expectancy in Portugal is attributed to the decline in by massive reductions in the infant mortality rate , while the slowdown in life expectancy gains in Denmark and the Netherlands is linked to mortality due to the prevalence of smoking among women (Leon, 2011). Another study also observes a slower increase in life expectancy in England and Wales compared with other 22 high-income countries, which is due to the higher mortality among people aged 25–50 years (Leon et al., 2019). In OECD countries such as Australia and Canada, there has also been a slowdown in life expectancy growth, primarily due to a deceleration in the decline of cardiovascular disease mortality rates among the elderly (Raleigh, 2019).

Obviously, different life expectancy growth rates are associated with different

mortality patterns. However, previous studies often adopt a negative perspective, discussing stagnation in high life expectancy growth and attributing it to a slowdown in the decline of specific disease mortality rates (Acosta et al., 2022b; Kim et al., 2020a, 2020b; Lopez & Adair, 2019b). There is a lack of systematic assessment and understanding of the different rates of high life expectancy growth.

2.2.3 Regional Differences in High Life Expectancy

Numerous comparative studies have identified regional differences in life expectancy among Brazil, England, Wales, Japan and the US. The studies reveal variations between northern and southern regions, as well as within individual states. The majority of these disparities can be attributed to differences in economic development, political factors, and cultural influences, the results reveal the health inequalities (Kataoka et al., 2021; Mariotto et al., 2018; Szwarcwald et al., 2016; Woods et al., 2005). In addition, regional differences can also be attributed to demographic factors and resources. In China, the total dependency ratio and water resources per capita have a negative association with the spatially stratified heterogeneity of life expectancy, while medical care expenditure and urbanization rate show a positive correlation (Y. Wu et al., 2020). Timonin's study indicates that the gap in life expectancy among developed countries is partly influenced by geopolitical factors at the level of country groupings (Timonin et al., 2016).

Regional differences in life expectancy are widely acknowledged and are associated with a range of socioeconomic factors. While the exact role of mortality patterns in shaping these differences remains unclear. Vallin's research in Russia has identified four clusters with distinct cause-of-death patterns (Vallin et al., 2005). However, there has been limited exploration of regional differences in mortality patterns behind high life expectancy.

2.2.4 Gender Differences in High Life Expectancy

The gender life expectancy gaps have long been a topic of discussion, indicating underlying disparities in mortality pattern between genders. Vallin’s study examining

the gender life expectancy gap across eight Western countries from 1750 to 2000 reveals a fluctuating trend. Prior to 1950, the gender gap in countries like Sweden, Norway, Denmark, and the Netherlands shrank from 5 years to 2 years. Subsequently, it widened significantly, jumping from nearly 2 years to 7 years. This change was predominantly attributed to man-made diseases and degenerative diseases, with women benefitting more than men from advancements in medical technology for cardiovascular conditions during the third epidemiological transition. However, between 1975 and 2000, the disparity began to decrease (Vallin & Meslé, 2005).

Researchers have explored a lot about reasons causing the gender life expectancy gaps. Men's efforts to manage cardiovascular diseases and the increase of smoking among women contributed to the narrowing of the gap (Pampel, 2002; Vallin & Meslé, 2005). A study of 54 countries from 1994 to 2004 found that factors like alcohol use and GDP are linked to longer life expectancy for women. In contrast, GDP, income inequality, social activity, smoking, and overall happiness seem to play a bigger role in life expectancy gains for men (Rochelle et al., 2015b). However, while biological factors such as telomere length, inherited mitochondrial function, and immune response give women a longevity advantage, they account for only a small part of the gender difference (Seifarth et al., 2012). More recent studies indicate that differences in mortality related with lifestyle choices such as drinking and smoking are more significant factors in this disparity (Kossova et al., 2020; Meara et al., 2008; Sundberg et al., 2018; Trias-Llimós & Janssen, 2018).

However, previous literature has mainly emphasized gender differences in mortality, which may not fully reveal the differences in life expectancy growth patterns within genders. Women enter a stage of higher life expectancy and experience a slower rate of increase compared to men (Leon, 2011). Further research on changes in mortality patterns for both genders during the high life expectancy stage should continue.

2.3 Summary and Research Gap

Overall, there have been considerable discussions about increases in life expectancy during different period and countries. Researchers reveal the changes in age-specific and cause-specific mortality contributing to changes in life expectancy. Obviously, the decline in mortality among the elderly and from cardiovascular disease has played an important role in increasing life expectancy. However, the question of how long these changes in mortality will last and to what extent they will affect our life expectancy growth remains unanswered. Particularly, with cardiovascular diseases mortality decreasing over time, people are bound to die from other causes eventually. Whether new patterns emerge after cardiovascular diseases, remains unexplored. Additionally, current research primarily focuses on increases in life expectancy within specific periods, lacking studies that systematically examine increases at different stages of life expectancy. Consequently, explanations for changes in life expectancy predominantly rely on changes in events occurring within those specific periods. In addition, there has been no systematic comparative study on whether the mortality patterns behind the increase in life expectancy differ by gender, by growth pace, and by region.

Therefore, this paper aims to fill the research gap about the underlying mortality patterns behind the increase in high life expectancy, and to investigate the existence of a consistent mortality pattern, and whether the mortality patterns will show differences based on specific reasons. other Meanwhile, it seeks to provide more detailed descriptions for the later stages of the epidemiological transition-a phase characterized by high life expectancy.

3 Data and Method

3.1 Countries

In this study, the targeted high life expectancy range refers to 78 to 83 years old. According to World Population Prospects 2022, out of the 68 countries and regions that

reach a life expectancy of 78 years old, only 14 reach 83 years old. Ten countries and regions meet the condition after filtering regions with small populations. Since the study utilizes death data from the Global Burden of Disease (GBD), which only provides cause-specific death data from 1990 to 2019, Japan, Hong Kong, and Macao are excluded due to a lack of provided cause-specific death data during the observed period. By referencing life expectancy provided by the GBD, Norway nearly meets the conditions and is also added to the observation list.

The entire eight research countries are listed in Table 1, including life expectancy data from both the United Nations and GBD, as well as the time taken to reach from 78 years old to 83 years old. The included countries represent diverse regions: Singapore and Republic of Korea from Asia, Norway and Sweden from North Europe, Switzerland from Central Europe, Italy and Spain from South Europe, and Australia. Although Asian countries started late to reach the high life expectancy level, they take less time to go through the stage from 78 to 83 years old.

Table 1. Countries list

	Life Expectancy					
	Year	**UN**	**GBD**	**GBD-FEMALE**	**GBD-MALE**	**Duration(year)**
Singapore	1998	77.99	78.28	80.96	75.66	13
	2011	81.98	83.1	85.27	80.79	
Republic of Korea	2004	78.01	78.25	81.54	74.76	14
	2018	83.34	82.94	85.67	80.02	
Switzerland	1991	77.65	78.1	81.54	74.56	20
	2011	82.57	80.03	85.14	80.75	
Italy	1995	78.12	78.22	81.4	74.92	21
	2016	83.05	83.04	85.22	80.68	
Spain	1995	78.2	78.09	81.81	74.39	22
	2017	83.03	83.04	85.81	80.18	
Norway	1995	77.8	78.04	81.04	75.03	24
	2019	82.96	82.9	84.66	81.12	
Australia	1994	77.86	78.02	80.99	75.07	25
	2019	83.11	82.89	84.98	80.82	
Sweden	1991	77.73	78.06	80.94	75.21	28
	2019	83.05	82.82	84.58	81.09	

Source: Global Burden of Disease 2019 (GBD), World Population Prospects 2022 (UN)

3.2 Data

Mortality data by age, cause of death, country, gender, and year are obtained from the Global Burden of Disease database. The GBD summarizes data for 204 countries and territories from global vital registration systems, sample registration systems, household surveys (complete birth histories, summary birth histories, and sibling histories), censuses (summary birth histories and household deaths), and Demographic Surveillance Sites (DSS). The dataset comprises 21 age groups, each with a 5-year age interval, excluding those aged 0 to 1, 1 to 4, and those over 95 years old. There are 21 level 2 causes of death as presented in Table 2. These causes of death encompass the primary one across various age groups, including both physical and mental illnesses, accidents, as well as infectious and chronic diseases.

Table2. Classification of level1 and level2 diseases

Level 1	Level 2
Non-communicable diseases (NCDs)	Cardiovascular diseases (CVD) Chronic respiratory diseases (CRD) Diabetes and kidney diseases, Digestive diseases Skin and subcutaneous diseases Substance use disorders Mental disorders Musculoskeletal disorders Neoplasms Neurological disorders Other non-communicable diseases
Infectious diseases	Nutritional deficiencies Maternal and neonatal disorders Enteric infections HIV/AIDS and sexually transmitted infections Neglected tropical diseases and malaria Respiratory infections and tuberculosis and Other infectious diseases
Injuries	Self-harm and interpersonal violence Transport injuries Unintentional injuries

To enhance the readability of results, causes of death contributed minor to the changes in high life expectancy were combined into one group based on their level-1 causes category. Thus, causes of death are classified into ten categories: 1) cardiovascular diseases, 2) chronic respiratory diseases, 3) neoplasms, 4) respiratory infections and tuberculosis, 5) transport injuries, 6) self-harm and interpersonal violence, 7) HIV/AIDS and sexually transmitted infections (HIV/AIDs and STIs), 8) other communicable, maternal, neonatal, and nutritional diseases (other CMNNs), 9) other maternal, neonatal disorders, nutritional deficiencies (other MNNs), and 10) other injuries. Decomposition results of all causes of death are presented in the appendix.

3.3 Method

3.3.1 Life Expectancy at Birth and Life Table

Life expectancy at birth (e_0), the average age at death for a newborn cohort, is affected by death rates across various age groups. This influence stems from its calculation based on a hypothetical cohort, that is newborn infants are assumed to experience death events observed in subsequent age groups during a specific period.

Life table ("period" life table) is a classical table in demography. It follows the assumption of hypothetical cohort, operated through a set of mortality-related functions to estimate the life expectancy.

The first column is age group, values from 0-1, 1-4, 5-9, …, 90-94, to 95+.

Age-specific death rate (${}_nm_x$) is the second column, which is observed in the period and necessarily needy for calculating remaining columns.

The third column is average years lived by those dying between age *x* and age *x*+*n* (${}_na_x$). Specific data of ${}_na_x$ is difficult to obtain due to one rule of thumb. Therefore, demographic methods are utilized to estimate ${}_na_x$. For age 0-1, I apply Keyfitz's equation to estimate ${}_na_x$ (Keyfitz, 1966):

$$ {}_na_x = 0.07 + 1.7\,{}_nm_x \tag{1}$$

For age groups 1-4 to 90-94, this study applies Greville's method to estimate ${}_na_x$ (Greville, 1977):

$$ {}_na_x = \frac{n}{2} - \frac{n^2}{12}\left[\,{}_nm_x - \frac{ln\left(\frac{{}_nm_{x+n}}{{}_nm_{x-n}}\right)}{2n}\right] \tag{2}$$

Where, n represents the age interval. For example, n for age group 0-1 is 1, n for age group 1-4 is 4, and n for age group 5-9 is 5.

For the last age group, ${}_na_x$ is estimated as (Preston et al., 2001):

$$ {}_na_x = 1/{}_nm_x \tag{3}$$

The fourth column is the age-specific probability of dying (${}_nq_x$) of hypothetical cohort, and it is transformed as below:

$$ {}_nq_x = \frac{n * {}_nm_x}{1+(n-{}_na_x)*{}_nm_x} \tag{4}$$

The fifth column is the number of survivors(l_x) at age *x*, with an original number (l_0) assumed to be: 100,000 for removing the effect of age structure (i.e., mortality of one specific age group with excessive population significantly impacts the average death age). Then the survivors (l_x) at each age is decided by the probability of dying between ages *x* and *x* + *n* ($_nq_x$). The relationships are expressed as below:

$$l_{x+n} = l_x - l_x * {}_nq_x \quad (5)$$

The sixth column is the number of deaths between ages *x* and *x* + *n* ($_nd_x$), results from:

$$_nd_x = l_x * {}_nq_x \quad (6)$$

The seventh column is the number of person-years lived between ages *x* and *x* + *n* ($_nL_x$), which is the sum of person-years lived by individuals died in the age interval and survivors:

$$_nL_x = l_x * n + {}_na_x * {}_nd_x \quad (7)$$

The overall estimate of life expectancy at birth is the sum of age-specific person-years (L_x) lived by the whole hypothetical cohort, divided by the original number in the cohort (l_0). The direct function can be expressed as:

$$e_0 = L_x / l_0 \quad (8)$$

In this study, a total of 48 single-year life tables were created for each country by the whole population (i.e., both genders combined) and gender at two separate times: one when the countries reach 78 years old and the other when they reach 83 years old.

3.3.2 Decomposition of Increase in Life Expectancy at Birth

The aim of this study is to reveal the change of mortality pattern contributing to the increase in life expectancy from 78 years old to 83 years old. The Arriaga decomposition method is utilized to decompose the difference of life expectancy between two populations, attributing it to differences in age-specific mortality and their impact on life expectancy (Arriaga, 1984). Augers and colleagues further developed the method, which partitions the age-specific contributions into contributions by various causes within a given age group (Auger et al., 2014).These methods are applied here to

decompose the increase in life expectancy between two populations: one when a country is 78 years old (e_0^{78}) and the other when it is 83 years old (e_0^{83}). Through this decomposition process, how changes of age-specific and cause-specific mortality contributing to the increase are exanimated.

Each population at one specific time point is represented by one life table. Six life tables are constructed for each country, based on the whole population and two gender at two time points. The essence of decomposition process is analyzing the impact of changes in the age-specific probability of dying $({}_nq_x)$ on changes of the total person-years lived by survivors and dead (L_x), and subsequently, on increase in life expectancy.

Age-specific death rate $({}_nm_x)$ and cause-specific death rate within age groups $({}_nm_x^i)$ from GBD are applied in each life table as the first start. The decomposition is proceeded by steps below:

3.3.2.1 Age-specific Contributions to Increase of Life Expectancy

As indicated by functions (5) and (8) above, the characteristic of life expectancy suggests that when original number in the cohort l_0 is fixed, an increase/decline of probability of dying $({}_nq_x)$ in younger may result in more/less survivors (l_x) and consequently lead to a higher/lower total person-years (L_x). This, in turn, can result in a higher or lower life expectancy. The contributions of age-specific mortality changes to the increase of life expectancies are the sum of three types of effect:

(1) Direct effect (DE): changes in life years lived by a particular age group (age x to $x+n$) as a consequence of the mortality change in that age group. In symbols,

$$DE = \frac{l_x^{78}}{l_0} * \left(\frac{{}_nL_x^{83}}{l_x^{83}} - \frac{{}_nL_x^{78}}{l_x^{78}}\right). \quad (9)$$

Here, 78 represents the corresponding values in life table of population with life expectancy at 78 years old, and 83 represents the population with life expectancy at 83 years old.

(2) Indirect effect (IE): life years added/subtracted to a given life expectancy due to additional/reductive survivors generated after the mortality change in a particular age group, and those survivors maintain an unchanged mortality in

the subsequent age groups.

(3) Interaction effect (I): similar to indirect effect, but with the difference that additional/ reductive survivors were affected by mortality changes in subsequent age groups.

Indirect effect and interaction effect are usually calculated by combining them. In symbols,

$$IE + I = \frac{{}_nL_{x+n}^{83}}{l_0} * (\frac{l_x^{78}}{l_x^{83}} - \frac{l_{x+n}^{78}}{l_{x+n}^{83}}). \quad (10)$$

Therefore, the age-specific contribution (${}_n\Delta_x$) to the increase is:

$${}_n\Delta_x = DE + IE + I. \quad (11)$$

3.3.2.2 Cause-specific Contributions to Increase of Life Expectancy

Changes in age-specific mortality are the result of changes in all the different causes of death within that age group. Therefore, the proportion of a particular cause among all causes within an age group is used to calculate its contribution to changes in life expectancy. To get the cause-specific contributions within an age group (${}_n\Delta_x^i$), the function below is used:

$${}_n\Delta_x^i = {}_n\Delta_x * \frac{({}_nR_x^{i,83} * {}_nm_x^{83}) - ({}_nR_x^{i,78} * {}_nm_x^{78})}{{}_nm_x^{83} - {}_nm_x^{78}} \quad (12)$$

Where ${}_nR_x^i$ is the proportion of deaths between ages *x* and *x*+*n* due to cause *i*.

In conclusion, increases in life expectancy for one specific population group could be represented as:

$$e_{country,gender}^{83} - e_{country,gender}^{78} = \sum_{n=0}^{95} {}_n\Delta_x = \sum_{n=0}^{95} \sum_{i=1}^{21} {}_n\Delta_x^i \quad (13)$$

Where *i* is the number of causes of death. $\sum_{n=0}^{95} {}_n\Delta_x$ is the sum of contributions from all age groups. $\sum_{n=0}^{95} \sum_{i=1}^{21} {}_n\Delta_x^i$ is the sum of cause-specific contributions within each age groups.

4 Results

Results are presented as age-specific contributions across 21 age groups, total contributions from each cause of death, and age- and cause-specific contributions. Comprehensive results, including all detailed contributions and their proportions for each age group and cause, are available in the tables in the supplementary material.

4.1 Age-specific Contributions to the Increase in High Life Expectancy

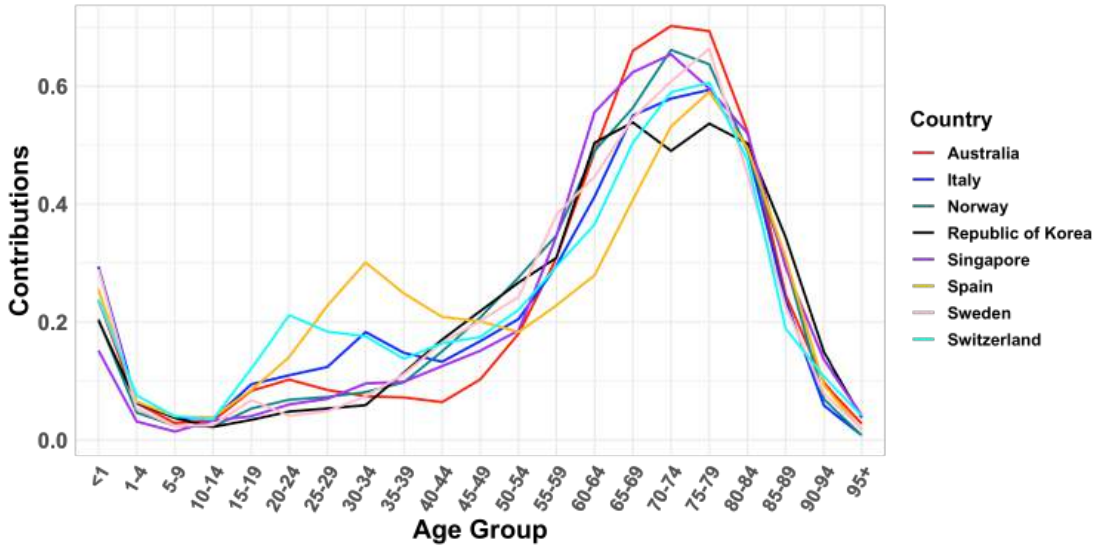

Figure 2. Age-specific contributions to the increases in high life expectancy, both genders combined

Figure 2 shows that trajectories of age-specific contributions highly converge within the 1-14 and 80+ age groups, while exhibit relative divergence in the 15-80 age groups. Detailed numbers of age-specific contributions are presented in Supplementary Table 1-1.

The most significant contributions are observed in older age groups (60-84 years), ranging from 2.30 to 3.07 years and accounting for 46.56% to 62.95% of the total increase. Within these age groups, the 70-79 age group shows the highest gains, contributing 1.03 to 1.40 years (21.84%-28.65% of the total increase). This indicates a significant decrease in mortality rates among the elderly, resulting in an overall increase

in high life expectancy.

There are also noticeable contributions from the <1 year age group, which contributes 0.15 to 0.24 years (3.15% to 6.10% of the total). Meanwhile, although young middle age groups (20-39 years) also exhibit significant contributions, this trend is only observed in Spain (0.92 years/18.56%), Switzerland (0.71 years/14.52%) and Italy (0.56 years/11.70%). 1–14 age groups have a minimal impact on the overall growth, contributing only 0.08 to 0.15 years (about 1.63%-3.04% of the increase).

In summary, while Spain, Italy, Switzerland, and Australia show some differences within the 20-54 age range compared to other countries, the age-specific contributions pattern is very clear.

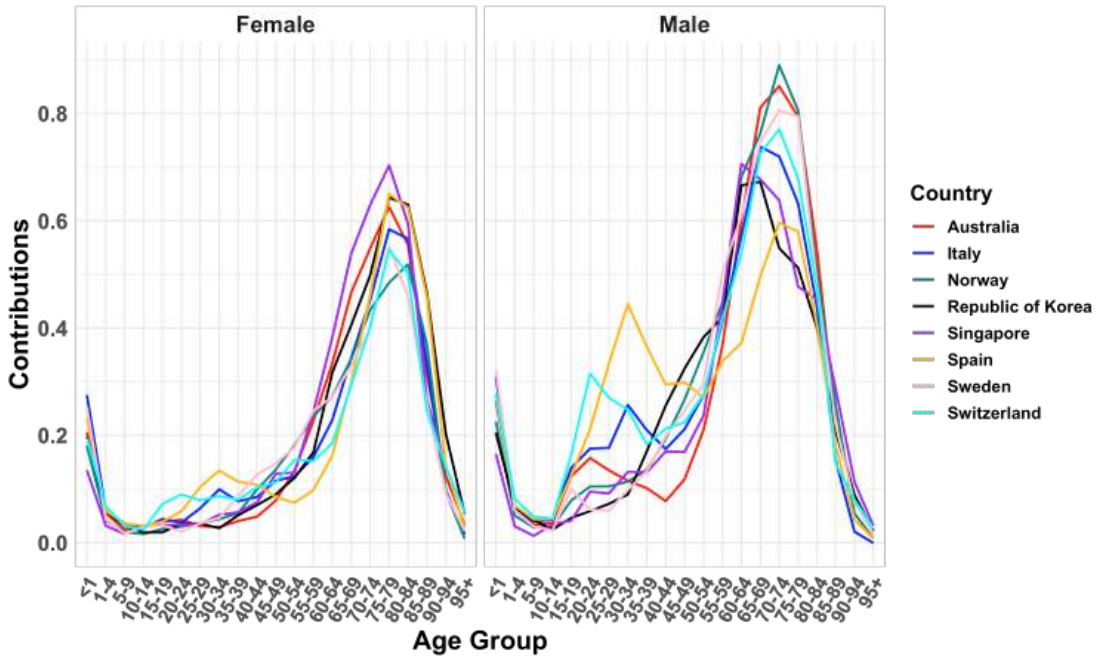

Figure 3. Age-specific contributions to the increases in high life expectancy by gender

Figure 3, Supplementary Table 1-2, and Supplementary Table 1-3 show age-specific contributions to high life expectancy growth for females and males, respectively. In the life expectancy growth range of 78 to 83 years, males demonstrate the highest overall contribution to national life expectancy, with an increase ranging from 5.14 to 6.21 years. In contrast, the range for females lies between 3.62 and 4.32 years. Additionally, contribution trajectories for both male and female populations display trends similar to those observed in the overall population, while there are

differences in age-specific contributions between genders.

In both genders, elderly groups contribute significantly to life expectancy increases. This pattern of dominance by the elderly is particularly pronounced among females. Females aged over 60 contribute approximately 2.38 to 3.32 years (65.36%-77.66% of their total increase), while males contribute about 2.68 to 3.93 years (46.27%-68.49%). Furthermore, females' highest contributions occur within the 75-79 age group, compared to the 70-74 range for males. In the middle-aged groups (20-54 years), males show greater divergence in contributions, ranging from 0.06 to 0.44 years, versus 0.02 to 0.18 years for females. Also, contributions from males account for 15.94%-38.29% of their total, compared to 10.14%-19.51% for females. For infants and teenagers (1-19 years), males generally contribute more (averaging 0.49 years) than females (0.35 years), with similar proportions around 8%.

The age patterns indicate that males play a more important role in affecting the trend of the age-specific contribution patterns of the whole population as presented in Figure 2. Especially, the outliers in the middle age groups are attributed by male.

Additionally, compared with other countries, Korea and Singapore, which spend less time to achieve a higher level of life expectancy, have higher increases in female life expectancy and lower increases in male life expectancy. This means that the decline in female mortality of the two countries has contributed greatly to the increase in life expectancy of the total population.

4.2 Cause-specific Contributions to the Increase in High Life Expectancy

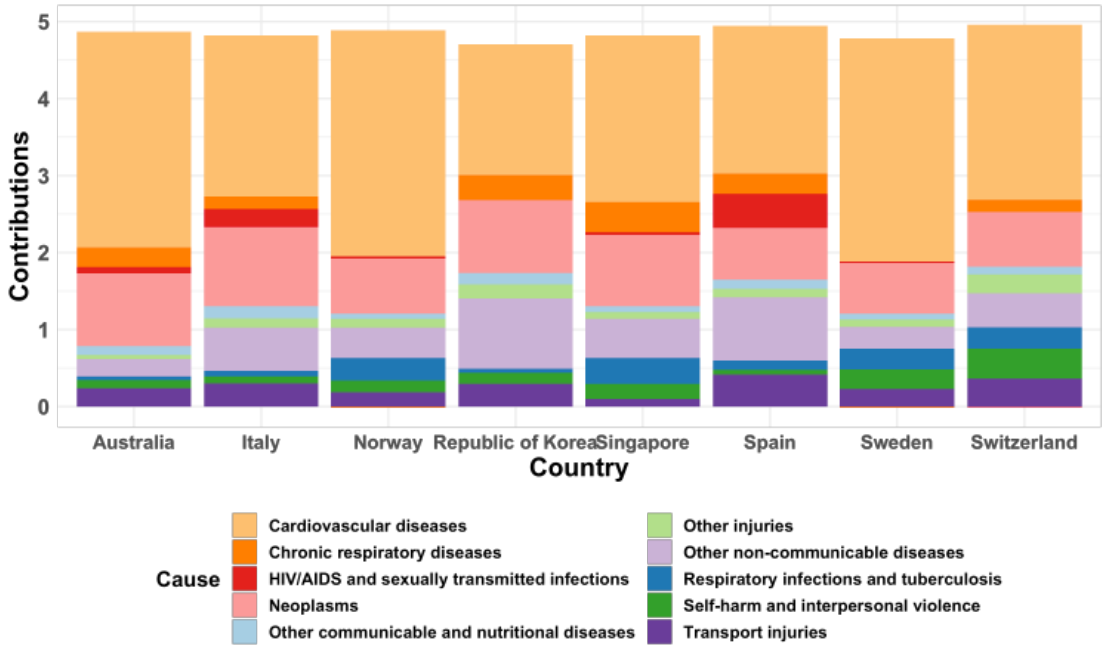

Figure 4. Cause-specific contributions to the increases in high life expectancy, both genders combined

Figure 4 illustrates contributions from 7 specific causes of death to the increase in high life expectancy, while the remaining causes are grouped into 3 "other" causes based on their Level 1 cause category. Detailed contributions from all 21 causes of death can be found in Supplementary Table 2-1.

In term of level 1 causes of death, among the eight countries, NCDs contribute a total of 3.83 to 4.43 years to life expectancy, accounting for 77.39% to 90.91% of the total increase. After NCDs, injuries contribute a total of 0.38 to 0.99 years, accounting for 7.85% to 20.08% of the increase. Infectious diseases have the smallest contribution, adding only 0.08 to 0.59 years, or 1.76% to 11.92% of the total increase.

From the perspective of level 2 causes of death, cardiovascular diseases are the primary contributors to the growth in life expectancy, with an increase of 1.70 to 2.90 years, representing 36.05% to 60.80% of the total increase. The decline in cardiovascular disease mortality significantly boosted life expectancy in Switzerland,

Norway, and Australia, contributing 60.80%, 60.29%, and 57.60% of their respective increases. In other countries, the impact of cardiovascular diseases ranged from 35.05% to 45.98%. Korea benefited the least from reductions in cardiovascular mortality, accounting for only 35.05% of its total life expectancy gain.

Neoplasms are the second leading contributors to life expectancy increases, after cardiovascular diseases. Italy benefits the most from a reduction in neoplasm mortality, achieving a 1.03-year increase, which accounts for 21.34% of its total growth. In contrast, Spain sees the smallest benefit, with just a 0.67-year increase, representing 13.64% of its total growth.

Chronic respiratory diseases also significantly impact life expectancy growth, though their effects vary by country. They contribute increases of 0.33 and 0.39 years to rapidly increasing countries like Singapore and South Korea, accounting for 7.03% and 8.18% of their respective total increases. However, they have a negative impact in Nordic countries such as Norway and Sweden, each seeing a slight decrease of -0.02 years (-0.36% and -0.39% of their total increases). For other countries, the contributions account from 3.25% to 5.37%.

As for other NCDs, different countries exhibit varied characteristics. Diabetes and kidney diseases have the most substantial contributions in South Korea, contributing to 8.17% of the growth, followed by Spain (4.61%) and Singapore (3.62%), with other countries benefiting less. Digestive diseases follow a similar characteristic, impacting South Korea the most with 7.29% of the total increase, then Spain (6.73%) and Italy (6.39%), while other countries see smaller benefits. Although the impacts of enteric infections are generally minor, apart from South Korea and Singapore, they contribute negatively to most other countries.

Transport injuries are the most significant injury-related cause of increases in life expectancy. They account for the highest contributions in Spain and Switzerland, representing 8.44% and 7.32% of the total increases, respectively. Following this, self-harm and interpersonal violence are the next major injury-related contributors to life expectancy growth in Switzerland, accounting for 7.82%.

Respiratory infections and tuberculosis represent the most impactful infectious

diseases on life expectancy. They contribute approximately 6.0% to the increases in Norway, Singapore, Sweden, and Switzerland, although their impact is much smaller in other counties, around 1.0% to 2.0%. HIV/AIDS and sexually transmitted infections are the second most significant infectious diseases, notably affecting Spain and Italy with increases of 8.89% and 4.85%, respectively.

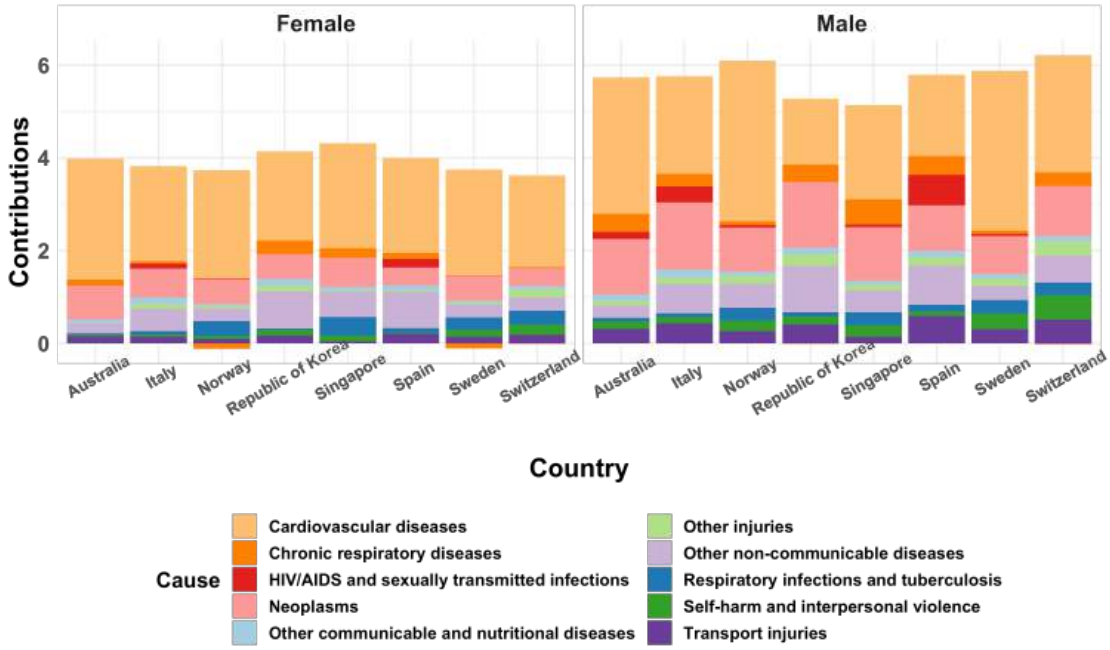

Figure 5. Cause-specific contributions to the increases in high life expectancy by gender

Figure 5 shows cause-specific contributions to the increases in high life expectancy by gender and more details can be found in Supplementary Table 2-2 and Table 2-3. The trend for each gender aligns closely with the one observed in Figure 4. Overall, the contributions of cardiovascular disease and neoplasms are particularly pronounced during periods of high life expectancy growth. There are notable differences in disease patterns between countries due to various factors. In particular, contributions from cardiovascular diseases are greater in countries with a longer period of increase; significant contributions from HIV/AIDS and sexually transmitted infections are observed in southern European countries (Spain, Italy), while these are less pronounced in other regions. In addition, gender differences may sometimes mask or dilute the apparent importance of certain disease contributions when solely looking at contribution patterns of growth in national life expectancy.

Cardiovascular diseases contribute between 1.92 to 2.62 years to the increase in female life expectancies, accounting for 46.46%-65.83% of their total gains. In contrast, contributions for males range from 1.42 to 3.46 years, representing 26.93%-58.75% of their total increases. Conversely, neoplasms have a greater impact on male life expectancy, accounting for 14.00%-26.97%, compared to just 9.81%-18.34% for females. Notably, neoplasms account for as much as 26.97% of the increase among males in South Korea, but only 12.79% among females. This results in an overall contribution of 20.03% for the whole population, thereby reducing the relative significance of neoplasms to South Korea's national life expectancy growth without gender perspective.

Chronic respiratory diseases generally have a positive effect on life expectancy. In the Nordic region, however, they have a negative effect in Norway and Sweden, where rising female mortality rates account for -3.15% and -2.95% to the changes in life expectancy, respectively.

Males benefit more from improvements in injury-related mortality than females. Excluding a minor impact in Singapore, the contribution of transport injuries to male life expectancy ranges from 4.36% to 10.28%. Whereas for females, it is only between 1.00% and 5.29%. In terms of self-harm and interpersonal violence, contributions are also higher for males than for females. Additionally, contributions to life expectancy from self-harm and interpersonal violence are notably higher in Sweden and Switzerland, compared to other countries.

HIV/AIDS and sexually transmitted infections contribute more significantly to male life expectancy than to female, particularly in Spain and Italy, where the differences in contributions amount to 6.79% and 3.12%, respectively. Australian male also benefits from decreased mortality due to HIV/AIDS and sexually transmitted infections. However, the relatively smaller gains among females result in these contributions not being prominent in Australia's overall cause-specific contribution pattern.

4.3 Cause-specific Contributions to the Increase in High Life Expectancy by Ages

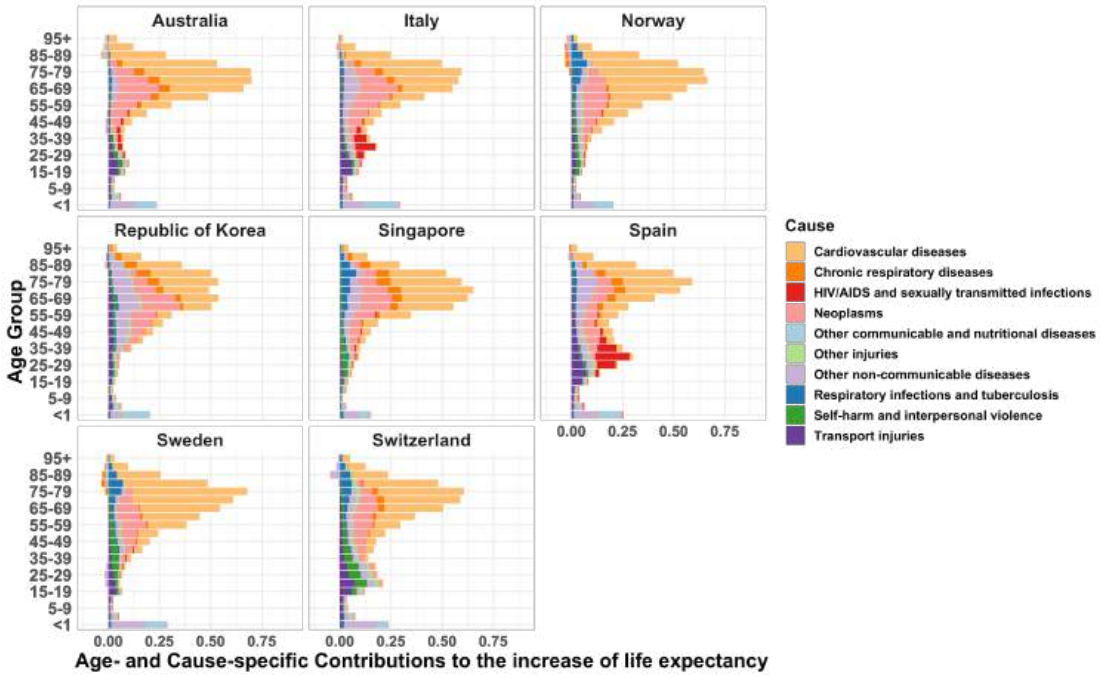

Figure 6. Age- and cause-specific contributions to the increases in high life expectancy, both genders combined

Figure 6 displays cause-specific contributions across age groups with both genders combined. Tables 3-1 to Tables 10-3 in the Supplementary Material detail age- and cause-specific contributions for each country for the whole population and by gender.

The pattern of increase in high life expectancy is driven by NCDs among the middle-aged and elderly. Particularly, cardiovascular diseases in those over 60 years old account for the majority of the increase in life expectancy. Additionally, neoplasms in the 40-79 age group significantly contribute to this growth. The distribution of contributions from chronic respiratory diseases is similar to that of neoplasms, but notably causing a negative impact on life expectancy in the advance elderly (75 years and above) in Norway and Sweden.

Moreover, although not universally observed, significant contributions from respiratory infections and tuberculosis to increases in life expectancy are noted among the elderly (60 years and above) in Singapore, Norway, Sweden, and Switzerland.

Contributions to life expectancy gains from HIV/AIDS and sexually transmitted infections in Spain and Italy primarily come from the middle-aged population (20-50 years).

The contribution patterns of the above diseases typically show an inverted V-shape distribution, concentrating mainly within a specific age range and peaking in a middle age group. In contrast, transport injuries, self-harm, and interpersonal violence exhibit a pattern that contributions to life expectancy decline with age.

Maternal and neonatal disorders are primary causes of life expectancy gains in the <1 year age group, along with contributions from other non-communicable diseases.

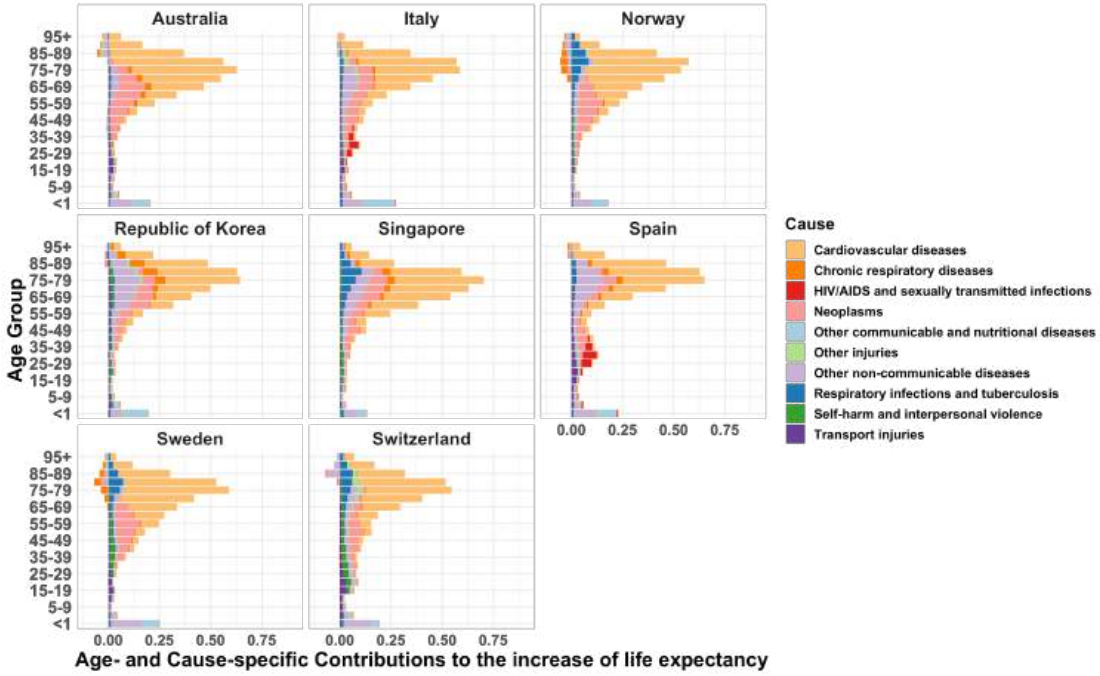

Figure 7. Age- and cause-specific contributions to the increases in high life expectancy, among female

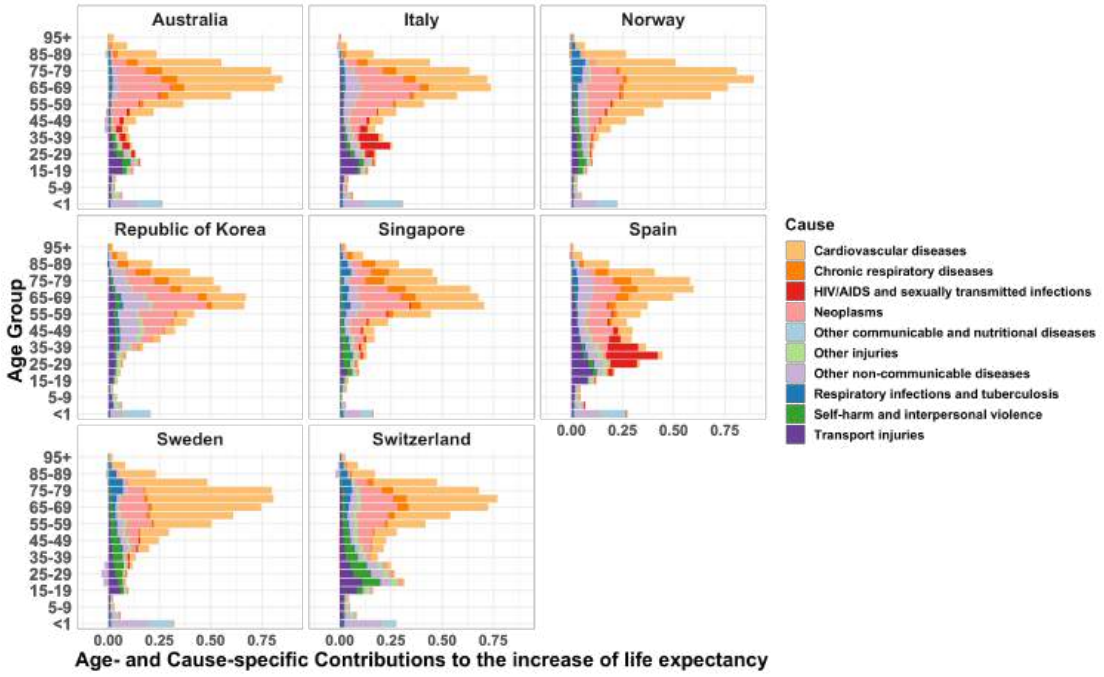

Figure 8. Age- and cause-specific contributions to the increases in high life expectancy, among male

Figures 7 and 8 show age- and cause-specific contributions to the gains in high life expectancy by gender. Compared to the broad distribution among males, contributions from cardiovascular diseases in females are more concentrated in older age groups. Conversely, in terms of neoplasms, contributions from younger elderly and middle-aged women are more significant. While in men, contributions from neoplasms are predominantly found in older age groups. The negative contributions from chronic respiratory diseases to gains in national life expectancy in Norway and Sweden are primarily caused by women over the age of 70.

Contributions from respiratory infections and tuberculosis mainly come from elderly women aged 60 and above. Additionally, contributions to life expectancy gains from HIV/AIDS and sexually transmitted infections are predominantly from young men aged 20-40. Significant contributions from self-harm and interpersonal violence, as well as transport injuries, are observed in males within the 15-50 age group. Moreover, compared to females, contributions of these two injuries have a wider age distribution among males. Last, negative impacts on life expectancy growth from the advance age group are found among females.

5 Discussion

This study has selected eight countries that have experienced noteworthy advancements in high life expectancy. It investigates whether a consistent age-specific and cause-specific mortality pattern contributing to the increase in high life expectancy and whether there is heterogeneity in the pattern. The results address research question (1) and show a consistent pattern characterized by declines in noncommunicable disease mortality among the elderly and the middle-aged, contributing to the increase in high life expectancy. Additionally, the study answers research questions (2), (3), and (4) by revealing heterogeneity in the pattern of contributions, showing differences by gender, pace, and geographical location.

Such comparative study allows for a comprehensive analysis of mortality rate trends, yielding universally applicable insights. These insights can provide instructive public health recommendations and forecasts for other countries with low and middle life expectancy.

5.1 Commonalities in Contributions Pattern Behind the Increase in High Life Expectancy

In the process of transitioning to higher life expectancy in countries with already high life expectancy, reductions in the elderly mortality remain the primary contributing factor to life expectancy growth, aligning with current research (Mayhew & Smith, 2015; Yang et al., 2010; Zheng et al., 2019b). As Vaupel notes, mortality rates continue to decline, and deaths are delayed and concentrated in older age groups (Vaupel, 2010). This delay leads to increasing contributions to gains in life expectancy from the elderly (H. Chen et al., 2020). Besides, the age group making the most significant contributions is progressively older over time.

This study reveals an inverted V-shape distribution of age-and cause-specific contributions among the elderly, particularly from non-communicable diseases such as cardiovascular disease and neoplasms. This pattern primarily arises from minimal

changes in mortality from specific causes within certain age groups, contrasted with significant changes observed in other age groups. Although many studies show a continuing decrease in mortality among the elderly, few have revealed variations across different elderly age groups (Rau et al., 2008). The results of this study suggest that the effectiveness of improvement for diseases does not necessarily follow a linear relationship. In other words, younger age does not necessarily correlate with greater benefits. Similarly, a study on heart disease mortality among young adults in the U.S. found that the percentage reduction in mortality rates accelerated more in the 55+ age groups compared to the 35–54 age groups (Ford & Capewell, 2007).

The decline in CVD mortality is a primary reason for the decrease in all-cause mortality among the elderly and the subsequent increase in high life expectancy. This provides new interpretations and support for epidemiological and health transition theories, suggesting that a cardiovascular revolution may continue to develop for an extended period (Omran, 1971; Vallin & Meslé, 2004). Norway, Australia, and Sweden benefit more from the decline in CVD mortality due to improvements in the prevalence of hypertension, smoking, and hypercholesterolemia, as well as better national education levels. (Eriksson et al., 2011). For Asian countries, South Korea and Singapore, reductions in smoking and alcohol consumption have contributed to a decrease in CVD mortality (Lin et al., 2023). However, rising obesity rates have offset some of these improvements, resulting in smaller gains in life expectancy compared to Western countries (Ueshima et al., 2008). Benefits of reducing CVD for men are significantly less than for women, primarily because men benefit less from technological advances and have poorer health behaviors. This indicates considerable potential for further reducing male CVD mortality as life expectancy continues to rise (Vallin & Meslé, 2004; J. Wu et al., 2022). It is also found that in the age group over 80 years, the contribution of CVD shows a steep decline. As mentioned before, there is an inverted V-shaped distribution of contributions from CVD among the elderly. To some extent, this could be due to the gradual delay in the onset of CVD, which has not yet extended to those ages. However, studies have found that the decline in CVD mortality is slowing, suggesting that further research is needed on whether it is difficult

for the very old group to continue to benefit from the decline in CVD mortality (Lopez & Adair, 2019a).

The contribution of neoplasms to the increase in life expectancy is second only to cardiovascular diseases. However, due to varied causes of neoplasms-related deaths in different countries, it is challenging to categorize a universal pattern. In South Korea, stomach cancer has a significant presence in mortality rates due to poor eating habit (Shin et al., 2010). Nonetheless, improvements in health policies have markedly reduced its mortality rate, contributing to the increase in life expectancy (C. Chen et al., 2023). For the other seven countries, tracheal, bronchus, and lung cancer, along with colon and rectum cancer, are the main concerns. Lifestyle like: smoking, alcohol use, overweight and obesity, physical activity and fruit and vegetable consumption still account a lot for the cancer in these high life expectancy countries (Boniol & Autier, 2010; Danaei et al., 2005). However, well development of cancer diagnosis, treatment, and management help to shrift the negative effects (La Vecchia et al., 2015). The death patterns in these countries align more with the fourth stage of the epidemiological transition, featuring diseases often related to lifestyle habits. Additionally, other studies also observed a global decline in neoplasm mortality rates, particularly with men experiencing a faster decrease than women. This partly explains why the contribution of neoplasms to life expectancy gains is greater for men than for women (Hashim et al., 2016).

Even in stages of high life expectancy growth, the decline in infant mortality rates still significantly contributes to the growth, mainly due to improvements in maternal and neonatal disorders and other non-communicable diseases. This is attribute to series policies contribute to the wellbeing of perinatal woman and infant, like job-protected paid parental leave and support to perinatal care center (Chang et al., 2011; Patton et al., 2017). In lower life expectancy countries, infectious disease and malnutrition are main causes of death for infant, highlighting a need for improvements in sanitary condition (Boutayeb, 2010). While turn to a stage of higher life expectancy, advancements in social security benefits and female status play a more important role in control infant mortality (Frey & Field, 2000; Wennemo, 1993).

Decreases in mortality from transport injuries, self-harm, and interpersonal violence contribute significantly to life expectancy growth in most countries, especially among young and middle-aged male. A potential explanation is the stable development in economic associated with a safe social environment (Sahlin et al., 2017). However, other studies indicate that unlike in low-income countries, where self-harm is often associated with poverty, violence, and political instability, it is more frequently linked to mental health issues in high-income countries (Eissazade et al., 2024). South Korea has reduced the risk of self-harm by increasing access to mental health providers. It has been observed that men benefit from this service more than women, and young people are more likely to seek help from mental health providers than older individuals (Gong et al., 2023). Additionally, improvements in alcohol control also helps to reduce the transport injuries in Europe (Haagsma et al., 2022).

In conclude, a consistent mortality pattern becomes evident: the growth in high life expectancy is driven by the decline in mortality rates from CVD and neoplasms among middle-aged and elderly populations. This observation partly suggests the existence of a consistent mortality pattern and reply to the research question (1). In addition, beyond these two primary characteristics of mortality changes, the contributions to the increase in life expectancy exhibit heterogeneity.

5.2 Heterogeneity in Contributions Pattern Behind the Increase in High Life Expectancy

The heterogeneity in national-level life expectancy growth patterns can be understood from various perspectives. From the perspective of gender, although men and women have developed similar patterns of life expectancy growth, such as both primarily benefiting from declines in NCDs mortality, gender differences contribute to the heterogeneity in national-level life expectancy growth patterns. For example, HIV/AIDS and sexually transmitted infections have notable contributions to life expectancy gains among males in Australia and Singapore. However, when combined with lesser contributions from females, their overall impact on the entire population

(i.e., gains in national life expectancy) becomes negligible. This contrasts with the situation in Italy and Spain, where both male and female have significant and positive contributions from HIV/AIDS and sexually transmitted infections.

In most cases, the heterogeneity in contribution patterns arises from differences within each gender. Negative contributions to life expectancy growth from the elderly population are particularly evident in Australia, Norway, Switzerland, and Sweden. This is primarily due to the rising mortality from chronic respiratory diseases, neoplasms, and other NCDs among females in these countries. This can explain by a cumulative damage during the life in female, including exposure to fuels use in cooking, smoking and obesity, because the benefit from decline smoking is limited (Khaltaev & Axelrod, 2019). Similarly, negative contributions from substance use disorders in Australia and Sweden due to working age groups are only observed among midlife males. The disease relies on chemicals to alter an individual's mental state, including alcohol, drugs, and anti-anxiety medications. Although Australia has conducted the national reform to improve burden of substance use disorders, the mortality among males remained unchanged during 1990 and 2015 (Ciobanu et al., 2018). In Sweden, the disease is mainly attributed to drug-related causes among young men and alcohol-related causes among older men. Compulsory care programs have failed to reduce mortality rates, with relapse and overdose after discharge contributing to increased mortality (Scarpa et al., 2023). Additionally, substance use disorders are associated with post-traumatic stress disorder, indicating complex mental and psychological challenges among males in both countries. (Mills et al., 2006). Overall, these findings address research question (2), highlighting the significant role of gender in shaping differences in life expectancy growth patterns among the eight countries.

From the perspective of geographical location, it also helps shape differences among those countries. In the neighboring South European countries of Spain and Italy, HIV/AIDS and sexually transmitted infections have made a significant positive contribution among middle-aged and young adult populations, due to spread of spread PrEP, TasP and screening programs (Salvati et al., 2020). While HIV/AIDS and sexually transmitted infections have a minor impact in other countries. Even though the

decreases in deaths from other diseases did not show regional clustering, the above observations partially addressed research question (3).

From the perspective of pace, it to some extent helps shaping heterogeneity and response to the research question (4). The study finds that the shorter time taken to reach the high life expectancy, the contributions of CVD are more likely to be smaller. Notably in Singapore and South Korea, which have reached high life expectancy taking the shortest time, the distribution of contributions is relatively even among all causes and injuries, rather than CVD having absolute dominance. In the two countries, gains in life expectancy are achieved through simultaneous declines in mortality from multiple diseases. In contrast, relying heavily on reductions in CVD mortality to improve life expectancy into a higher level requires more time to achieve life expectancy gains, especially in regions with significant aging.

5.3 Insight of the Study

This study examines changes in mortality among eight countries with high life expectancy, thereby deepening our understanding of primary age groups and causes of death that led to a higher level of life expectancy. Unlike other studies that use regression models to explore indirect effects of socioeconomic variables, socio-political factors, female education, physician density, and specific disease prevalence rates (such as HIV prevalence) (Freeman et al., 2020; Kabir, 2008; Mondal & Shitan, 2013, 2014), this research adopts a formal demographic approach to analyze underlying causes of increases in high life expectancy. While previous studies have explored how differences in disease mortality rates account for life expectancy disparities among high-income countries (which typically have high life expectancies) and within different demographic groups (Chang et al., 2011; Ho & Hendi, 2018; Jung-Choi et al., 2014; Khang et al., 2010; Rogot et al., 1992), there has been limited systematic observation of mortality patterns contributing to increased life expectancy.

The growth pattern of high life expectancy significantly differs from that of countries with low life expectancy (mainly in underdeveloped regions, e.g., in 2019

Congo: 59.19 years old; Zambia: 61.22 years old). In South Africa, the well-controlled HIV due to the development of mass antiretroviral treatment (ART) contributed to an 8.9-year growth in life expectancy during the increase from 54.0 years in 2006 to 65.1 years in 2017 (Bor et al., 2013; Doan et al., 2022). The life expectancy growth in these lagging regions is primarily driven by improvements in infectious diseases, such as HIV/AIDS, respiratory tract infections, neglected tropical diseases, and diarrheal diseases among young and middle-aged populations, as well as improvements in neonatal disorders among infants and children aged 1–4 years. These issues are closely linked to socio-political and economic problems like poverty, unrest, political instability, inequality, and insufficient healthcare resources (Chisumpa & Odimegwu, 2018; Freeman et al., 2020; Jembere et al., 2018; Mondal & Shitan, 2013, 2014).

The growth pattern in countries with high life expectancy also differs from those with middle-high life expectancy (primarily middle-income countries, e.g., in 2019 Indian: 67.24 years old; Mexico: 70.21years old). In the latter, while the decline in infant mortality rates remains significant, the focus shifts to contributions from chronic diseases among the elderly. For example, during China's increase in life expectancy from 66.86 years in 1990 to 76.3 years in 2016, the decrease in mortality from infectious diseases among infants contributed to a 27% growth before 2002. Subsequently, the primary contributors became the decline in cardiovascular diseases, chronic respiratory diseases, and neoplasms among individuals aged 65 and above, accounting for a 62% increase in life expectancy (Chen et al., 2020). In addition, inequalities in mortality persist due to disparities in urban and rural living conditions, socioeconomic status and access to health care, posing a challenge to improving mortality rates (Chan, 2015; Chan & Kamala Devi, 2015; Yiengprugsawan et al., 2007). However, with urbanization, populations in these countries are benefiting from improved living conditions, leading to better health outcomes (Z. Chen et al., 2021).

In contrast, the growth in high life expectancy of selected eight countries is primarily driven by chronic diseases among the elderly, especially cardiovascular diseases and neoplasms. Moreover, the notable decrease in mortality among young and middle-aged males, though less explored in previous research, also makes a substantial

contribution. While some studies attribute declining trends to improvements in health risk behaviors such as smoking, there remains a dearth of literature and theoretical research elucidating changes in mortality rates among middle-aged men (Zatoński et al., 2017). This suggests a need for further attention to health issues of middle-aged men.

Additionally, in comparative study on the life expectancy gap between high and middle-high life expectancy countries, cardiovascular diseases mortality has also been identified as the predominant factor contributing to the gap (Lyu et al., 2023). Both this study and previous research findings support the key role of cardiovascular diseases in future global life expectancy gains (Mathers et al., 2015). The findings of this study also emphasize that focusing heavily on cardiovascular diseases may not be sufficient for countries seeking to achieve higher life expectancy, given the prolonged time required for improving CVD mortality. Instead, attention should be focused on a wide range of diseases and injuries, particularly those affecting middle-aged men. At the same time, future gains in life expectancy will also require attention to differences in mortality changes between urban and rural, educational, and income groups (Luy et al., 2019; Meara et al., 2008; Rogot et al., 1992; J. Wu et al., 2022). As this study illustrates, contributions to life expectancy growth are not due to inherently lower mortality rates, but to substantial declines in mortality. Therefore, ensuring a more even distribution of declining mortality rates among all population groups is conducive to improving overall life expectancy.

The findings of this study provide partial support for existing literature and theoretical research. Notably, gender disparities in mortality remain pronounced even as life expectancy rises to a super high level (Chisumpa & Odimegwu, 2018; J. Wu et al., 2022). Women currently have a life expectancy approximately five years longer than men in the eight countries. However, men experience an increase of about two years more than women over the period of life expectancy growth. Furthermore, the findings add to the cardiovascular revolution theory by showing that the decline in cardiovascular diseases will continue to exert a prolonged influence on life expectancy gains in the later stages of health transitions (Vallin & Meslé, 2004). In addition,

regarding the debate about whether there is an upper limit to life expectancy, while the findings cannot directly answer this question, they can respond to the problem of "stagnant" growth in a country with middle-high or high life expectancy (Kim et al., 2020b; Mehta et al., 2020). Such a stagnation does not imply that life expectancy has come to a halt or reached a maximum, but rather that the rate of decline in mortality from certain diseases has slowed. Therefore, this paper supports the view that there is insufficient evidence to conclude that the decline in mortality among people over 60 has decelerated (Mathers et al., 2015).

The results of this study also shed light on issues overlooked in previous literature. Contrary to the expected recurrence of infectious diseases in the later stages of the epidemiological transition (Omran, 1983), improvements in respiratory infections and tuberculosis are identified among elderly populations in Norway, Switzerland, Sweden, and Singapore. These improvements are more likely to have occurred in early stages of the epidemiological transition. Conversely, NCDs do not always make a consistent positive contribution. In this study, chronic respiratory diseases mortality among women in older age groups have been found to have a negative impact on life expectancy, whereas the contribution among younger elderly individuals is positive. This phenomenon that has not previously been addressed in theoretical discussions, suggesting a potential rebound in chronic diseases among older age groups at the later stage of epidemiological transition. These diseases are associated with long-term cumulative damage and offer insights for future research to explore how health risks experienced throughout the life course influence later health problems (Ben-Shlomo & Kuh, 2002). This exploration can facilitate the development of improved intervention and prevention strategies.

This study shows potential growth patterns for countries currently at middle-high levels of life expectancy. The results of this study do not predict which countries will be like Singapore and South Korea (faster growth) and which countries will be like Sweden and Norway (slower growth), but it has confirmed that breakthrough gains in life expectancy are possible in a short period of time after effective reductions in mortality from certain diseases. Also, a breakthrough in high life expectancy also means

that the number of elderly people will continue to increase in the short term (Christensen et al., 2009). For countries with middle-high life expectancy, such as China, Thailand, Malaysia, and Vietnam, aging is likely to accelerate in the next 10 years. The aging process should be reasonably estimated and prepared for in advance to avoid unexpected shocks to the pension system (Bongaarts, 2004).

At the same time, there is no need for pessimism about aging as life expectancy rises. Studies have indicated that as life expectancy increases, healthy life expectancy also demonstrates an upward trend (Salomon et al., 2012). This suggests that future cohorts of older adults are likely to be healthier than current ones, supporting the feasibility of delaying retirement policies. China has proposed implementing policies for healthy aging, which can not only achieve the objective of reducing future dependency burdens but also provide a healthier and higher-quality workforce for delayed retirement policies (J. P. Smith et al., 2014). This offers valuable insights for the future advancement of high-quality labor in other countries (Han et al., 2020).

5.4 Contribution of the Study

Firstly, this research contributes a systematic summary of the patterns behind high life expectancy growth. Previous studies primarily focus on changes in mortality patterns within specific countries during certain periods, with their conclusions and analyses often influenced by events occurring during those periods. In contrast, this paper selects eight diverse countries spanning different time periods, thereby avoiding the confounding effects of specific eras and facilitating the identification of common patterns in high life expectancy growth. Furthermore, while existing research has attempted to examine patterns of life expectancy growth at the whole population level, there has been limited exploration of disparities between genders. This paper addresses this research gap by examining life expectancy growth patterns for both men and women during periods of high life expectancy growth. Moreover, this study adopts a global perspective by selecting countries from three different continents, thereby enhancing the generalizability of the identified patterns of high life expectancy growth.

Secondly, this research contributes a comprehensive understanding of mortality patterns. The paper examines 21 causes of death and injuries, covering all common causes of mortality. This detailed breakdown clearly demonstrates the significant roles of various diseases play in life expectancy growth. Most previous literature emphasizes the importance of cardiovascular disease mortality among the elderly. While this study finds that mortality from neoplasms, traffic injuries, and self-harm among middle-aged male is also crucial, yet these causes receive less attention in existing literature.

Thirdly, this research provides reference for research about life expectancy growth in other countries with lower level of life expectancy. This study points out the key diseases and age groups for future researchers to consider. For example, the decline in cardiovascular mortality will be a critical determinant of future life expectancy trends in countries with middle-high life expectancies. Identifying factors associated with these declines will be a key focus of future research. Similarly, future analyses related to life expectancy growth should consider certain diseases as intermediary variables to explore how different factors can influence life expectancy.

Last, the research provides guidance and early warning for policy makers. For countries with low and medium life expectancy, potential future mortality patterns can be anticipated. To improve public health, it is essential to formulate appropriate public health policies with targeted gender, age groups, and causes of death. Promoting healthier lifestyles and controlling issues such as excessive alcohol consumption and smoking are also essential. This paper also highlights the understanding of the aging process and provides warnings for countries with medium life expectancy. As chronic disease management technologies improve, not only will population health improve rapidly, but so will aging. Utilizing the healthy older workforce will become a new direction for future development.

5.5 Innovation of the Study

One of the innovations of this study is the research perspective. In contrast to examining the impacts on life expectancy growth from macro perspective (gross domestic product,

health expenditure) or micro perspective (individual physical activity, health behavior), this study analyzes the impact of different causes of death on life expectancy. The research reveals the uneven distribution of changes in causes of death across different age groups. This provides policy makers with more efficient means to implement public health policies to address disease burdens in specific age groups.

The second innovation is the research method. The study applies a decomposition method to quantify the specific contributions of changes in cause-specific mortality within different age groups to life expectancy growth, making the understanding of mortality changes more intuitive. Moreover, the study focused on changes in mortality, rather than the magnitude of specific mortality levels, to better understand future demographic dynamics.

The third innovation is a complement to existing theories. The study results reveal phenomena that have not been addressed in existing theories. For example, the rebound of other noncommunicable diseases among the advanced-age female population. Also, the study reveals the significant contribution to life expectancy growth of improvements in male mortality related to health behaviors, traffic injuries, and self-harm, which have not been thoroughly discussed in mortality theories. These findings suggest areas for future attention.

5.6 Limitations

This study also has certain limitations. Firstly, due to data availability, the number of countries observed is limited, and some key countries like Japan are not included. At the same time, not enough countries have reached a level of 83-year-old, that further limit the number of observations. Therefore, the conclusions drawn require further validation, indicating the need for continued observation of high life expectancy trends. However, the encouraging aspect is that subsequent studies could confirm these patterns.

Secondly, there is a lack of in-depth comparative analysis. While the research uncovers growth patterns behind high life expectancy, it does not examine whether the

patterns are the same across demographic groups within countries, such as those with different income levels or educational backgrounds. Such analysis could further confirm the inequality of mortality decline and universality of growth patterns. However, due to the lack of specific data, conducting such comparisons presents challenges.

Lastly, there is a need for more empirical research to interpret changes in mortality rates. The study frequently mentions the impact of health behaviors on certain diseases, but additional regression models are necessary to verify the significance of these effects. Particularly, research on how these factors influence the decline in cardiovascular disease mortality rates during periods of high life expectancy warrants further exploration.

6 Conclusion

This study systematically demonstrates a growth pattern of high life expectancy, providing clear pathways for countries with lower life expectancy to improve population health. Implementing policies targeting NCDs among the elderly and injuries among midlife ages can be an efficient way to achieve a high life expectancy. Also, achieving a high life expectancy in a relatively short period is possible by preventing mortality from multiple causes of death, rather than heavily relying on reductions from CVD mortality. Meanwhile, the number of the elderly is expected to grow when life expectancy towards to a higher level during the process. This implies urgent needs for population policies focusing on healthy aging and high-quality population development. In the context of ever-lengthening life expectancies, how to alleviate the healthcare expenditure burden of the elderly and make good use of their potential labor output will be crucial issues for the future.

Supplementary Material

Supplementary Table 1-1. Age-specific contributions to increases in high life expectancy, both genders combined

	Australia		Italy		Norway		Republic of Korea		Singapore		Spain		Sweden		Switzerland	
<1	0.24	4.87%	0.29	6.10%	0.21	4.21%	0.20	4.31%	0.15	3.15%	0.26	5.17%	0.29	6.08%	0.24	4.83%
1-4	0.06	1.28%	0.06	1.30%	0.05	0.95%	0.06	1.36%	0.03	0.65%	0.07	1.31%	0.05	1.11%	0.08	1.52%
5-9	0.03	0.59%	0.04	0.78%	0.02	0.50%	0.04	0.79%	0.01	0.30%	0.04	0.81%	0.02	0.50%	0.04	0.81%
10-14	0.03	0.68%	0.04	0.74%	0.02	0.46%	0.02	0.47%	0.03	0.68%	0.04	0.78%	0.03	0.53%	0.04	0.71%
15-19	0.08	1.72%	0.09	1.96%	0.05	1.10%	0.03	0.73%	0.04	0.84%	0.09	1.72%	0.07	1.42%	0.12	2.45%
20-24	0.10	2.10%	0.11	2.28%	0.07	1.40%	0.05	1.03%	0.06	1.25%	0.14	2.84%	0.04	0.86%	0.21	4.28%
25-29	0.08	1.74%	0.12	2.57%	0.07	1.50%	0.05	1.14%	0.07	1.45%	0.23	4.60%	0.05	1.03%	0.18	3.71%
30-34	0.07	1.52%	0.18	3.79%	0.08	1.67%	0.06	1.26%	0.10	1.99%	0.30	6.09%	0.07	1.56%	0.18	3.55%
35-39	0.07	1.48%	0.15	3.06%	0.10	2.01%	0.11	2.42%	0.10	2.05%	0.25	5.03%	0.11	2.34%	0.14	2.78%
40-44	0.06	1.32%	0.13	2.75%	0.15	3.08%	0.17	3.62%	0.13	2.60%	0.21	4.22%	0.17	3.47%	0.16	3.31%
45-49	0.10	2.11%	0.17	3.48%	0.21	4.26%	0.22	4.65%	0.15	3.14%	0.20	4.07%	0.20	4.24%	0.17	3.53%
50-54	0.18	3.70%	0.21	4.25%	0.28	5.66%	0.27	5.68%	0.19	3.85%	0.18	3.70%	0.24	5.09%	0.22	4.46%
55-59	0.31	6.35%	0.30	6.13%	0.35	7.14%	0.31	6.58%	0.35	7.17%	0.23	4.62%	0.38	8.03%	0.29	5.94%
60-64	0.49	10.02%	0.41	8.56%	0.49	10.06%	0.50	10.72%	0.56	11.52%	0.28	5.64%	0.45	9.37%	0.37	7.39%
65-69	0.66	13.55%	0.55	11.41%	0.56	11.56%	0.54	11.45%	0.62	12.93%	0.41	8.23%	0.55	11.45%	0.50	10.18%
70-74	0.70	14.41%	0.58	12.00%	0.66	13.57%	0.49	10.43%	0.65	13.56%	0.53	10.75%	0.61	12.76%	0.59	11.91%
75-79	0.69	14.23%	0.59	12.31%	0.64	13.08%	0.54	11.41%	0.60	12.35%	0.59	11.93%	0.66	13.93%	0.61	12.24%
80-84	0.52	10.74%	0.49	10.26%	0.49	10.06%	0.50	10.69%	0.52	10.78%	0.50	10.01%	0.45	9.44%	0.47	9.59%
85-89	0.25	5.04%	0.24	4.90%	0.30	6.15%	0.34	7.30%	0.29	6.07%	0.31	6.26%	0.23	4.74%	0.19	3.81%
90-94	0.10	1.99%	0.06	1.21%	0.07	1.42%	0.15	3.17%	0.14	2.82%	0.09	1.88%	0.08	1.65%	0.11	2.17%
95+	0.03	0.56%	0.01	0.17%	0.01	0.16%	0.04	0.80%	0.04	0.87%	0.02	0.35%	0.02	0.41%	0.04	0.83%
Total	4.87	100.00%	4.82	100.00%	4.87	100.00%	4.70	100.00%	4.82	100.00%	4.95	100.00%	4.76	100.00%	4.95	100.00%

Supplementary Table 1-2. Age-specific contributions to increases in high life expectancy, among female

	Australia		Italy		Norway		Republic of Korea		Singapore		Spain		Sweden		Switzerland	
<1	0.21	5.16%	0.28	7.20%	0.18	4.99%	0.20	4.76%	0.14	3.13%	0.23	5.79%	0.25	6.93%	0.20	5.39%
1-4	0.05	1.37%	0.06	1.58%	0.04	1.16%	0.06	1.44%	0.03	0.73%	0.06	1.50%	0.04	1.22%	0.07	1.89%
5-9	0.02	0.62%	0.04	0.94%	0.02	0.55%	0.03	0.74%	0.02	0.38%	0.04	0.89%	0.02	0.47%	0.03	0.84%
10-14	0.03	0.71%	0.03	0.71%	0.02	0.44%	0.02	0.47%	0.03	0.74%	0.03	0.79%	0.03	0.78%	0.02	0.67%
15-19	0.04	0.98%	0.04	1.16%	0.03	0.71%	0.02	0.47%	0.03	0.75%	0.04	0.98%	0.03	0.89%	0.07	1.99%
20-24	0.04	1.07%	0.04	0.98%	0.03	0.82%	0.04	0.86%	0.03	0.79%	0.06	1.46%	0.02	0.56%	0.09	2.49%
25-29	0.03	0.78%	0.06	1.68%	0.04	1.01%	0.04	0.86%	0.03	0.79%	0.10	2.61%	0.04	1.00%	0.08	2.17%
30-34	0.03	0.72%	0.10	2.60%	0.04	1.21%	0.03	0.65%	0.05	1.21%	0.13	3.36%	0.05	1.27%	0.09	2.40%
35-39	0.04	1.01%	0.08	2.02%	0.06	1.52%	0.05	1.24%	0.06	1.31%	0.11	2.85%	0.09	2.39%	0.08	2.22%
40-44	0.05	1.22%	0.09	2.22%	0.10	2.74%	0.07	1.69%	0.08	1.74%	0.11	2.69%	0.13	3.48%	0.10	2.85%
45-49	0.08	1.98%	0.12	3.03%	0.14	3.76%	0.09	2.18%	0.13	2.98%	0.08	2.12%	0.15	4.05%	0.11	3.10%
50-54	0.13	3.36%	0.12	3.22%	0.18	5.01%	0.12	2.92%	0.13	3.02%	0.07	1.86%	0.18	4.87%	0.15	4.28%
55-59	0.23	5.70%	0.16	4.17%	0.24	6.49%	0.17	4.08%	0.24	5.66%	0.10	2.45%	0.25	6.74%	0.15	4.20%
60-64	0.33	8.39%	0.23	5.98%	0.27	7.53%	0.32	7.66%	0.38	8.87%	0.16	4.07%	0.27	7.45%	0.19	5.13%
65-69	0.47	11.71%	0.34	9.01%	0.34	9.45%	0.41	9.80%	0.54	12.48%	0.30	7.48%	0.33	9.04%	0.29	8.11%
70-74	0.55	13.76%	0.45	11.82%	0.43	11.96%	0.50	12.04%	0.63	14.58%	0.46	11.55%	0.40	10.96%	0.40	11.10%
75-79	0.63	15.70%	0.58	15.27%	0.48	13.37%	0.64	15.53%	0.70	16.29%	0.65	16.25%	0.55	15.12%	0.55	15.08%
80-84	0.56	13.93%	0.57	14.81%	0.52	14.31%	0.63	15.21%	0.59	13.77%	0.62	15.61%	0.46	12.60%	0.50	13.86%
85-89	0.31	7.87%	0.33	8.64%	0.37	10.19%	0.47	11.24%	0.27	6.15%	0.46	11.42%	0.26	7.07%	0.25	6.78%
90-94	0.12	3.11%	0.10	2.55%	0.09	2.59%	0.20	4.89%	0.14	3.28%	0.14	3.62%	0.09	2.52%	0.14	3.92%
95+	0.03	0.83%	0.02	0.40%	0.01	0.20%	0.05	1.28%	0.06	1.35%	0.03	0.65%	0.02	0.60%	0.06	1.53%
Total	3.98	100.00%	3.83	100.00%	3.63	100.00%	4.14	100.00%	4.32	100.00%	4.00	100.00%	3.65	100.00%	3.62	100.00%

Supplementary Table 1-3. Age-specific contributions to increases in high life expectancy, among male

	Australia		Italy		Norway		Republic of Korea		Singapore		Spain		Sweden		Switzerland	
<1	0.27	4.62%	0.31	5.37%	0.23	3.71%	0.21	3.89%	0.17	3.22%	0.28	4.75%	0.32	5.48%	0.28	4.47%
1-4	0.07	1.20%	0.06	1.12%	0.05	0.83%	0.07	1.27%	0.03	0.59%	0.07	1.19%	0.06	1.02%	0.08	1.31%
5-9	0.03	0.56%	0.04	0.67%	0.03	0.46%	0.04	0.80%	0.01	0.25%	0.04	0.75%	0.03	0.51%	0.05	0.78%
10-14	0.04	0.64%	0.04	0.75%	0.03	0.46%	0.02	0.46%	0.03	0.66%	0.04	0.76%	0.02	0.38%	0.04	0.72%
15-19	0.12	2.15%	0.14	2.42%	0.08	1.29%	0.05	0.87%	0.04	0.80%	0.12	2.15%	0.10	1.70%	0.16	2.63%
20-24	0.16	2.75%	0.18	3.04%	0.10	1.72%	0.06	1.12%	0.10	1.85%	0.21	3.65%	0.06	1.05%	0.32	5.08%
25-29	0.13	2.35%	0.18	3.07%	0.11	1.72%	0.07	1.37%	0.09	1.78%	0.33	5.77%	0.06	1.01%	0.27	4.35%
30-34	0.12	2.01%	0.26	4.45%	0.11	1.87%	0.09	1.70%	0.13	2.57%	0.44	7.68%	0.10	1.68%	0.25	3.99%
35-39	0.10	1.77%	0.21	3.64%	0.14	2.23%	0.17	3.23%	0.13	2.56%	0.36	6.30%	0.13	2.26%	0.18	2.96%
40-44	0.08	1.35%	0.17	3.03%	0.19	3.18%	0.26	4.85%	0.17	3.31%	0.29	5.08%	0.20	3.38%	0.21	3.42%
45-49	0.12	2.06%	0.21	3.67%	0.27	4.38%	0.32	6.15%	0.17	3.29%	0.30	5.16%	0.25	4.19%	0.22	3.62%
50-54	0.21	3.66%	0.28	4.78%	0.36	5.82%	0.38	7.26%	0.24	4.61%	0.27	4.66%	0.30	5.04%	0.28	4.45%
55-59	0.37	6.40%	0.41	7.14%	0.45	7.35%	0.42	7.95%	0.45	8.66%	0.34	5.84%	0.50	8.57%	0.42	6.72%
60-64	0.60	10.46%	0.57	9.93%	0.68	11.18%	0.67	12.62%	0.71	13.74%	0.37	6.42%	0.61	10.36%	0.54	8.68%
65-69	0.81	14.12%	0.74	12.81%	0.76	12.51%	0.67	12.75%	0.68	13.18%	0.50	8.56%	0.75	12.69%	0.73	11.69%
70-74	0.85	14.82%	0.72	12.50%	0.89	14.60%	0.55	10.40%	0.64	12.42%	0.60	10.29%	0.81	13.71%	0.77	12.41%
75-79	0.79	13.83%	0.63	10.97%	0.81	13.21%	0.51	9.71%	0.48	9.29%	0.58	10.00%	0.79	13.51%	0.68	10.96%
80-84	0.54	9.49%	0.44	7.61%	0.50	8.22%	0.40	7.57%	0.45	8.82%	0.41	6.99%	0.48	8.13%	0.47	7.63%
85-89	0.22	3.84%	0.15	2.68%	0.26	4.22%	0.21	3.94%	0.29	5.60%	0.18	3.14%	0.22	3.76%	0.15	2.39%
90-94	0.09	1.50%	0.02	0.36%	0.05	0.90%	0.09	1.69%	0.11	2.20%	0.04	0.74%	0.07	1.26%	0.08	1.28%
95+	0.02	0.42%	0.00	-0.01%	0.01	0.13%	0.02	0.41%	0.03	0.61%	0.01	0.13%	0.02	0.29%	0.03	0.43%
Total	5.74	100.00%	5.76	100.00%	6.10	100.00%	5.28	100.00%	5.14	100.00%	5.80	100.00%	5.88	100.00%	6.21	100.00%

Supplementary Table 2-1. Cause-specific contributions to increases in high life expectancy, both genders combined

	Australia		Italy		Norway		Republic of Korea		Singapore		Spain		Sweden		Switzerland	
Cardiovascular diseases	2.81	57.60%	2.09	43.44%	2.94	60.29%	1.70	36.05%	2.17	44.92%	1.92	38.78%	2.90	60.80%	2.28	45.98%
Chronic respiratory diseases	0.25	5.18%	0.16	3.37%	-0.02	-0.36%	0.33	7.03%	0.39	8.18%	0.27	5.37%	-0.02	-0.39%	0.16	3.25%
Diabetes and kidney diseases	0.06	1.23%	0.15	3.11%	0.03	0.67%	0.38	8.17%	0.17	3.62%	0.23	4.61%	-0.01	-0.20%	0.09	1.78%
Digestive diseases	0.10	1.95%	0.31	6.39%	0.13	2.65%	0.34	7.29%	0.13	2.76%	0.33	6.73%	0.12	2.48%	0.05	1.00%
Enteric infections	0.00	-0.05%	-0.01	-0.20%	-0.03	-0.60%	0.00	0.04%	0.01	0.18%	-0.01	-0.13%	-0.03	-0.73%	-0.01	-0.11%
HIV/AIDS and sexually transmitted infections	0.08	1.74%	0.23	4.85%	0.03	0.64%	0.00	-0.05%	0.03	0.64%	0.44	8.89%	0.02	0.48%	-0.01	-0.24%
Maternal and neonatal disorders	0.10	2.11%	0.16	3.31%	0.09	1.90%	0.12	2.45%	0.05	0.94%	0.10	1.99%	0.10	2.10%	0.04	0.82%
Mental disorders	0.00	0.00%	0.00	0.01%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%
Musculoskeletal disorders	0.01	0.17%	0.00	0.09%	0.02	0.38%	0.03	0.59%	0.01	0.28%	0.03	0.66%	0.01	0.12%	0.01	0.21%
Neglected tropical diseases and malaria	0.00	0.00%	0.00	0.01%	0.00	-0.01%	0.00	0.03%	0.00	0.01%	0.00	0.05%	0.00	0.00%	0.00	-0.01%
Neoplasms	0.94	19.37%	1.03	21.34%	0.71	14.64%	0.94	20.03%	0.93	19.25%	0.67	13.64%	0.66	13.80%	0.71	14.35%
Neurological disorders	-0.01	-0.26%	-0.06	-1.31%	0.03	0.67%	0.05	1.14%	0.03	0.60%	0.07	1.37%	0.03	0.58%	0.01	0.14%
Nutritional deficiencies	0.00	0.06%	0.00	-0.07%	-0.01	-0.17%	0.01	0.17%	0.00	0.00%	0.00	0.04%	0.00	-0.01%	0.01	0.27%
Other infectious diseases	0.01	0.21%	0.01	0.16%	0.01	0.24%	0.02	0.53%	0.02	0.44%	0.02	0.47%	0.01	0.19%	0.05	0.96%
Other non-communicable diseases	0.11	2.16%	0.12	2.41%	0.12	2.47%	0.07	1.52%	0.16	3.42%	0.12	2.35%	0.22	4.62%	0.19	3.74%
Respiratory infections and tuberculosis	0.05	1.06%	0.08	1.57%	0.29	6.01%	0.05	1.08%	0.34	6.98%	0.12	2.47%	0.27	5.71%	0.28	5.71%
Self-harm and interpersonal violence	0.10	2.12%	0.09	1.89%	0.15	3.15%	0.14	3.03%	0.19	4.03%	0.06	1.20%	0.25	5.28%	0.39	7.82%
Skin and subcutaneous diseases	-0.01	-0.15%	0.00	-0.02%	-0.01	-0.21%	0.01	0.14%	0.00	-0.03%	0.00	-0.08%	-0.01	-0.15%	-0.01	-0.15%
Substance use disorders	-0.03	-0.54%	0.04	0.88%	0.07	1.47%	0.03	0.55%	0.00	-0.04%	0.04	0.90%	-0.07	-1.57%	0.11	2.21%
Transport injuries	0.24	4.89%	0.30	6.19%	0.19	3.81%	0.30	6.32%	0.10	2.07%	0.42	8.44%	0.23	4.81%	0.36	7.32%
Unintentional injuries	0.05	1.12%	0.12	2.57%	0.11	2.36%	0.18	3.89%	0.08	1.76%	0.11	2.26%	0.10	2.06%	0.24	4.95%
Total	4.87	100%	4.82	100%	4.87	100%	4.70	100%	4.82	100%	4.95	100%	4.76	100%	4.95	100%

Supplementary Table 2-2. Cause-specific contributions to increases in high life expectancy, among female

	Australia		Italy		Norway		Republic of Korea		Singapore		Spain		Sweden		Switzerland	
Cardiovascular diseases	2.62	65.83%	2.05	53.64%	2.34	64.66%	1.92	46.46%	2.27	52.48%	2.05	51.36%	2.30	62.94%	1.98	54.71%
Chronic respiratory diseases	0.12	3.02%	0.05	1.39%	-0.11	-3.15%	0.30	7.17%	0.21	4.76%	0.13	3.13%	-0.11	-2.95%	0.03	0.70%
Diabetes and kidney diseases	0.08	2.01%	0.21	5.37%	0.02	0.45%	0.41	9.81%	0.22	5.05%	0.29	7.37%	-0.01	-0.29%	0.10	2.89%
Digestive diseases	0.07	1.76%	0.24	6.18%	0.10	2.77%	0.19	4.64%	0.09	1.99%	0.25	6.30%	0.09	2.43%	-0.01	-0.19%
Enteric infections	0.00	0.00%	-0.01	-0.31%	-0.04	-1.12%	0.01	0.20%	0.01	0.19%	-0.01	-0.23%	-0.04	-1.20%	-0.01	-0.32%
HIV/AIDS and sexually transmitted infections	0.01	0.25%	0.11	2.85%	0.01	0.32%	0.00	-0.03%	0.00	-0.01%	0.18	4.58%	0.00	0.13%	-0.01	-0.26%
Maternal and neonatal disorders	0.09	2.26%	0.15	3.93%	0.08	2.28%	0.11	2.68%	0.05	1.10%	0.09	2.18%	0.09	2.36%	0.03	0.85%
Mental disorders	0.00	0.00%	0.00	0.02%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.01%	0.00	0.00%
Musculoskeletal disorders	0.01	0.25%	0.01	0.19%	0.02	0.66%	0.04	1.05%	0.03	0.63%	0.05	1.16%	0.01	0.17%	0.01	0.36%
Neglected tropical diseases and malaria	0.00	0.00%	0.00	0.01%	0.00	-0.02%	0.00	0.03%	0.00	0.00%	0.00	0.05%	0.00	0.00%	0.00	-0.02%
Neoplasms	0.73	18.34%	0.62	16.28%	0.54	14.79%	0.53	12.79%	0.63	14.48%	0.39	9.81%	0.53	14.61%	0.38	10.57%
Neurological disorders	-0.01	-0.25%	-0.09	-2.28%	0.03	0.96%	0.07	1.69%	0.04	0.81%	0.10	2.39%	0.04	1.06%	-0.01	-0.22%
Nutritional deficiencies	0.00	0.00%	0.00	-0.11%	-0.01	-0.35%	0.01	0.24%	0.00	0.00%	0.00	0.06%	0.00	-0.05%	0.02	0.42%
Other infectious diseases	0.01	0.25%	0.01	0.18%	0.01	0.25%	0.03	0.65%	0.02	0.37%	0.02	0.55%	0.01	0.17%	0.04	1.06%
Other non-communicable diseases	0.09	2.26%	0.11	2.94%	0.10	2.84%	0.07	1.65%	0.18	4.26%	0.09	2.29%	0.19	5.22%	0.16	4.34%
Respiratory infections and tuberculosis	0.03	0.75%	0.07	1.80%	0.32	8.75%	0.03	0.67%	0.40	9.20%	0.10	2.44%	0.26	7.11%	0.29	8.02%
Self-harm and interpersonal violence	0.03	0.75%	0.05	1.24%	0.07	1.86%	0.13	3.05%	0.13	3.01%	0.03	0.63%	0.15	4.22%	0.23	6.24%
Skin and subcutaneous diseases	-0.01	-0.25%	0.00	-0.04%	-0.01	-0.39%	0.01	0.23%	0.00	-0.05%	-0.01	-0.14%	-0.01	-0.26%	-0.01	-0.31%
Substance use disorders	-0.04	-1.01%	0.01	0.22%	0.01	0.27%	0.01	0.12%	0.00	-0.04%	0.01	0.13%	-0.03	-0.81%	0.04	1.20%
Transport injuries	0.15	3.77%	0.15	3.85%	0.10	2.66%	0.17	4.12%	0.04	1.00%	0.21	5.19%	0.15	3.98%	0.18	5.09%
Unintentional injuries	0.00	0.00%	0.10	2.64%	0.05	1.51%	0.12	2.79%	0.03	0.76%	0.03	0.72%	0.04	1.15%	0.18	4.87%
Total	3.98	100%	3.83	100%	3.63	100%	4.14	100%	4.32	100%	4.00	100%	3.65	100%	3.62	100%

Supplementary Table 2-3. Cause-specific contributions to increases in high life expectancy, among male

	Australia		Italy		Norway		Republic of Korea		Singapore		Spain		Sweden		Switzerland	
Cardiovascular diseases	2.95	51.30%	2.10	36.50%	3.46	56.79%	1.42	26.93%	2.03	39.55%	1.76	30.31%	3.46	58.75%	2.53	40.76%
Chronic respiratory diseases	0.39	6.81%	0.27	4.72%	0.09	1.46%	0.38	7.16%	0.54	10.53%	0.40	6.97%	0.07	1.19%	0.30	4.80%
Diabetes and kidney diseases	0.06	0.96%	0.10	1.79%	0.06	0.95%	0.36	6.82%	0.13	2.61%	0.17	2.90%	0.01	0.08%	0.08	1.26%
Digestive diseases	0.11	1.95%	0.37	6.44%	0.16	2.56%	0.47	8.91%	0.17	3.33%	0.40	6.92%	0.15	2.52%	0.11	1.74%
Enteric infections	0.00	-0.03%	-0.01	-0.12%	-0.02	-0.30%	0.00	-0.08%	0.01	0.18%	0.00	-0.07%	-0.03	-0.42%	0.00	0.02%
HIV/AIDS and sexually transmitted infections	0.16	2.72%	0.34	5.97%	0.05	0.79%	0.00	-0.06%	0.06	1.11%	0.66	11.37%	0.04	0.66%	-0.01	-0.23%
Maternal and neonatal disorders	0.12	2.00%	0.17	2.90%	0.10	1.66%	0.12	2.22%	0.04	0.84%	0.11	1.86%	0.11	1.90%	0.05	0.81%
Mental disorders	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%
Musculoskeletal disorders	0.01	0.09%	0.00	0.02%	0.01	0.20%	0.01	0.17%	0.00	0.02%	0.02	0.33%	0.00	0.07%	0.01	0.10%
Neglected tropical diseases and malaria	0.00	0.00%	0.00	0.02%	0.00	-0.02%	0.00	0.04%	0.00	0.02%	0.00	0.05%	0.00	0.00%	0.00	0.00%
Neoplasms	1.20	20.87%	1.45	25.17%	0.94	15.48%	1.42	26.97%	1.16	22.51%	0.98	16.89%	0.82	14.00%	1.08	17.37%
Neurological disorders	-0.02	-0.30%	-0.04	-0.62%	0.03	0.49%	0.03	0.64%	0.02	0.43%	0.04	0.74%	0.02	0.31%	0.02	0.35%
Nutritional deficiencies	0.00	0.05%	0.00	-0.03%	0.00	-0.07%	0.01	0.11%	0.00	0.00%	0.00	0.02%	0.00	0.02%	0.01	0.18%
Other infectious diseases	0.01	0.23%	0.01	0.16%	0.02	0.25%	0.02	0.44%	0.03	0.51%	0.02	0.41%	0.01	0.20%	0.06	0.90%
Other non-communicable diseases	0.12	2.16%	0.12	2.08%	0.14	2.26%	0.07	1.38%	0.15	2.84%	0.14	2.40%	0.25	4.21%	0.21	3.42%
Respiratory infections and tuberculosis	0.07	1.25%	0.08	1.44%	0.27	4.46%	0.09	1.78%	0.28	5.39%	0.15	2.50%	0.29	4.86%	0.27	4.35%
Self-harm and interpersonal violence	0.17	2.91%	0.13	2.29%	0.23	3.80%	0.17	3.24%	0.25	4.81%	0.09	1.57%	0.34	5.80%	0.52	8.44%
Skin and subcutaneous diseases	0.00	-0.07%	0.00	-0.02%	-0.01	-0.11%	0.00	0.06%	0.00	-0.02%	0.00	-0.03%	-0.01	-0.08%	0.00	-0.06%
Substance use disorders	-0.02	-0.30%	0.07	1.27%	0.13	2.13%	0.05	0.85%	0.00	-0.02%	0.08	1.36%	-0.11	-1.89%	0.17	2.68%
Transport injuries	0.32	5.49%	0.43	7.53%	0.27	4.36%	0.41	7.77%	0.15	2.90%	0.60	10.28%	0.31	5.18%	0.51	8.27%
Unintentional injuries	0.11	1.92%	0.14	2.50%	0.17	2.85%	0.24	4.62%	0.13	2.49%	0.19	3.21%	0.16	2.63%	0.30	4.85%
Total	5.74	100%	5.76	100%	6.10	100%	5.28	100%	5.14	100%	5.80	100%	5.88	100%	6.21	100%

Supplementary Table 3-1. Age- and Cause-specific contributions to increases in high life expectancy, both genders combined Australia

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.08	0.15	0.24	0.36	0.45	0.52	0.46	0.27	0.12	0.04	**2.81**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.05	0.05	0.03	0.00	0.00	0.00	**0.25**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.01	-0.01	-0.01	0.00	**0.06**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02	0.01	0.00	0.00	0.00	**0.10**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.08**
Maternal and neonatal disorders	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.03	0.05	0.08	0.12	0.17	0.19	0.15	0.09	0.03	-0.01	0.00	0.00	**0.94**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	**-0.01**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	**0.11**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	**0.05**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	-0.01	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.03**
Transport injuries	0.00	0.01	0.01	0.01	0.05	0.04	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**0.24**
Unintentional injuries	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	**0.05**
Total	**0.24**	**0.06**	**0.03**	**0.03**	**0.08**	**0.10**	**0.08**	**0.07**	**0.07**	**0.06**	**0.10**	**0.18**	**0.31**	**0.49**	**0.66**	**0.70**	**0.69**	**0.52**	**0.25**	**0.10**	**0.03**	

Supplementary Table 3-2. Age- and Cause- contributions to increases in high life expectancy, among female, Australia

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.09	0.15	0.26	0.38	0.51	0.54	0.36	0.17	0.06	**2.62**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.03	0.02	0.00	-0.01	0.00	0.00	**0.12**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.01	-0.01	-0.01	0.00	**0.08**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.07**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Maternal and neonatal disorders	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.09**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.04	0.06	0.09	0.11	0.13	0.13	0.09	0.05	0.01	-0.01	-0.01	0.00	**0.73**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	**0.09**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	-0.01	**0.03**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.04**
Transport injuries	0.00	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.15**
Unintentional injuries	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	**0.00**
Total	**0.21**	**0.05**	**0.02**	**0.03**	**0.04**	**0.04**	**0.03**	**0.03**	**0.04**	**0.05**	**0.08**	**0.13**	**0.23**	**0.33**	**0.47**	**0.55**	**0.63**	**0.56**	**0.31**	**0.12**	**0.03**	

Supplementary Table 3-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Australia

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.11	0.20	0.31	0.44	0.51	0.53	0.41	0.19	0.08	0.02	**2.95**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.07	0.08	0.08	0.06	0.02	0.01	0.00	**0.39**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.00	**0.06**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.00	0.00	0.00	**0.11**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.16**
Maternal and neonatal disorders	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.07	0.13	0.20	0.25	0.21	0.14	0.07	0.01	0.01	0.00	**1.20**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	**-0.02**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.12**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.07**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.17**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.00	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.02**
Transport injuries	0.00	0.01	0.01	0.02	0.07	0.07	0.04	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**0.31**
Unintentional injuries	0.00	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	**0.11**
Total	**0.27**	**0.07**	**0.03**	**0.04**	**0.12**	**0.16**	**0.13**	**0.12**	**0.10**	**0.08**	**0.12**	**0.21**	**0.37**	**0.60**	**0.81**	**0.85**	**0.79**	**0.54**	**0.22**	**0.09**	**0.02**	

Supplementary Table 4-1. Age- and Cause-specific contributions to increases in high life expectancy, both genders combined, Italy

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.06	0.10	0.16	0.24	0.32	0.38	0.39	0.22	0.07	0.01	**2.09**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.03	0.01	0.00	0.00	**0.16**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.02	0.00	-0.01	-0.01	**0.15**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.03	0.04	0.05	0.04	0.03	0.02	0.01	0.00	0.00	**0.31**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.10	0.06	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.23**
Maternal and neonatal disorders	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.16**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.07	0.10	0.13	0.16	0.18	0.14	0.10	0.04	0.00	-0.01	0.00	**1.03**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.03	-0.04	-0.02	0.01	0.01	**-0.06**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectiou diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.12**
Respiratory infections and tuberculosis	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.08**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.09**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Transport injuries	0.00	0.01	0.01	0.01	0.06	0.06	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.30**
Unintentional injuries	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.12**
Total	**0.29**	**0.06**	**0.04**	**0.04**	**0.09**	**0.11**	**0.12**	**0.18**	**0.15**	**0.13**	**0.17**	**0.21**	**0.30**	**0.41**	**0.55**	**0.58**	**0.59**	**0.49**	**0.24**	**0.06**	**0.01**	

Supplementary Table 4-2. Age- and Cause-specific contributions to increases in high life expectancy, among female, Italy

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.03	0.05	0.10	0.18	0.28	0.41	0.48	0.30	0.10	0.02	**2.05**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.05**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.05	0.05	0.04	0.00	-0.01	-0.01	**0.21**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.03	0.04	0.04	0.03	0.02	0.01	0.00	0.00	**0.24**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Maternal and neonatal disorders	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.15**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.02	0.04	0.06	0.06	0.06	0.07	0.08	0.07	0.07	0.03	0.01	-0.01	0.00	**0.62**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.03	-0.05	-0.02	0.01	0.01	**-0.09**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.09	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Respiratory infections and tuberculosis	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	**0.07**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Transport injuries	0.00	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.15**
Unintentional injuries	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.01	0.00	**0.10**
Total	**0.28**	**0.06**	**0.04**	**0.03**	**0.04**	**0.04**	**0.06**	**0.10**	**0.08**	**0.09**	**0.12**	**0.12**	**0.16**	**0.23**	**0.34**	**0.45**	**0.58**	**0.57**	**0.33**	**0.10**	**0.02**	

Supplementary Table 4-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Italy

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.04	0.07	0.09	0.14	0.21	0.30	0.35	0.36	0.31	0.13	0.03	0.01	**2.10**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.06	0.07	0.05	0.02	0.00	0.00	**0.27**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.01	-0.01	-0.01	0.00	**0.10**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.03	0.04	0.05	0.06	0.05	0.04	0.02	0.01	0.00	0.00	**0.37**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.14	0.10	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.34**
Maternal and neonatal disorders	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.17**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.08	0.13	0.19	0.25	0.28	0.22	0.14	0.05	0.00	-0.01	0.00	**1.45**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.02	-0.02	-0.01	0.00	0.00	**-0.04**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.12**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.08**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	**0.13**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
Transport injuries	0.00	0.01	0.01	0.02	0.09	0.09	0.05	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.43**
Unintentional injuries	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.14**
Total	**0.31**	**0.06**	**0.04**	**0.04**	**0.14**	**0.18**	**0.18**	**0.26**	**0.21**	**0.17**	**0.21**	**0.28**	**0.41**	**0.57**	**0.74**	**0.72**	**0.63**	**0.44**	**0.15**	**0.02**	**0.00**	

Supplementary Table 5-1. Age- and Cause-specific contributions to increases in high life expectancy, both genders combined, Norway

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.08	0.12	0.16	0.30	0.38	0.50	0.52	0.42	0.27	0.07	0.02	**2.94**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	-0.01	-0.02	-0.02	-0.01	0.00	**-0.02**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	-0.01	0.00	**0.03**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.13**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	**-0.03**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Maternal and neonatal disorders	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.09**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.09	0.12	0.12	0.12	0.08	0.05	0.01	0.00	-0.01	-0.01	**0.71**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.10	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.12**
Respiratory infections and tuberculosis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.04	0.07	0.05	0.03	0.01	**0.29**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**0.15**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
Transport injuries	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**0.19**
Unintentional injuries	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.11**
Total	**0.21**	**0.05**	**0.02**	**0.02**	**0.05**	**0.07**	**0.07**	**0.08**	**0.10**	**0.15**	**0.21**	**0.28**	**0.35**	**0.49**	**0.56**	**0.66**	**0.64**	**0.49**	**0.30**	**0.07**	**0.01**	

Supplementary Table 5-2. Age- and Cause-specific contributions to increases in high life expectancy, among female, Norway

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.07	0.15	0.24	0.37	0.46	0.46	0.34	0.10	0.03	**2.34**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	-0.02	-0.03	-0.04	-0.03	-0.01	-0.01	**-0.11**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	**0.02**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.10**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	**-0.04**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Maternal and neonatal disorders	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.08**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.07	0.10	0.12	0.09	0.07	0.02	-0.01	-0.01	-0.01	-0.01	-0.01	**0.54**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	**0.03**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Respiratory infections and tuberculosis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.04	0.08	0.07	0.04	0.02	**0.32**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Transport injuries	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Unintentional injuries	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	**0.05**
Total	**0.18**	**0.04**	**0.02**	**0.02**	**0.03**	**0.03**	**0.04**	**0.04**	**0.06**	**0.10**	**0.14**	**0.18**	**0.24**	**0.27**	**0.34**	**0.43**	**0.48**	**0.52**	**0.37**	**0.09**	**0.01**	

Supplementary Table 5-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Norway

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.07	0.12	0.18	0.24	0.43	0.51	0.62	0.57	0.39	0.20	0.05	0.01	**3.46**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	**0.09**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.06**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.00	**0.16**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.02**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
Maternal and neonatal disorders	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.05	0.08	0.11	0.15	0.16	0.15	0.12	0.04	0.01	0.00	0.00	**0.94**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.14**
Respiratory infections and tuberculosis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.05	0.06	0.04	0.02	0.01	**0.27**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.01	0.03	0.04	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	**0.23**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**0.13**
Transport injuries	0.00	0.01	0.01	0.01	0.03	0.03	0.03	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.27**
Unintentional injuries	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.17**
Total	**0.23**	**0.05**	**0.03**	**0.03**	**0.08**	**0.10**	**0.11**	**0.11**	**0.14**	**0.19**	**0.27**	**0.36**	**0.45**	**0.68**	**0.76**	**0.89**	**0.81**	**0.50**	**0.26**	**0.05**	**0.01**	

Supplementary Table 6-1. Age- and Cause- contributions to increases in high life expectancy, both genders combined, Republic of Korea

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.04	0.05	0.07	0.14	0.18	0.22	0.29	0.30	0.22	0.10	0.03	**1.70**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.07	0.06	0.03	0.01	**0.33**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.06	0.06	0.06	0.04	0.02	0.00	0.00	**0.38**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.04	0.03	0.04	0.03	0.02	0.02	0.02	0.03	0.01	0.00	**0.34**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Maternal and neonatal disorders	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.12**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	**0.03**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.07	0.10	0.12	0.19	0.17	0.11	0.07	0.03	-0.01	-0.01	0.00	**0.94**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	**0.05**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other infectious diseases	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other non-communicable diseases	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	-0.01	0.00	**0.05**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	**0.14**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Transport injuries	0.00	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.01	0.01	0.01	0.00	0.00	0.00	**0.30**
Unintentional injuries	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.18**
Total	**0.20**	**0.06**	**0.04**	**0.02**	**0.03**	**0.05**	**0.05**	**0.06**	**0.11**	**0.17**	**0.22**	**0.27**	**0.31**	**0.50**	**0.54**	**0.49**	**0.54**	**0.50**	**0.34**	**0.15**	**0.04**	

Supplementary Table 6-2. Age- and Cause-specific contributions to increases in high life expectancy, among female, Republic of Korea

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.11	0.17	0.26	0.37	0.39	0.31	0.14	0.04	**1.92**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.07	0.07	0.04	0.01	**0.30**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.07	0.08	0.09	0.05	0.02	0.00	0.00	**0.41**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.01	**0.19**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Maternal and neonatal disorders	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	**0.04**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.06	0.10	0.09	0.07	0.06	0.02	-0.02	-0.01	0.00	**0.53**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.00	**0.07**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other infectious diseases	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Other non-communicable diseases	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	-0.01	-0.01	**0.03**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.13**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Transport injuries	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.17**
Unintentional injuries	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	**0.12**
Total	**0.20**	**0.06**	**0.03**	**0.02**	**0.02**	**0.04**	**0.04**	**0.03**	**0.05**	**0.07**	**0.09**	**0.12**	**0.17**	**0.32**	**0.41**	**0.50**	**0.64**	**0.63**	**0.47**	**0.20**	**0.05**	

Supplementary Table 6-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Republic of Korea

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.05	0.07	0.08	0.16	0.19	0.19	0.22	0.20	0.12	0.05	0.01	**1.42**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.04	0.05	0.07	0.07	0.05	0.02	0.01	**0.38**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.06	0.06	0.05	0.04	0.03	0.01	0.00	0.00	**0.36**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.06	0.07	0.06	0.05	0.06	0.04	0.02	0.02	0.02	0.02	0.01	0.00	**0.47**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Maternal and neonatal disorders	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.12**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.06	0.10	0.14	0.17	0.26	0.25	0.18	0.13	0.06	0.00	0.00	0.00	**1.42**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other infectious diseases	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other non-communicable disease	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.09**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	**0.17**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Transport injuries	0.00	0.02	0.02	0.01	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	**0.41**
Unintentional injuries	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.24**
Total	**0.21**	**0.07**	**0.04**	**0.02**	**0.05**	**0.06**	**0.07**	**0.09**	**0.17**	**0.26**	**0.32**	**0.38**	**0.42**	**0.67**	**0.67**	**0.55**	**0.51**	**0.40**	**0.21**	**0.09**	**0.02**	

Supplementary Table 7-1. Age- and Cause-specific contributions to increases in high life expectancy, both genders combined, Singapore

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.07	0.15	0.27	0.32	0.36	0.35	0.28	0.14	0.08	0.02	**2.17**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.06	0.07	0.06	0.05	0.02	0.01	**0.39**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.03	0.02	0.01	0.00	0.00	0.00	**0.17**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	**0.13**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Maternal and neonatal disorders	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.06	0.10	0.15	0.16	0.12	0.09	0.06	0.03	0.01	0.00	**0.93**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other non-communicable diseases	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.16**
Respiratory infections and tuberculosis	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.02	0.02	0.04	0.04	0.07	0.04	0.02	0.01	**0.34**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.19**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Transport injuries	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Unintentional injuries	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.08**
Total	**0.15**	**0.03**	**0.01**	**0.03**	**0.04**	**0.06**	**0.07**	**0.10**	**0.10**	**0.13**	**0.15**	**0.19**	**0.35**	**0.56**	**0.62**	**0.65**	**0.60**	**0.52**	**0.29**	**0.14**	**0.04**	

Supplementary Table 7-2. Age- and Cause-specific contributions to increases in high life expectancy, among female, Singapore

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.05	0.13	0.23	0.32	0.38	0.43	0.35	0.17	0.10	0.03	**2.27**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.02	0.01	0.01	**0.21**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.03	0.02	0.00	0.00	0.00	**0.22**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.09**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Maternal and neonatal disorders	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.06	0.06	0.09	0.09	0.09	0.05	0.00	0.00	0.00	**0.63**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	**0.04**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other non-communicable diseases	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.00	0.00	**0.18**
Respiratory infections and tuberculosis	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.04	0.07	0.10	0.05	0.02	0.01	**0.40**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.13**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Transport injuries	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Unintentional injuries	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Total	**0.14**	**0.03**	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.05**	**0.06**	**0.08**	**0.13**	**0.13**	**0.24**	**0.38**	**0.54**	**0.63**	**0.70**	**0.59**	**0.27**	**0.14**	**0.06**	

Supplementary Table 7-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Singapore

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.09	0.18	0.31	0.31	0.32	0.26	0.21	0.11	0.05	0.01	**2.03**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.07	0.09	0.09	0.09	0.07	0.03	0.01	**0.54**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.02	0.02	0.01	0.01	0.00	0.00	0.00	**0.13**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	**0.17**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
Maternal and neonatal disorders	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.05	0.07	0.14	0.22	0.21	0.15	0.08	0.07	0.05	0.01	0.00	**1.16**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Other non-communicable diseases	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	**0.15**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.03	0.02	0.03	0.01	0.05	0.03	0.01	0.00	**0.28**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	**0.25**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Transport injuries	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**0.15**
Unintentional injuries	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.13**
Total	**0.17**	**0.03**	**0.01**	**0.03**	**0.04**	**0.10**	**0.09**	**0.13**	**0.13**	**0.17**	**0.17**	**0.24**	**0.45**	**0.71**	**0.68**	**0.64**	**0.48**	**0.45**	**0.29**	**0.11**	**0.03**	

Supplementary Table 8-1. Age- and Cause-specific contributions to increases in high life expectancy, both genders combined, Spain

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.12	0.19	0.27	0.34	0.33	0.24	0.10	0.03	**1.92**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.06	0.04	0.02	0.00	0.00	**0.27**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.04	0.01	0.00	0.00	**0.23**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.04	0.03	0.01	0.00	0.00	**0.33**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.17	0.09	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.44**
Maternal and neonatal disorders	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	**0.03**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.07	0.08	0.07	0.06	0.06	0.08	0.09	0.07	0.02	0.00	-0.01	0.00	**0.67**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.01	0.00	**0.07**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectiou diseases	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other non-communicable diseases	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	**0.12**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.01	0.00	0.00	**0.12**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.06**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Transport injuries	0.00	0.01	0.01	0.01	0.05	0.07	0.05	0.04	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.42**
Unintentional injuries	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Total	**0.26**	**0.07**	**0.04**	**0.04**	**0.09**	**0.14**	**0.23**	**0.30**	**0.25**	**0.21**	**0.20**	**0.18**	**0.23**	**0.28**	**0.41**	**0.53**	**0.59**	**0.50**	**0.31**	**0.09**	**0.02**	

Supplementary Table 8-2. Age- and Cause-specific contributions to increases in high life expectancy, among female, Spain

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.05	0.08	0.15	0.26	0.40	0.44	0.36	0.15	0.04	**2.05**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.02	0.00	-0.01	**0.13**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.07	0.06	0.02	0.00	0.00	**0.29**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.04	0.03	0.02	0.00	0.00	**0.25**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.01	0.00	0.00	0.00	0.01	0.05	0.07	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.18**
Maternal and neonatal disorders	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.09**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	**0.05**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.02	0.04	0.05	0.04	0.02	0.01	0.02	0.04	0.06	0.06	0.02	0.00	-0.01	0.00	**0.39**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.02	0.01	0.00	**0.10**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectiou diseases	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other non-communicable diseases	0.11	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	**0.09**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.00	0.00	**0.10**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Transport injuries	0.00	0.01	0.01	0.01	0.02	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.21**
Unintentional injuries	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	**0.03**
Total	**0.23**	**0.06**	**0.04**	**0.03**	**0.04**	**0.06**	**0.10**	**0.13**	**0.11**	**0.11**	**0.08**	**0.07**	**0.10**	**0.16**	**0.30**	**0.46**	**0.65**	**0.62**	**0.46**	**0.14**	**0.03**	

Supplementary Table 8-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Spain

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.07	0.08	0.11	0.16	0.22	0.27	0.29	0.23	0.13	0.05	0.01	**1.76**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.08	0.09	0.06	0.02	0.00	0.00	**0.40**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.02	0.00	0.00	0.00	**0.17**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.03	0.02	0.04	0.04	0.05	0.05	0.04	0.02	0.01	0.00	0.00	**0.40**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.02	0.13	0.25	0.15	0.05	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.66**
Maternal and neonatal disorders	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.08	0.12	0.11	0.11	0.09	0.11	0.13	0.10	0.03	0.00	-0.01	0.00	**0.98**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	**0.04**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other non-communicable diseases	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.14**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.00	0.00	**0.14**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	**0.09**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.08**
Transport injuries	0.00	0.01	0.01	0.02	0.08	0.11	0.08	0.06	0.05	0.04	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.60**
Unintentional injuries	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.19**
Total	**0.28**	**0.07**	**0.04**	**0.04**	**0.12**	**0.21**	**0.33**	**0.44**	**0.36**	**0.29**	**0.30**	**0.27**	**0.34**	**0.37**	**0.50**	**0.60**	**0.58**	**0.41**	**0.18**	**0.04**	**0.01**	

Supplementary Table 9-1. Age- and Cause-specific contributions to increases in high life expectancy, both genders combined, Sweden

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.10	0.19	0.28	0.39	0.49	0.56	0.41	0.21	0.08	0.02	**2.90**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	-0.01	-0.02	-0.01	-0.01	0.00	**-0.02**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	**-0.01**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	**0.12**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	**-0.03**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Maternal and neonatal disorders	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.06	0.08	0.12	0.11	0.11	0.06	0.03	-0.01	0.00	0.00	0.00	**0.66**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	**0.03**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.17	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	**0.22**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.05	0.07	0.04	0.02	0.01	**0.27**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.25**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	-0.02	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.07**
Transport injuries	0.00	0.01	0.01	0.01	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.23**
Unintentional injuries	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.10**
Total	**0.29**	**0.05**	**0.02**	**0.03**	**0.07**	**0.04**	**0.05**	**0.07**	**0.11**	**0.17**	**0.20**	**0.24**	**0.38**	**0.45**	**0.55**	**0.61**	**0.66**	**0.45**	**0.23**	**0.08**	**0.02**	

Supplementary Table 9-2. Age- and Cause-specific contributions to increases in high life expectancy, among female, Sweden

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.05	0.08	0.15	0.24	0.36	0.51	0.44	0.25	0.10	0.03	**2.30**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02	-0.03	-0.03	-0.02	-0.01	-0.01	**-0.11**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	-0.01	-0.02	-0.01	-0.01	**-0.01**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	**0.09**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	**-0.04**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Maternal and neonatal disorders	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.09**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.03	0.05	0.07	0.09	0.12	0.09	0.06	0.01	0.00	-0.03	-0.01	0.00	0.00	**0.53**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	**0.04**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.15	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.19**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.07	0.05	0.02	0.01	**0.26**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	**0.15**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.03**
Transport injuries	0.00	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	**0.15**
Unintentional injuries	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	**0.04**
Total	**0.25**	**0.04**	**0.02**	**0.03**	**0.03**	**0.02**	**0.04**	**0.05**	**0.09**	**0.13**	**0.15**	**0.18**	**0.25**	**0.27**	**0.33**	**0.40**	**0.55**	**0.46**	**0.26**	**0.09**	**0.02**	

Supplementary Table 9-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Sweden

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.03	0.05	0.09	0.14	0.28	0.41	0.53	0.61	0.62	0.38	0.18	0.06	0.02	**3.46**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	**0.07**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	**0.00**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.00	**0.15**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	**-0.03**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Maternal and neonatal disorders	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.03	0.05	0.07	0.12	0.13	0.15	0.12	0.08	0.02	0.01	0.01	0.00	**0.82**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other non-communicable diseases	0.18	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	**0.25**
Respiratory infections and tuberculosis	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.06	0.06	0.04	0.01	0.00	**0.29**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.05	0.05	0.05	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.34**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Substance use disorders	0.00	0.00	0.00	0.00	-0.01	-0.03	-0.04	-0.03	-0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.11**
Transport injuries	0.00	0.01	0.01	0.01	0.06	0.05	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.30**
Unintentional injuries	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	**0.16**
Total	**0.32**	**0.06**	**0.03**	**0.02**	**0.10**	**0.06**	**0.06**	**0.10**	**0.13**	**0.20**	**0.25**	**0.30**	**0.50**	**0.61**	**0.75**	**0.81**	**0.79**	**0.48**	**0.22**	**0.07**	**0.02**	

Supplementary Table 10-1. Age- and Cause-specific contributions to increases in high life expectancy, both genders combined, Switzerland

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.04	0.05	0.08	0.12	0.19	0.29	0.37	0.42	0.37	0.17	0.09	0.03	**2.28**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.03	0.01	0.00	0.00	0.00	**0.16**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.01	-0.01	-0.01	0.00	**0.09**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	**0.05**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Maternal and neonatal disorders	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.02	0.04	0.06	0.07	0.09	0.10	0.10	0.08	0.05	0.02	-0.01	0.00	0.00	**0.71**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	**0.01**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Other infectious diseases	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.05**
Other non-communicable diseases	0.16	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	**0.19**
Respiratory infections and tuberculosis	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.05	0.03	0.01	**0.28**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.02	0.06	0.06	0.06	0.04	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.39**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.11**
Transport injuries	0.00	0.01	0.02	0.01	0.06	0.07	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.36**
Unintentional injuries	0.00	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.00	**0.25**
Total	**0.24**	**0.08**	**0.04**	**0.04**	**0.12**	**0.21**	**0.18**	**0.18**	**0.14**	**0.16**	**0.17**	**0.22**	**0.29**	**0.37**	**0.50**	**0.59**	**0.61**	**0.47**	**0.19**	**0.11**	**0.04**	

Supplementary Table 10-2. Age- and Cause-specific contributions to increases in high life expectancy, among female, Switzerland

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.04	0.06	0.10	0.18	0.29	0.42	0.42	0.23	0.12	0.04	**1.98**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	**0.03**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.01	-0.02	-0.01	0.00	**0.10**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.01	0.00	**-0.01**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Maternal and neonatal disorders	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Neoplasms	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.05	0.07	0.05	0.04	0.04	0.01	0.01	0.00	-0.01	0.00	0.00	**0.38**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	**-0.01**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**
Other infectious diseases	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Other non-communicable diseases	0.13	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	**0.16**
Respiratory infections and tuberculosis	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05	0.06	0.03	0.02	**0.29**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.03	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.23**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.01**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**
Transport injuries	0.00	0.01	0.01	0.01	0.03	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	**0.18**
Unintentional injuries	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.01	0.01	**0.18**
Total	**0.20**	**0.07**	**0.03**	**0.02**	**0.07**	**0.09**	**0.08**	**0.09**	**0.08**	**0.10**	**0.11**	**0.15**	**0.15**	**0.19**	**0.29**	**0.40**	**0.55**	**0.50**	**0.25**	**0.14**	**0.06**	

Supplementary Table 10-3. Age- and Cause-specific contributions to increases in high life expectancy, among male, Switzerland

	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95+	Total
Cardiovascular diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Chronic respiratory diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Diabetes and kidney diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Digestive diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Enteric infections	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
HIV/AIDS and sexually transmitted infections	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Maternal and neonatal disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Mental disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Musculoskeletal disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Neglected tropical diseases and malaria	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Neoplasms	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Neurological disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Nutritional deficiencies	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Other infectious diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Other non-communicable diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Respiratory infections and tuberculosis	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Self-harm and interpersonal violence	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Skin and subcutaneous diseases	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Substance use disorders	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Transport injuries	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Unintentional injuries	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.07	0.11	0.18	0.27	0.39	0.44	0.42	0.31	0.11	0.05	0.02	**2.53**
Total	**0.04**	**0.02**	**0.02**	**0.02**	**0.09**	**0.21**	**0.29**	**0.43**	**0.69**	**1.19**	**1.49**	**2.31**	**3.87**	**5.68**	**8.19**	**9.34**	**8.85**	**6.54**	**2.36**	**1.14**	**0.34**	

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