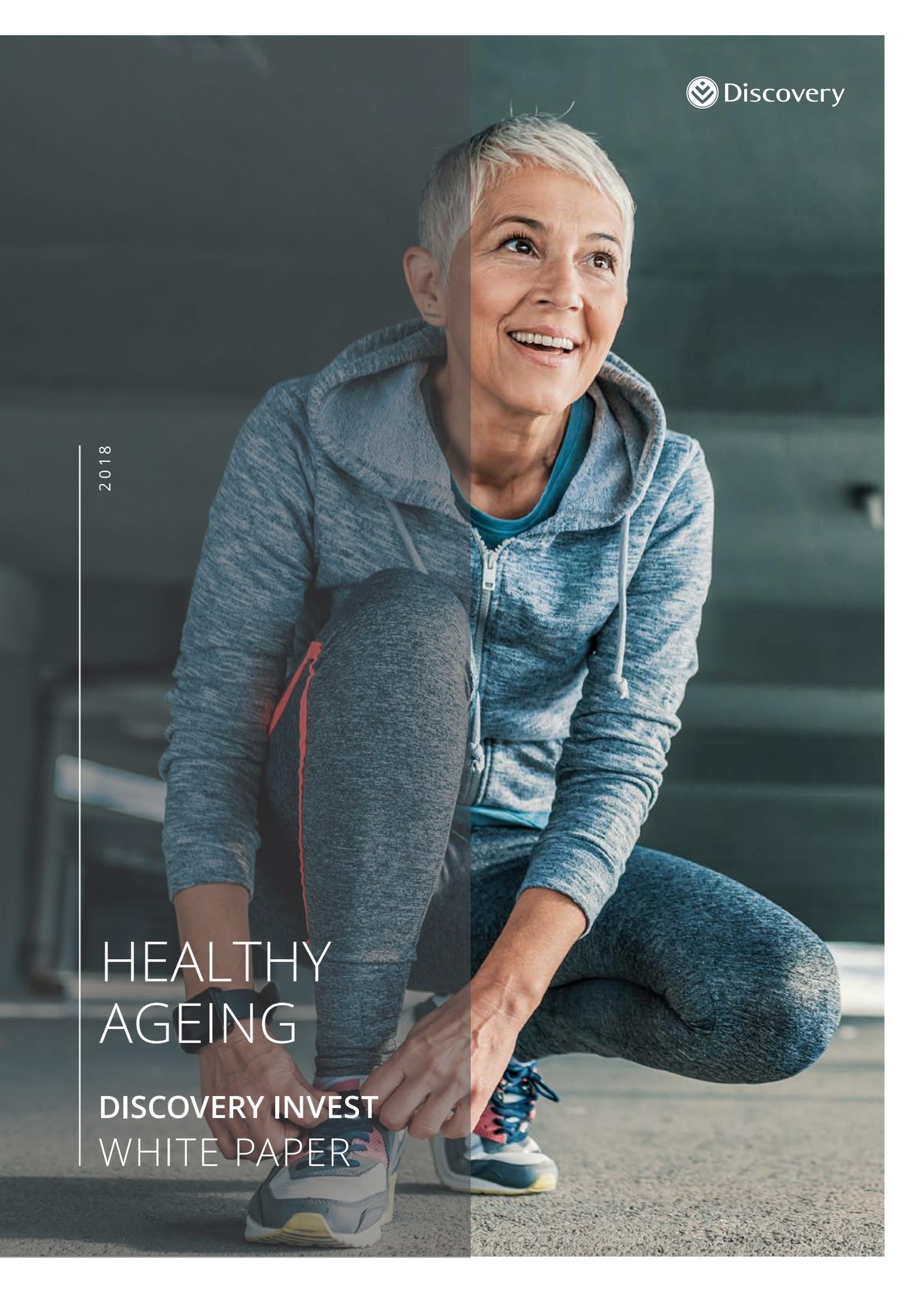


2018

# HEALTHY AGEING

DISCOVERY INVEST  
WHITE PAPER



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# Introduction

Average life expectancy in the year 1900 was 31 years.<sup>1</sup> By 2016, this figure had risen to 72 years and is expected to continue its upward trend.<sup>2</sup> The United Nations predicts that global life expectancy will reach 77 in the next 25 years and may reach 83 years within half a century after that.<sup>3</sup> Increasing longevity, however, is only half of the story.

Advancements in medicine and technology are likely to continue driving improvements in the length and quality of the average life. In the meantime, a few behaviours and decisions can drastically impact how each individual will compare to that average. Research has revealed a handful of activities and lifestyle choices that could allow us to enjoy a high-quality life for longer.

Unfortunately, through the lens of retirement planning, living longer than expected is more of a risk than a privilege. Spending more years in retirement means we'll need to fund more years in retirement and that can dramatically increase the level of savings required before we can comfortably retire.

At best, a carefully structured financial plan will take account of key demographic factors to assume an average life expectancy. Given the variations caused by healthy behaviours, this is likely to lead to insufficient savings for healthy individuals.

After investigating the link between healthy behaviour, life expectancy and required retirement savings, it becomes clear that a new model is needed for effective retirement planning. It is imperative that this model incorporates the increasing trends in longevity and also takes account of the level of health and wellness specific to the individual in question.

<sup>1</sup> Prentice, Thomson. Health, history and hard choices: *Funding dilemmas in a fast-changing world*. World Health Organization: Global Health Histories. Retrieved November 4, 2010.

<sup>2</sup> Life expectancy at birth, total (years) - Data. [data.worldbank.org](http://data.worldbank.org).

<sup>3</sup> United Nations. *World Population Prospects: The 2015 Revision*. 2015

## The increase in life years

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The general trend of increasing longevity has been largely driven by events and developments in the fields of science and medicine. One of the most notable of these events is the discovery of penicillin in 1928. The use of antibiotics in the treatment of infectious diseases had a revolutionary impact and resulted in the main causes of deaths changing from communicable diseases to non-communicable diseases (NCDs).

Despite constant progress in the medical field, NCDs are still having a major impact on current mortality rates and on the quality of life that individuals are able to enjoy in their later years. In particular, there are four NCDs that should be discussed: cardiovascular disease, cancer, chronic respiratory disease and diabetes. Together, these four conditions are responsible for roughly 32.3 million deaths out of the 57 million deaths occurring each year. The average South African has just over a one-in-four chance of dying from any one of these diseases between the ages of 30 and 70.

As alarming as these figures may be, there have been significant improvements in recent years. Between the year 2000 and 2016, the global probability of dying from one of the four major NCDs, between the age of 30 and 70, decreased from 22% to 18%. As part of the UN Sustainable Development Goals, the target is to reduce premature NCD mortality by one third by 2030. Efforts to achieve this goal involve the reduction of key risk factors, including tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol.<sup>4</sup>

## The impact of lifestyle choices

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Developments in medicine and technology will continue to have a significant impact on the average life expectancy in the world. In addition to this general trend, there are a few lifestyle choices and behaviours that can cause a significant deviation from this average. For those who haven't yet reached retirement, these lifestyle choices are focused on diet, physical activity and smoking.

Along with these general behaviours, there are certain behaviours that become much more significant with age and are, therefore, most applicable to retirees. The most significant of these behaviours include adherence to chronic medicine, regular vaccinations, appropriate physical activity and social connectedness.

These behaviours can lead to additional years of life as well as significant improvements in the quality of those years. For a person to adequately plan their retirement savings, they will have to understand the impact that a healthy lifestyle, both pre- and post-retirement, will have on their required retirement savings.

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## Diet

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In 2015 the South African takeaway and fast-food sector generated R17.3 billion in revenue.<sup>5</sup> This represents an increase of roughly 128% from the R7.6 billion figure for 2007 which can be translated to a 4.4% annual increase net of headline inflation. Substituting unhealthy fast foods with an increased intake of fruits and vegetables, however, may significantly improve longevity.

A 2002 study examined the economic consequences for the healthcare sector if people followed recommendations to increase the intake of fruits and vegetables. Simulated increases of 150g and 250g respectively lead to 0.8 and 1.3 year increases in life expectancy respectively.<sup>6</sup> In addition to this, the data suggested that 19% and 32% of cancer incidences could be prevented.

## Regular physical activity

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It has also been found that leisure-time physical activity can have an impact on life expectancy. A large pooled cohort analysis in 2012 showed that regular physical activity, equivalent to 450 minutes of brisk walking per week, was associated with an average of 4.5 years in increased life expectancy. Less intense physical activity equivalent to 75 minutes of brisk walking per week, was associated with a 1.8 year increase in life expectancy.<sup>7</sup>

## Smoking

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The general attitude towards smoking has come a long way from where it was 50 years ago. Most people today are aware of the severe health risks associated with smoking. On the other side of the spectrum, however, it has been found that many older smokers place far less emphasis on the health risks of smoking than the rest of the population. The life expectancy of a smoker is said to be roughly 10 years less than that of a non-smoker. That said, quitting smoking before the age of 40 can reduce the risk of dying from a smoking-related disease by 90%.<sup>8</sup>

<sup>5</sup> Statistics South Africa. *Food and Beverages, 2015, Report 64-20-01(2015)*.

<sup>6</sup> Gundgaard, J., Nielsen, J., Olsen, J., & Sørensen, J. (2003). Increased intake of fruit and vegetables: Estimation of impact in terms of life expectancy and healthcare costst. *Public Health Nutrition*, 6(1), 25-30. doi:10.1079/PHN2002355

<sup>7</sup> Moore SC, Patel AV, Matthews CE, Berrington de Gonzalez A, Park Y, et al. (2012) Leisure Time Physical Activity of Moderate to Vigorous Intensity and Mortality: A Large Pooled Cohort Analysis. *PLOS Medicine* 9(11): e1001335

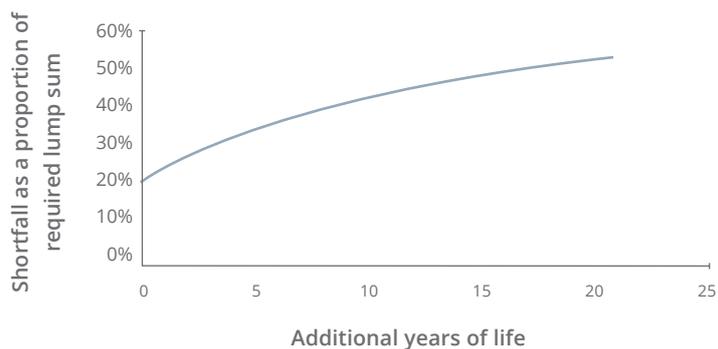
<sup>8</sup> U.S. Department of Health and Human Services. *The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014 [accessed 2015 Aug 17].

## The impact on retirement savings

Even before the issues caused by increasing life expectancy, most individuals will reach retirement with insufficient funds to provide them with the income they'll need. While the general rule of thumb for retirees is to target a real income of 75% of their pre-retirement income, most South Africans have little to no retirement savings. The 2018 Schroders Global Investor Study suggests that even the more affluent retirees in South Africa are only achieving a 59% replacement ratio.<sup>9</sup> This already represents a 21.3% shortfall.<sup>10</sup>

In a low-growth environment where the margin between investment growth and inflation is slim, adding more years to the time an individual is expected to spend in retirement further deteriorates the adequacy of retirement savings. An individual who saves enough money to fund a 20-year retirement can theoretically find themselves with a 14% shortfall at retirement simply by adding five years to their expected life span.<sup>11</sup> This is exacerbated by the fact that, individuals today already have a 21.3% shortfall for a 15-year expected retirement term. If this retirement term increases by 10 years within the space of a lifetime, today's infants are looking at a 41% replacement ratio at retirement – a 45% shortfall.

### The retirement gap caused by additional life years



<sup>9</sup> Schroders. Global Investor Study 2018: Saving for a Comfortable Retirement.

<sup>10</sup> Shortfall =  $1 - (\text{achieved replacement ratio}) / (\text{targeted replacement ratio})$

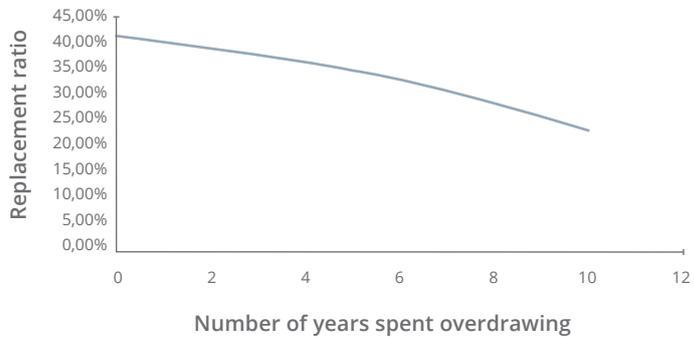
<sup>11</sup> Assumptions: 9% net investment growth, 5.5% annual withdrawal escalation

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Another factor that cannot be overlooked is the limitation of human perception. People are generally not good at estimating the number of years they will spend in retirement. This is true to the extent that many people withdraw too much from their savings in their initial years in retirement and are then forced to make severe compromises further down the line.

In an effort to capture this dimension of the problem, we can look at the impact on the replacement ratio that the individual can achieve given a 59% starting replacement ratio and an environment where life expectancy was underestimated by 10 years. The key here is that the individual will likely only alter their drawdown after a few years in retirement. Until the individual reaches a point in their retirement where the reality of longevity really sets in, they are likely to overdraw from their retirement savings, making matters far worse.

### Replacement ratio after years of overdrawing



An individual who underestimates their life expectancy by 10 years and then overdraws for the first 5 years in retirement will only be able to sustain a replacement ratio of 34.27% for the remaining 20 years in retirement – a 54% shortfall for the majority of the years spent in retirement.<sup>11</sup>

<sup>11</sup> Assumptions: 9% net investment growth, 5.5% annual withdrawal escalation

## Pre-retirement planning

An individual engaged in healthy activities will need to consider the impact on their required retirement savings. To fund the additional years of life gained from healthy behaviours, an individual would need to either outperform the market consistently, save more towards retirement or save for a longer period.

The reality is that most people entering retirement currently do not have sufficient savings to retire. This is a testament to the fact that most of us have limited capacity to increase our level of savings. That said, increasing the level of pre-retirement savings is one of the most obvious solutions to closing the retirement gap caused by additional years of life.

Another option that may be more accessible is to increase the savings term by delaying retirement. This has many benefits. Delaying retirement does not only increase the amount of time that the retirement savings can grow but it also shortens the number of years that will be spent in retirement. In the case of an individual making recurring contributions to an investment, it will also increase the retirement savings in the form of more contributions.

The table below shows how each of these alternatives can close the retirement gap caused by increased longevity from healthy behaviours.<sup>12</sup> These are the critical assumptions that need to be considered in any financial planning tool. In each case, it is assumed that each healthy behaviour acts in isolation and that each solution is applied individually. The assumed baseline is a person who consumes 250g of fruit and vegetables per day, is a smoker, does not engage in physical activity and was originally expected to spend 20 years in retirement.

Behaviour	Additional life years gained	Additional return required	Increase in savings required	Additional months of saving required
Small increase in fruit and vegetable intake <sup>13</sup>	0.8	0.17%	3%	3
Large increase in fruit and vegetable intake <sup>14</sup>	1.3	0.28%	4%	4
Low physical activity <sup>15</sup>	1.8	0.39%	6%	6
High physical activity <sup>16</sup>	4.5	0.92%	15%	13
Quitting smoking	10	1.71%	30%	26

As shown in the table above, an individual can gain an additional 0.8 years of life by making a small increase in their intake of fruits and vegetables (150g more per day).

<sup>12</sup> Assumptions: 9% net investment growth, 5.5% annual withdrawal escalation, 20-year baseline life expectancy, initial savings: 360 monthly contributions, 5.5% annual contribution increase

<sup>13</sup> 150 g increase in daily fruit and vegetable intake

<sup>14</sup> 250 g increase in daily fruit and vegetable intake

<sup>15</sup> 75 minutes of brisk walking per week

<sup>16</sup> 450 minutes of brisk walking per week

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Over a 30-year savings term, investors will require an additional 0.17% return on their investment each year to put them in the same position at retirement as they would have been without the additional 0.8 years of life.

Similarly, quitting smoking can add 10 years to a person's life expectancy. To fund these additional years, a person will have to save 30% more than they are currently saving. So, a contribution of R3 000 per month will have to increase to R3 900 per month for the same savings term to fund the additional 10 years of life. Alternatively, they could close their retirement gap by saving at the same rate for an additional 26 months. This is based on recurring monthly contributions and assumes that the original savings rate is sufficient to meet the retirement income needs before the additional 10 years of life.

### Post-retirement planning

Recent research has revealed that certain activities and behaviours yield significant health benefits for older individuals. While the average person is now living longer, the extra years of life are not necessarily healthy years. Adherence to chronic medicine, appropriate vaccinations, physical activity and social connectedness will not only lead to significant reductions in mortality risk for seniors but will also improve the quality of life.

Improved health in retirement also drastically reduces the impact of healthcare costs on retirement expenses. Lower healthcare costs reduce the risk of financial ruin in retirement. This is especially true since inflation of health care costs is higher than that of general goods and services.

Once in retirement, the options of increased savings, longer savings terms and increased return are no longer available. Apart from finding alternative sources of income in retirement, the best option to fund additional life years will be to lower the selected drawdown rate.

The next table illustrates the decrease in drawdown percentage that is required to fund additional life years resulting from healthy behaviours in retirement. The decrease is shown for starting drawdowns of 5%, 7.5% and 10%.<sup>17</sup>

Behaviour		Additional life years gained <sup>18</sup>	Decrease in % drawdowns for a 5% starting drawdown	Decrease in % drawdowns for a 7.5% starting drawdown	Decrease in % drawdowns for a 10% starting drawdown
Medicine adherence	Statins	4.7	0.68%	1.01%	1.35%
	Antihypertensive	4.43	0.64%	0.97%	1.29%
Vaccinations	Pneumococcal	3.66	0.54%	0.82%	1.09%
	Influenza	3.42	0.52%	0.78%	1.04%
Physical activity	High	3.18	0.48%	0.73%	0.97%
	Low	2.5	0.40%	0.60%	0.80%
Social connection	Social connection	1.96	0.31%	0.47%	0.63%

Here we see that adherence to antihypertensive medicine can add 4.43 years to a retiree's life expectancy. A retiree currently withdrawing 5% from their fund each year will have to reduce their drawdowns by 0.64% to 4.36%. This will ensure that savings last long enough to fund the additional 4.43 years in retirement. Similarly, an individual withdrawing 10% from their fund each year will have to decrease their drawdowns by 0.8% to 9.2% to fund the additional 2.5 years of life gained by engaging in low physical activity.

## A new paradigm for retirement modelling

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It is clear that longevity and everyday behavioural impacts, need more than ever, to be considered as an important part of long-term financial planning. This consideration must be tailored to the specific individual in question and must be based on the individual's level of health and wellness before and in retirement.

Standard financial planning tools do not allow for this level of detail and, therefore, many individuals run the risk of being underfunded in retirement. By considering individual health metrics and measures of healthy behaviours, the Discovery Retirement Modeller gives investors insights into how their health affects their needs in retirement. Once an investor has a personalised view of their own life expectancy, the Retirement Modeller shows how savings, wellness and integration can help fund the long and healthy life that most of us actively pursue.

This information will enable an investor to construct a portfolio that will cater for their specific longevity needs and to fund any additional years they may gain by living healthier lives.

