

Charting mortality trends signposts for an uncertain journey

LCP longevity report

June 2020



Part of LCP's 'Chart your own course' series



WELCOME TO LCP'S LATEST LONGEVITY REPORT



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Head of LCP's mortality group and report author



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This is our third annual report focused on helping trustees and sponsors to understand the impact of longevity risk and assumptions on their defined benefit pension schemes. This topic is becoming more important as pension schemes de-risk their investment strategies and longevity becomes one of the key remaining uncertainties.

This report has been written during an exceptional time in the UK, with a tragically high number of people dying due to Covid-19. Whilst Covid-19 is quite rightly dominating headlines and pension scheme agendas at the moment, it is of course only one of a number of factors that will drive a pension scheme's mortality experience and assumptions. As well as looking at the impact of Covid-19, this report therefore also considers wider mortality trends and takes a look at what might happen in the future.

The situation is developing all the time, and so is the analysis. Our report therefore reflects the latest data available at the time of writing, but we will provide subsequent updates over time as more information becomes available on our [insights page](#).

» KEY FINDINGS

- + The impact of Covid-19 on the financial position of a defined benefit pension scheme is very uncertain, and it is difficult to know at this point whether the repercussions will eventually lead to longer or shorter future life expectancies.
- + Our modelling implies the short-term financial impact on a typical pension scheme of excess deaths in 2020 is likely to be modest, at a fraction of a percent.
- + There are many factors and effects which have yet to be fully understood or analysed. These include the impact of Covid-19 on different groups, the impact of recession and wider factors including health care provision.
- + The ultimate impact of the pandemic on pension schemes will be driven more by the enduring consequences in the years to come.
- + In the meantime, we see that the longevity insurers and reinsurers are making very little (if any) allowance for Covid-19 in their longevity assumptions at the current time. Any impact on affordability of longevity hedging has therefore been dwarfed by changes to the financial markets due to the pandemic.
- + Whilst current events can encourage us to focus on the short-term, it is also important to consider the long term drivers on mortality, such as the ongoing development of accessible diagnostic technology in the home leading to earlier treatment.



OVERVIEW OF REPORT

p04

RECENT TRENDS IN MORTALITY & COVID-19

- + 2019 saw the lowest average mortality rate in England & Wales ever, but 2020 has seen unprecedented high levels due to Covid-19



p08

HOW HAS COVID-19 AFFECTED DIFFERENT GROUPS?

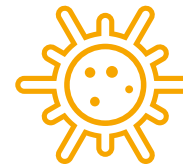
- + how deaths due to Covid-19 have varied by region, deprivation, occupation, age, ethnicity and gender



p12

DIRECT AND INDIRECT CONSEQUENCES OF COVID-19

- + What impact has the Covid-19 pandemic had on healthcare provision and mortality?



p13

MODELLING FUTURE MORTALITY

- + Update on the latest CMI projections and where we go from here.



p16

MORTALITY & RECESSION

- + How will a recession affect your scheme's longevity?



p17

POTENTIAL FUTURE DRIVERS FOR LONGEVITY

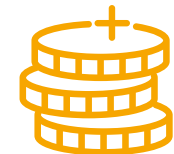
- + Some long term drivers behind mortality rates and how they might affect future pension scheme payments.



p19

HEDGING LONGEVITY RISK

- + The impact of Covid-19 on the pensions de-risking market.





RECENT TRENDS IN MORTALITY AND COVID-19



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Understanding recent levels of mortality and trends helps put into perspective how a pension scheme's financial position can develop over time. It also highlights the potential variation even over relatively short periods of time and the challenges this presents for predicting what will happen in the future.

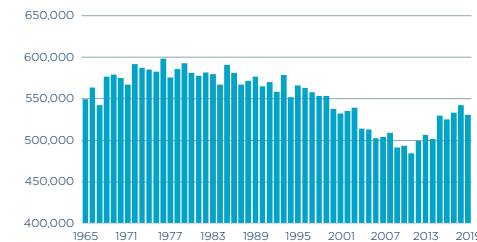
Chris looks at the contrasting picture between 2019, with the lowest average mortality rate in England & Wales ever, and 2020 which is experiencing an unprecedented high level of deaths due to Covid-19.

Looking back over 2019

There were around 530,000 recorded deaths in England & Wales in 2019. After a few years of stagnant changes in mortality rates, the average mortality rate in England & Wales fell in 2019 by 3.8%. This is equivalent to around 13,000 fewer deaths compared to the previous year.

The chart on the right shows the number of deaths and the significant change in trend since 2011.

Number of deaths in England & Wales



Source: ONS 2020

Developments in 2020 – Covid-19

The year started well, with the initial level of mortality at the start of 2020 being relatively low, with fewer deaths than 2019.

However, the global impact of Covid-19 has been far reaching, with significant implications for public health in the UK. It goes without saying that any deaths due to Covid-19 are tragic.

Our analysis suggests that the ultimate impact of deaths due to Covid-19 on the funding of defined benefit pension schemes won't be dominated by the experience in 2020, but will be driven more by the enduring consequences following the pandemic.

The ultimate impact of the pandemic on defined benefit pension schemes will be driven more by the enduring consequences in the years to come, than the number of deaths in 2020.



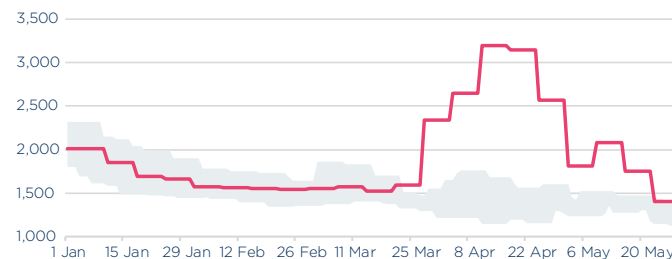
TRENDS IN MORTALITY CONTINUED

Impact so far

At the height of the pandemic in April / May, the ONS reported the highest number of registered deaths in England & Wales in any week since 1993, and over double the typical number of deaths for that time of year. Before then, the mortality rate for 2020 had been very low for that time of year.

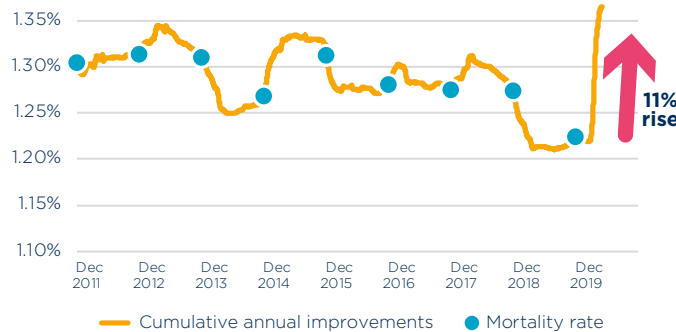
The pink line in the chart below shows the total number of recorded deaths in England & Wales each week in 2020, compared to previous years, shown by the shaded area. The total additional deaths in 2020 to the end of May was almost 60,000. The chart on the right shows standardised mortality rates in England & Wales and the effect of cumulative improvements up to each point in the calendar year compared to the previous years. The number of Covid-19 deaths in 2020 has led to a rise of 11% in the year-to-date rate of mortality.

Daily deaths in England & Wales in 2020 and range since 2011



Source: ONS and LCP calculations 2020

Trend in annual mortality rates (persons, standardised across ages 20 to 100)



Source: ONS & LCP calculations 2020

At the height of the pandemic in April / May, the ONS reported the highest number of registered deaths in England & Wales in any week since 1993.

Challenges with counting the number of fatalities due to Covid-19

It is difficult to apportion the total number of deaths between those deaths that are due to Covid-19 and other reasons. Some reasons include:

- The ONS publishes the number of people who have died where Covid-19 is mentioned on their death certificate as a suspected contributing factor, but the virus may not be the primary reason for death.
- A person may die due to Covid-19 that is undetected and so not recorded on their death certificate. This could be because it occurs outside of hospital where a test for Covid-19 wasn't performed, or the symptoms were not obvious.
- A death not directly recorded as being due to Covid-19 may occur due to implications indirectly linked to this unprecedented and extreme situation. This includes:
 - individuals not seeking medical assistance or support from their GP where they have a serious or deteriorating health condition.
 - the NHS pivoting towards the pandemic, and away from elective procedures.
 - social distancing affecting mental health and changes in lifestyles.



TRENDS IN MORTALITY CONTINUED

Disentangling the number of Covid-19 deaths from those that would ordinarily be 'expected' at this time of the year is not straightforward. It is therefore useful and important to look at the total number of deaths to track trends.

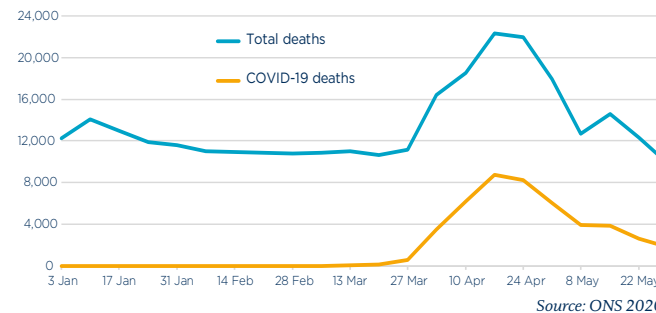
The chart on the right shows the total number of recorded deaths in England & Wales each week in 2020 (up to May 2020) where Covid-19 is mentioned on their death certificate.

A high proportion of weekly deaths have been attributed to Covid-19, but not all. This implies there could be additional deaths indirectly related to Covid-19 which may be going unrecognised.

Equally, a fraction of those that have died may have been expected to die over the next few years, say due to underlying health conditions - regardless of whether they had been exposed to the virus. Therefore, on the other side of the coin, some deaths reported as being due to Covid-19 may not be "excess" deaths above the typical levels normally seen in the UK.

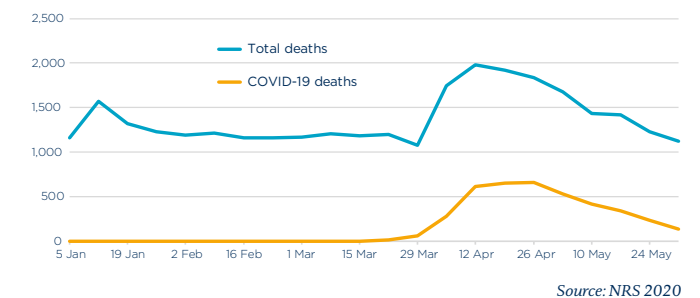
Scotland and Northern Ireland have also been affected by Covid-19, with the number of deaths being respectively c.16% and c.10% higher than the five year average (compared to c.22% higher in England & Wales).

Deaths by week registered in England & Wales

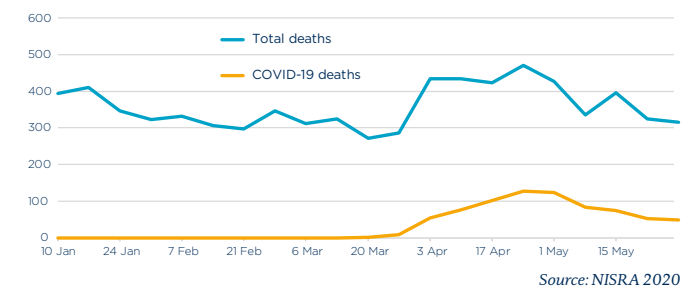


Disentangling the number of Covid-19 deaths from those that would ordinarily be 'expected' at this time of the year is not straightforward.

Deaths by week registered in Scotland



Deaths by week registered in Northern Ireland





TRENDS IN MORTALITY CONTINUED

What is the financial impact likely to be on a typical defined benefit pension scheme?

Below we consider some potential scenarios to get a broad feel for the impact of Covid-19 – these are not forecasts, but what-ifs.

Two key unknowns are:

- the level of extra deaths due to Covid-19; and
- how the deaths affect different sub-groups of the population.

Firstly, if we assume a simple model where the number of expected deaths in 2020 increases by 20% at all ages, then this would translate to around 100,000 excess deaths in England & Wales.

In this scenario the typical value of a typical scheme's liabilities might fall by the order of 0.25%, all other things being equal.

The impact for the group of members in receipt of a pension will be bigger than that for the non-pensioners, as can be seen by the table.

Age	Illustrative fall in life expectancy
50	0.0%
60	0.1%
70	0.2%
80	0.8%
90	3.0%

There has been some discussion about the extent to which those affected may typically be more frail than average, perhaps with their deaths being “accelerated” to some extent.

To see the impact of this, we could assume that those affected had, on average, shorter life expectancies. If we therefore assume that the pensioners alive, say in 10 years' time, are the same pensioners that would have been alive whether there had been a pandemic or not, the financial impact shown could halve. This reflects slightly lower average mortality over the following years offsetting the excess deaths in 2020. The impact on each scheme will vary, and depend on the actual circumstances of its individual members, such as their health, where they reside, their personal circumstances, age and gender. This is covered in more detail in the next article.

Looking forwards

The above analysis focuses on the impact of an abnormal number of deaths in 2020 only. Looking forward, there is a lot of uncertainty on how Covid-19 will affect the population of the UK in the medium to long-term. Key areas are:

- is this the first of several waves with future resurgences?
- how effective would mitigation and vaccination measures be, and when might they be available?
- is this the first of a series of recurring pandemics which we do not become resistant to (either naturally or through vaccination)?
- what will be the impact on public health from a significant deterioration to the economy? We look at this in the article on page 16.
- what is the outcome to our health care system – will this shock lead to more funding, or will a recession result in less funding?
- will individuals who have recovered from having Covid-19 have impaired health in the future?

- what the 'new normal' might look like, and will people live their lives differently, perhaps embracing a healthier lifestyle?
- will our experience of the pandemic mean we change how we approach other flus in the future?
- will there be implications from delays in receiving preventative medical care or diagnosis due to the lockdown, possibly temporary or in the long term? Our article on page 12 considers this question.

These factors could have far bigger consequences than the immediate impact of Covid-19 in 2020.

Finally, the levels of mortality in the long term will also be driven by many other, perhaps more significant, factors. This includes developments in medical treatment and prevention, technology, lifestyle and the environment. We cover such drivers on page 17.

Our modelling implies that the impact on liabilities of members' deaths in 2020 is likely to be a fraction of a percent.



HOW HAS COVID-19 AFFECTED DIFFERENT GROUPS?



Tim Honey
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The ONS has been very busy, and has published a prolific amount of analysis showing how deaths due to Covid-19 have varied between subgroups of the population. Tim highlights how deaths due to Covid-19 have varied by region, deprivation, occupation, age, ethnicity and gender.

This may be helpful for trustees and sponsors seeking to understand how Covid-19 may affect their specific schemes' membership, the make up of which may be different from that of the general population.

Age and gender

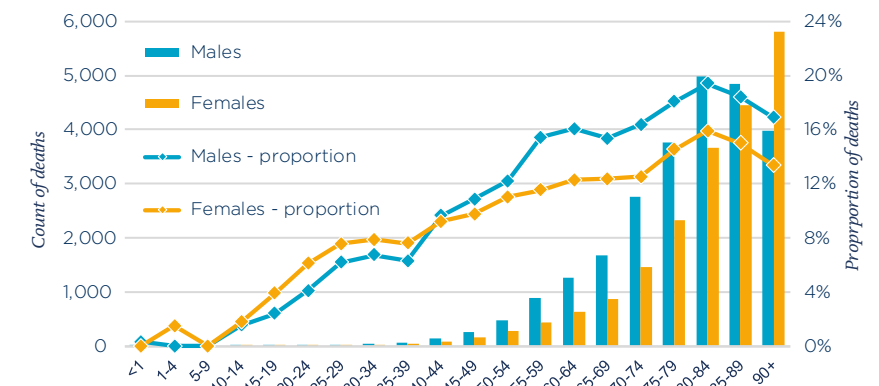
Of the people who have died with Covid-19 recorded on their death certificate (up to 29 May 2020), 92% of males and 95% of females were aged over 60. The fatalities are therefore clearly concentrated in older people, which is a similar pattern seen for deaths due to all causes.

Males are affected more, with around 17% of all male deaths involving Covid-19, and 13% for females. Interestingly, the proportion of deaths at ages above 60 involving Covid-19 is fairly constant, ie Covid-19 is broadly affecting the mortality rate by the same proportion regardless of age.

Deaths involving Covid-19:

17% of all male deaths
13% of all female deaths

Age related deaths. Deaths involving Covid-19 and proportion of total deaths



Source: ONS and LCP calculations 2020



TRENDS IN MORTALITY CONTINUED

Occupation

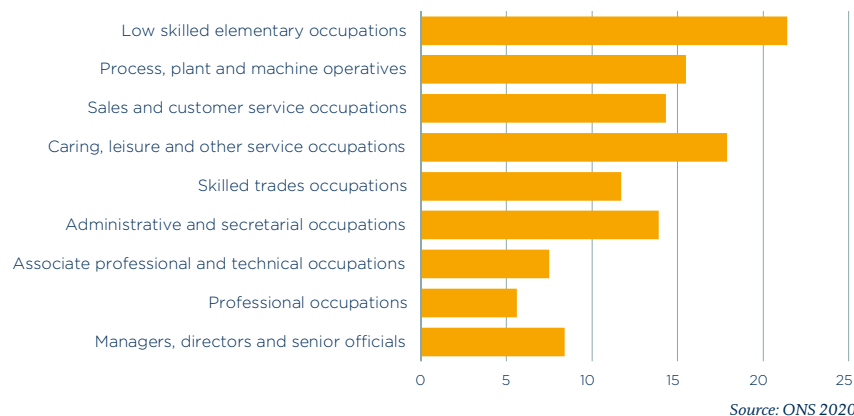
In a preliminary study, the ONS compared rates of death involving Covid-19 for different occupations, after adjusting for age and gender.

For men, the highest rate was for those working in low-skilled or caring, leisure and other service occupations. For women, the highest rate was for those working in caring, leisure and other service occupations. Rates of death among male and female social care workers (such as care workers, home carers, and social workers) were significantly higher than the general population.

We note that we can only observe the number of deaths by occupation, which is a combination of the degree of exposure to the virus, and how susceptible those people are. Interpreting these results is therefore tricky. The general trend is that those with lower life expectancies appear to be affected the most. However, it is not clear whether this is the type of occupation driving the impact (say through increased exposure without sufficient protection), or the virus affecting those with attributes typical of those doing each occupation.

Occupation - Males

Age- standardised mortality rate of deaths involving the Covid-19 Rates per 100,000 population



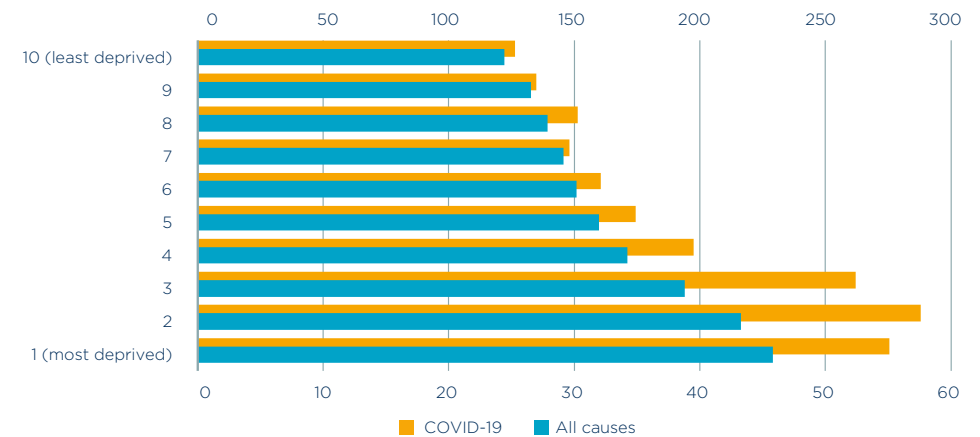
Deprivation

Additional analysis by the ONS, summarised below, shows that individuals living in the most deprived areas of England & Wales (as measured by the Index of Multiple Deprivation) are affected disproportionately by Covid-19.

As the groups living in the more deprived areas have shorter average life expectancies, this seems to reinforce the observation that those with lower life expectancies / higher rates of mortality are affected the most.

Deprivation (IMD)

Age- standardised mortality rate of deaths involving the Covid-19
Rates per 100,000 population



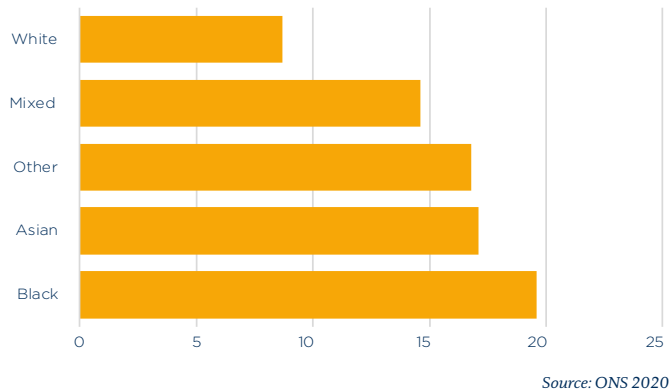
*Individuals living in the most deprived areas
are disproportionately affected by Covid-19.*



TRENDS IN MORTALITY CONTINUED

The previous chart implies that Covid-19 has affected those living in the most deprived areas the most. However, there are other factors that could, at least partially, account for this. For example, the below chart shows that a higher proportion of ethnic minorities live in the most deprived decile. We touch on this further later.

Proportion of ethnic groups living in the most deprived 10% of neighbourhoods, by ethnicity

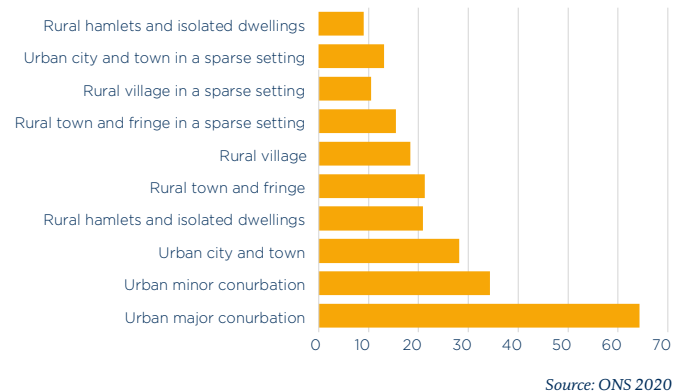


Location

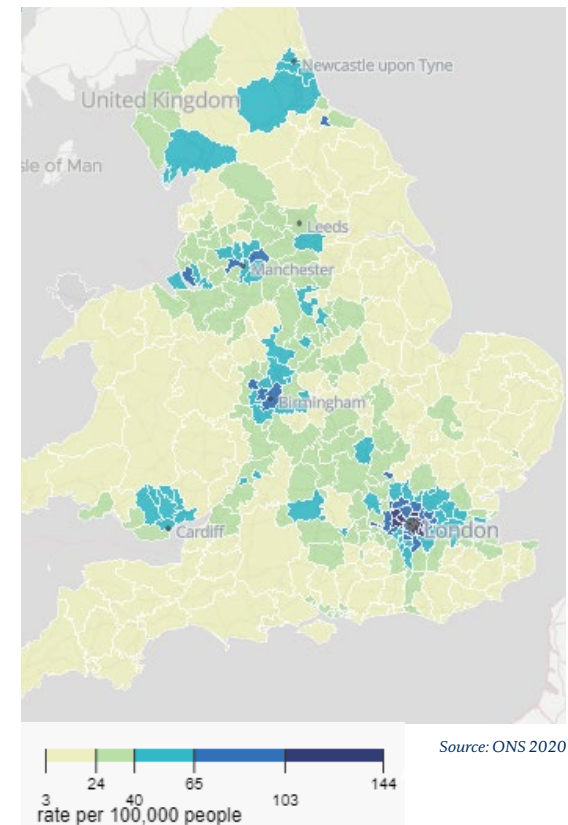
Further, some of the most deprived areas are located around areas of high population density, urban conurbations, and some of the highest mortality rates involving the Covid-19 were in urban conurbations such as London, Liverpool, Birmingham and Manchester.

Urban Rural Classification

Age- standardised mortality rate of deaths involving the Covid-19
Rates per 100,000 population



Map of Covid-19 deaths



Urban areas are affected the most by Covid-19 deaths



TRENDS IN MORTALITY CONTINUED

Ethnicity

A report published in early June by Public Health England had found the risk of dying was higher in those in Black, Asian and Minority Ethnic (BAME) groups than in White ethnic groups. The analysis took into account age, sex, deprivation, region and ethnicity, but importantly did not take into account occupation, obesity or the existence of comorbidities, which are associated with the risk of exposure / death from Covid-19, and are likely to explain some of the differences.

The report commented that the relationship between ethnicity and health is complex.

- Firstly, people of BAME communities are likely to be at increased risk of acquiring the infection because they are more likely to live in urban areas, in overcrowded households, in deprived areas, and have jobs that expose them to higher risk.
- Secondly, they are also likely to be at increased risk of poorer outcomes once they acquire the infection. For example, some comorbidities which increase the risk of poorer outcomes are more common among certain ethnic groups.

Public Health England found that the risk of dying was higher in Black, Asian and Minority Ethnic (BAME) groups than in White ethnic groups.

Correlated factors

Although different sub-populations appear to be affected differently, more research (such as multi-variate analyses) would help identify effects between potentially correlated factors, across say region, deprivation and comorbidities, and isolate which factors have been driving the observed differences between groups.

More research will be published over the coming months, to better understand the correlations and underlying drivers. One piece of preliminary research by OpenSAFELY on 7 May looked at over 5,000 Covid-19 deaths in hospitals, and how their rates of death varied by their characteristics to try to distinguish their relative risk. They observed that there was a higher risk of death, after adjusting for other characteristics, due to Covid-19 for those diagnosed with obesity, and a higher risk in the presence of comorbidities, including diabetes.

Members of pension schemes

The impact of Covid-19 on each defined benefit pension scheme will vary significantly, and depend on its specific circumstances and membership.

From above, we might expect the schemes most affected to have members which are mostly male, are more mature, located in urban areas and with shorter average life expectancies.

We have analysed the recent experience of the defined benefit pension schemes LCP administers on behalf of our trustee clients, covering around 65,000 members. Our analysis shows there has been an increase in the number of deaths, but this has broadly been in line with the increases within the general national population.



DIRECT AND INDIRECT CONSEQUENCES OF COVID-19

ON HEALTH CARE PROVISION



Dr Jonathan Pearson-Stuttard
Advisor

+ Jonny is a Public Health Physician and Wellcome Trust Fellow at Imperial College London. He has a research portfolio spanning chronic disease epidemiology and life expectancy and has worked in a range of policy positions at national and local level. He is a Trustee of the Royal Society for Public Health.

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The Covid-19 pandemic has disrupted the provision of health care in the UK, both directly and indirectly. Dr Jonathan Pearson-Stuttard highlights some of these areas and the impact on mortality.

Covid-19 has already killed tens of thousands of people in the UK, but the total mortality impact of the pandemic is likely to be larger still in coming months. The mortality impacts of the pandemic can be broadly grouped into three:

1. direct effects of the virus in wave 1 and any potential future waves of Covid-19;
2. indirect effects through the response of the healthcare system and individual behaviour change;
3. indirect health effects of the social and economic environment resulting from the pandemic. The Institute of Fiscal Studies has estimated that if we saw a rise in unemployment rates similar to those seen after the 2008 recession, this could result in 900,000 more working-age people developing chronic conditions in the UK, for example.

There were 46,400 excess deaths from 7th March to 1st May in England & Wales but one in four of did not mention Covid-19 on the death certificate. The ONS reported that two thirds of these 'non- Covid-19' excess deaths were due to dementia, Alzheimer's or frailty in elderly groups; it is likely, therefore, that many of these were in fact due to Covid-19 but due to co-morbid conditions and the seemingly broad range of symptoms, they were not diagnosed as such in the earlier part of the pandemic in the community and care homes. Deaths due to asthma and diabetes

in the community increased in this period too, suggestive of the pandemic affecting usual care for chronic conditions.

The potential impact of the second group of mortality impacts - indirect effects through our response to tackle the virus - is unclear but is likely to affect population groups in different ways over different time periods.

In the short term, we saw that A&E departments reported 50% less activity than usual during April. It is plausible that the pandemic led to a reluctance to seek healthcare when needed for other health conditions leading to premature mortality. Behavioural and lifestyle risk factors have changed during lockdown too; estimates suggest one in three have put on weight, smoking and alcohol consumption have increased in the most at risk groups, while physical activity has declined. If these behaviours are sustained this will alter the risk of developing and dying prematurely from several chronic diseases.

The effects of the healthcare service pivoting to focus on Covid-19 are likely to affect mortality in the medium term. Care pathways for serious chronic conditions such as heart disease and cancers were affected during wave 1 of the pandemic. Urgent cancer referrals from GPs were down around 75% on usual levels and Cancer Research UK estimated that 2.4 million patients have been affected during

this time. This ranges from delays to radiotherapy treatment, chemotherapy being postponed due to the increased risk of immunosuppressed patients suffering worse outcomes from Covid-19 if they catch it and postponements of cancer surgery due to intensive care beds being prioritised for Covid-19 patients. How this has all affected 5 and 10-year cancer survival rates will only become clear as time elapses.

Longer term still, the cancellation of millions of non-urgent procedures including hip and knee replacements is expected to affect morbidity and mortality patterns. Several million are currently on waiting lists, with fears that this could be as high as eight million by autumn, the waiting time for 'non-urgent' procedures is likely to be longer than ever. For those waiting for hip replacements, for example, this can mean months longer with more sedentary lifestyles, affecting their mortality risk in years to come.

Each of these groups of mortality impacts will be felt differently across the country. The risk of dying from Covid-19 according to deprivation, ethnicity and occupation are well described. Those living in areas with the largest demand pressures on health services, before and during the pandemic, are likely to be hit hardest by these indirect mortality impacts which risks widening the gap in health outcomes further.



MODELLING FUTURE MORTALITY



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The choice of how to project current mortality rates is an important part of the overall mortality assumption for trustees and employers to adopt. As the Continuous Mortality Investigation ("CMI") produces annual updates to its industry standard projection model, it is vital to keep abreast of the latest updates to ensure your assumption is up to date. In this article, Catherine updates you on the latest projection ("CMI 2019"), considers our thoughts for next year's CMI 2020 projection and talks through the available parameters to calibrate the model so it is suitable for your schemes.

CMI 2019

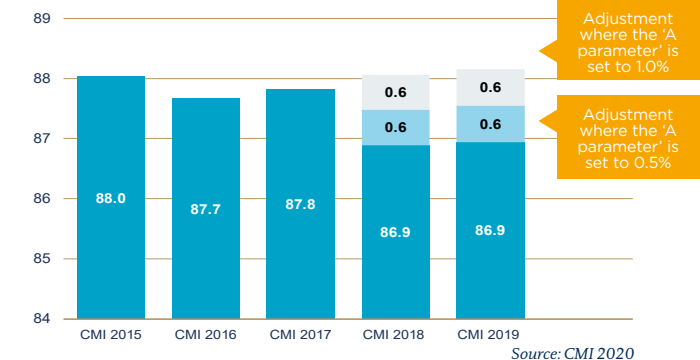
The latest incarnation of the commonly used CMI Mortality Projection Model, CMI 2019, was released earlier this year in March 2020. This release was a "business-as-usual" update – an extra year of mortality experience data for England & Wales has been added to the model covering (estimated) deaths up until 31 December 2019. Other than that, the CMI has not made any other changes to the model.

2019 had relatively few deaths in England & Wales; there were around 3.8% fewer deaths over the year. As such, when the CMI plugged the data for 2019 into its core model, the result is generally an increase in life expectancy.

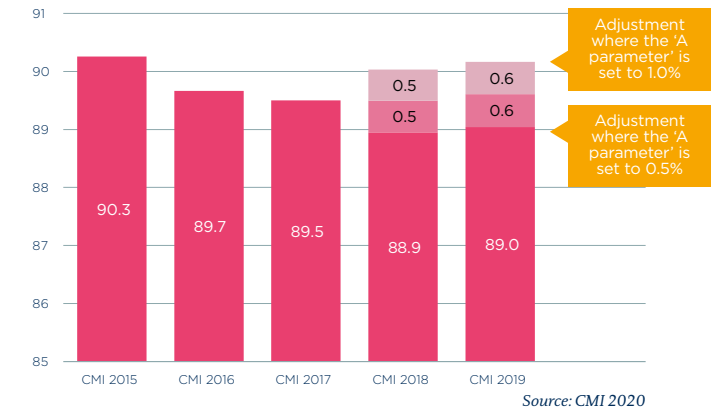
The change in your pension schemes liabilities will depend on the other assumptions used, in particular the discount rate. However, we only expect to see modest changes in liability values if schemes move from CMI 2018 to CMI 2019.

For trustees that are considering their triennial valuation assumptions, they may be moving from the model available three years ago, CMI 2016. Updating from CMI 2016 to CMI 2019 would have a more significant difference – a fall in life expectancy of around 8 months for males (equating to 2.9%) and 7 months for females (equating to 2.2%). These differences are again at age 65 and assume the core CMI model parameters have been adopted. The charts on the right also show the impact of adopting different levels for the 'A' parameter (see next page).

Male life expectancy for a 65 year old in 2020 (core assumptions)



Female life expectancy for a 65 year old in 2020 (core assumptions)





MODELLING FUTURE MORTALITY CONTINUED

What approach will be taken for CMI 2020?

Next year's version of the model will present the CMI with some challenges – how can it update for the yearly mortality experience when 2020 is such an atypical year?

If the CMI turns the handle, then the excess deaths due to Covid-19 over 2020 will lead to a material decrease in life expectancy. Taking into account registered deaths in England & Wales up to 29 May 2020 could lead to life expectancies falling by more than 4%.

Therefore, we do not expect the CMI 2020 model to be another “business-as-usual” update.

A key consideration for the CMI, and in turn the users of the model, will be whether the tragic increase in the number of deaths in 2020 will result in more or fewer deaths going forwards. Future years could possibly see lighter mortality if those who have died due to Covid-19 are most frail. Alternatively, the future could see new annual flare ups of Covid-19 causing heavier mortality in the short to medium term.

We anticipate that the CMI will need to consider making modifications to its model, or offer variations, to ensure it is useful for the different objectives of its users, and amplify its warnings that users of the model should ensure they parameterise it appropriately for their purposes.

Choosing the model's parameters

The CMI model in extended mode has three choices of parameters for users to define:

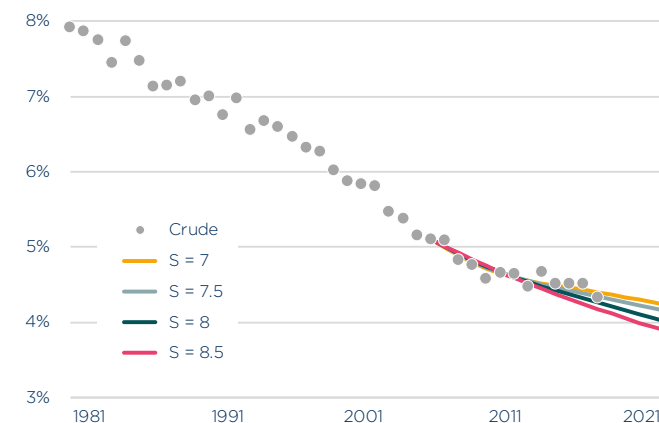
- a long-term rate of improvement;
- a smoothing parameter (“S”); and
- an initial addition to rates of improvement (“A”).

Experienced users of the model will be familiar with the long-term rate of improvement parameter, as it has been a feature of the model since it was first released in 2009.

The “period smoothing parameter” S was first introduced for CMI 2016. The parameter affects the model's responsiveness to adding in new mortality data each year. Lower values of S place more emphasis on more recent mortality experience in England & Wales, whilst higher values place more emphasis on years further in the past. Due to the slow down in improvements since 2011, using a higher value of S, and hence more smoothing, leads to lower projected mortality rates under the CMI 2019 model at the current time, as can be seen in the chart.

We generally see trustees of defined benefit schemes use the default value in the core model (ie S = 7). However, the volatility currently being caused by Covid-19 could lead to some users taking the decision to adopt a higher value of S to limit the responsiveness of the model to new, unpredictable, data in upcoming years.

Progression of mortality rates by adopting different levels of smoothing. Standardised mortality rates Females, ages 60 to 100



Source: CMI 2019

How will the CMI update its projections model for the yearly mortality experience when 2020 is such an atypical year?

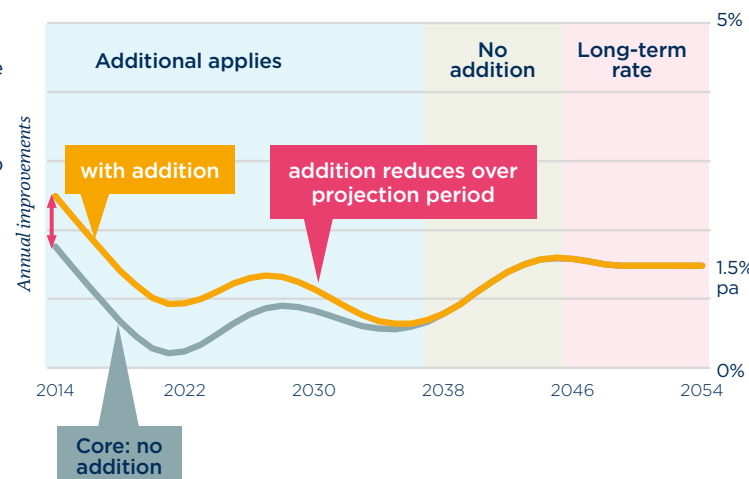


MODELLING FUTURE MORTALITY CONTINUED

The “initial addition to mortality improvements” parameter, A, has recently gained a lot of interest. The CMI model is calibrated to the mortality experience of the general population of England & Wales. There is increasing evidence that the slowdown of mortality improvements since 2011 has been experienced very differently by different subsets of the population. Where users believe that the members of their scheme will experience higher or lower improvements than that of the general population, they should adopt a non-zero value of A.

We have seen an expanding divide in life expectancy between different socio-economic groups.

Visualisation of the impact of the initial addition 'A' parameter



Unlike the S parameter, the A parameter has a “real-world” interpretation. The chosen value increases (decreases if negative) the annual mortality improvement in the short-term versus that observed in England & Wales by that amount. For example, if England & Wales saw a longevity improvement of 2% in a given year (ie deaths at each age in that year were 2% lower than the previous year) then an A value of 0.75% would model your members as having a longevity improvement of 2.75% in that year. Going forwards, this effect tapers off to zero in the medium term, so the rate of improvement trends to the long-term rate.

As there is evidence that individuals with longer life expectancies have also experienced higher rates of longevity improvements over individuals with shorter life expectancies, we have seen an expanding divide between the life expectancy of different individuals in different socio-economic groups.

LCP has developed an in-house model that links the socio-economic level of your scheme's membership to an appropriate choice of A parameter. Please speak to your usual LCP contact, or one of LCP's mortality team, if you would like to discuss how this model could be used to help your scheme.



MORTALITY & RECESSION



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One of the many fallouts from the Covid-19 crisis could be a new worldwide recession. Whilst you may have considered the fallout of a recession from an investment perspective, the repercussions for the longevity of your membership is far more nuanced. Ben discusses below the key points that you should consider when thinking about the link between a recession and longevity improvements.

It may seem obvious that there is a clear link between a recession and longevity improvements – fewer resources, higher unemployment and more stress increases average mortality rates. As with everything in longevity modelling, the truth is far more complex.

Economic welfare and life expectancy

The link between a country's economic welfare and the life expectancy of its population has long been a subject of academic interest. However, the results may surprise you. Since studies of the American population in the early 20th century, the same result has been repeated across different time periods and in different countries. When a country enters into a recession, the life expectancy of its population improves at a faster rate than would otherwise have been seen. Various academics have tested whether this is merely a lag from the boom times but again this does not seem to be the case.

On an individual level, when incomes are squeezed, the first thing out of the shopping basket could be our guilty pleasures. As many government campaigns have taught us, saying goodbye to the booze and cigarettes not only benefits our wallets but our health too. However, as smoking rates continue to decline in the UK, is the smoking prevalence of members in your scheme driven more by your members' disposable income or by their knowledge of, and adherence to, health advice?

With a recession comes higher levels of unemployment. This can bring on stress and anxiety for people looking for work, but may affect

pensioners to a lesser extent. Whilst the general population may see an uptick in suicide instances and other stress-induced disorders, this may not be the experience of your membership. Instead, they may benefit from having family with time to spare to look after them. In this scenario, an increase in unemployment could lead to an increase in life expectancy for the populations we are most concerned with as advisers to pension schemes.

How money is spent on a macro-level will also affect the outcome for longevity. On a simplistic note, less money on healthcare could result in more deaths. In a recession the government must balance lower tax receipts against the desire to stimulate the economy with focused spending. Very few governments are likely to focus this spending on things that make their citizens unhealthy. Instead, they may invest in healthcare, environmental measures or other ventures to improve our quality of life.

Learnings from the 2008 financial crisis

That being said, we may decide that the most relevant example of how a recession affects the longevity of your membership is the 2008 financial crisis. Since 2011, we have seen a new lower trend in life expectancy improvements than we saw in the prior 50 years before this. Whether this change in life expectancy was a consequence of the financial crisis or not is very difficult to determine. However, if we were to see a repeat of the last 10 years' rate of improvement (rather than reverting to a higher rate of improvement) projected life expectancies could fall by as much as 4-5%.

Determining the relationship between your membership's life expectancy and the economic environment is very difficult as there are drivers in both directions. In reality, it is likely that different subsets of the population will experience a recession differently and so there will not be one right answer for all schemes.



POTENTIAL FUTURE DRIVERS FOR LONGEVITY



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Whilst news headlines and current events can encourage us to think about short-term implications on the life expectancy of a population, it is equally important to consider the long term drivers behind mortality rates, particularly in the context of future pension scheme payments. Lydia highlights some of the key changes she is keeping an eye on.

Technology

The introduction of new technology has the potential to impact mortality rates in ways we currently can't imagine.

It is already common to use a phone to help us with our health, such as monitoring our levels of daily exercise, sleep patterns, our behaviour, and even detecting if we have had a fall. This technology has the ability to collect diagnostic information on us and provide instant feedback.

The development of the NHS mobile app to track Covid-19 infections and alert those who have been in contact with people who subsequently catch the virus could potentially lead to the introduction of even more advanced medical apps in future.

For example, imagine if your mobile phone could alert you if it automatically detects that you have a high temperature or if you appear to be coughing more than usual? There could be the potential for technology to notify you of illness before you even notice it yourself.

The use of technology in the home to help provide support for giving and receiving care is an area for great development. This is particularly important for those with chronic diseases, such as diabetes.

The development of such technology could lead to the traditional visits to a GP once an illness has already become severe, being replaced by automatic intervention while an illness is still mild, leading to quicker and more effective treatments – particularly for people who are generally reluctant or unable to visit their GP.

A significant proportion of over 65s find it difficult to travel to their GP or hospital. Those in the worst health and with the lowest incomes find it the most difficult to travel to health services. Technology and the ability to instantly connect to healthcare could be transformative.

Corporate responsibility

Over the last 5 to 10 years Corporate and Social Responsibility has grown in the UK, with more firms taking it seriously and seeing it as fundamental part of their business. Alongside this is more focus on the wellbeing of employees and the environment we work in. We see this continuing to develop, leading to healthier lives.

Accessible diagnostic technology in the home could lead to automatic intervention when an illness is still mild, leading to quicker and more effective treatment.



POTENTIAL FUTURE DRIVERS FOR LONGEVITY CONTINUED

Antibiotic resistance

As early as 1945, Sir Alexander Fleming raised the alarm regarding antibiotic overuse when he warned that the “public will demand [the drug and] ... then will begin an era ... of abuses.”

The overuse of antibiotics in recent years means they are becoming less effective which has led to the emergence of “superbugs”. These are strains of bacteria that have developed resistance to many different types of antibiotics which can be serious and challenging to treat, and are becoming an increasing cause of disability and death across the world.

Both the NHS and health organisations across the world are trying to reduce the use of antibiotics, especially for health problems that are not serious. However, in the midst of a global pandemic there are some reports of surges in the demand for antibiotics.

This is perhaps unsurprising, when evidence suggests that many Covid-19 patients die of secondary infections rather than the virus itself. This phenomenon has also been observed during major outbreaks of other respiratory viruses: up to half the 300,000 people who died of the 2009 H1N1 flu and the majority of deaths from the 1918 flu actually died of bacterial pneumonia.

No new antibiotics have been developed for several decades. The research is time consuming, difficult and expensive. Companies are focusing on developing other treatments and drugs that are more economically viable, especially in an environment where the use of antibiotics are actively being limited.

Climate change

As with all these factors, the impact of climate change on mortality rates is uncertain.

An increase in average temperatures could reduce the number of cold-related deaths, which in England are around 20,000 per year. However, the extent to which any reduction is offset by deaths caused by an increased occurrence of heatwaves and other weather events is unclear. In particular, as poor infrastructure contributes to both cold-related and heat-related deaths (such as poor building design, and the ability of the transport system to cope with extreme temperatures), if this can be adapted the mortality rates from both these causes could reduce.

In addition, some commentators have noted that the economic effects of climate change, such as lower economic growth and higher food prices, may be more significant in impacting the health of a population.

In any case, climate change is potentially the “longest-term” factor noted here and isn’t expected to be a significant driver of mortality rates over the next 20-40 years.



**No new antibiotics
have been developed
for decades**

Genetics

Scientists studying people aged over ninety found that their lifestyles were similar – many were non-smokers, were not obese and coped well with stress. Due to their healthy habits, these older adults were less likely to develop age-related chronic diseases such as high blood pressure, heart disease, cancer and diabetes, than their same-age peers. But first-degree relatives of long-lived individuals were also more likely to remain healthy for longer and to live to an older age than their peers, which suggests that shared genetics also play an important role in life expectancy.

Scientists have been studying the genetics of ageing and longevity for decades and research has identified numerous gene variants that are associated with long life spans. Some of these gene variants are involved with the basic maintenance and function of the body’s cells (e.g. DNA repair) and others are associated with regulating blood fat levels and the immune system, which contribute to longevity because they reduce the risk of age-related diseases.

The study of genetics is an ever developing field, but scientists are hoping that understanding more about our genes can help prevent and treat a variety of diseases, from age-related diseases (such as heart disease and dementia) to genetic disorders (such as cystic fibrosis and sickle cell disease). A particularly interesting area of scientific research is gene therapy, in which a disease-causing gene (such as the haemoglobin gene that causes sickle cell disease) can be corrected by editing the genetic code. For now, most of the trials in humans are to establish whether the therapy is safe, but this could have a significant impact on health, disease and life expectancy in the future.



HEDGING LONGEVITY RISK



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In a time when Covid-19 has brought the world to a standstill, the pensions de-risking market remains open for business. With particularly competitive buy-in and buy-out pricing since March 2020, Michelle discusses below how Covid-19 has affected the market for hedging longevity risks.

In the wake of the pandemic many trustees and sponsors may be questioning whether now would be a sensible time to look to hedge longevity risk given the potential for Covid-19 to lead to a higher number of deaths and reduced pension scheme liabilities. But whilst Covid-19 is predominantly a public health issue it is changes in economic conditions that are having the biggest impact on insurer pricing.

March and April 2020 saw some of the most attractive buy-in and buy-out pricing of recent years, driven by widening of UK and US corporate bond spreads (the excess yield from corporate bonds relative to the yields on UK government bonds). Whilst spreads have fallen back to some extent, insurer pricing still remains more attractive than at the start of the year. This is illustrated by the chart on the right, which shows typical pensioner buy-in pricing over time expressed as an implied return compared to the yield available from holding gilts. However schemes hedging longevity only (ie through a longevity swap transaction, rather than a buy-in or buy-out) will want to give careful consideration to the value offered given the current uncertainty around future longevity.



Source: LCP analysis until 31 May 2020

Despite the challenges presented by Covid-19, the pensions de-risking market remains open for business.



PENSION SCHEME DE-RISKING CONTINUED

So far, we have seen the pensions de-risking market weather the Covid-19 storm remarkably well – insurers' cautious asset strategies have protected them from much of the market volatilities and their operational response has meant that transactions have still been able to complete despite the workforce being at home.

From LCP's ongoing discussions with insurers and reinsurers, they are making very little (if any) allowance for the impact of Covid-19 in their longevity assumptions at the current time. This is in line with LCP's own modelling that shows that the current levels of Covid-19 deaths are generally not having a material impact on pension scheme liabilities. The insurers are continuing to monitor the situation and may update their assumptions once the impact becomes clearer.

We are finding that there is not a one-size-fits-all solution for our clients; we have seen some look to accelerate their de-risking plans to take advantage of current pricing, most are proceeding with caution, whilst a small minority have found that the deterioration in their other assets has meant that an insurance transaction is no longer affordable at this time.

Any choice you make should be dependent on the unique circumstances of your scheme.

Whilst the final impact of Covid-19 is unclear it seems likely that any impact on price as a result of changes to mortality assumptions will be secondary to the impact of financial markets. Any decision to de-risk should be taken in context of the overall strategic aims of a pension scheme. There may, of course be other reasons why Covid-19 means that this is not an appropriate time for de-risking your scheme's liabilities, for example due to reduced funding levels or illiquidity in your asset portfolio. However, holding out for the potential for increased mortality in your scheme this year is unlikely to save you as much as locking into the favourable pricing opportunities that can arise during periods of volatile market conditions.

From LCP's ongoing discussions with insurers and reinsurers, they are making very little (if any) allowance for the impact of Covid-19 in their longevity assumptions at the current time.



*To find out more...
please see our pensions
de-risking report which
is out soon.*



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At LCP, our experts provide clear, concise advice focused on your needs. We use innovative technology to give you real time insight & control. Our experts work in pensions, investment, insurance, energy and employee benefits.

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