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The social care issue

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Contents

Introduction by the Editor

How would we describe the actuarial skill set as briefly as possible?

Given any problem, the key elements to me are the ability to quantify the factors relating to morbidity and mortality on the one hand (with P&C actuaries looking at analogous but generally 'non-biological' contingencies), investments on the other hand, and to do so over the short, medium or long term, and all this while being mindful of any relevant behavioural and regulatory aspects. These skills allow us to help solve the problem in question.

In principle, these skills should enable us to 'solve care' – to identify the best options for a society to look after the most vulnerable, and least autonomous, elderly population, with the question of funding being a central consideration. But the bigger the problem, the more it becomes a political issue. This is, of course, as it should be, especially as any change will involve trade-offs, with winners and losers, all in a context that will be emotive for the many people with elderly and frail relatives directly affected.

In this issue of the Longevity Bulletin, coming out ten years after the Dilnot Commission set out its recommendations, we look at the question of care provision in the UK and internationally, and try to provide insights and recommendations as to what 'solving care' might look like. While a cynic might note that not much has changed for the better over the last ten years, there is, I think, a new sense of hope and opportunity.

This optimism stems, paradoxically, from the care home tragedy of the pandemic. With care home residents (and to some extent workers) in the UK and many other countries having suffered terribly from Covid-19, there is much greater public recognition of the importance of care as part of the 'life journey' that we are all travelling, and a part that clearly needs improvement. Government acceptance of this seems evident from the September announcement of the new Health and Social Care Levy.

In our first article, Sacha Dhamani provides an overview of the situation, with the apt title 'To care or not to care?' – that being the central question every society faces in this context. Jules Constantinou describes the current UK system for funding and commissioning care; again, his article's title summarises the situation: 'A broken system'.

Amer Fasihi shows us a way that technology can improve care provision to help move things in the right direction.

We also consider the situation internationally, where the approaches taken in some countries could be partly transferable to others. Dan Ryan looks at continuing care retirement communities, with particular reference to the US system, while Sze-Yunn Pang provides insights from Singapore; both of them also write about how the pandemic has affected the US and Singapore care systems, and what the lessons are from that.

We hope you find this issue of the Longevity Bulletin enlightening, and look forward to receiving your comments either on the Bulletin itself, or on your proposals to improve the provision of care for the elderly.

Matthew Edwards
Editor

Foreword by the President of the IFoA

The Institute and Faculty of Actuaries has always sought to inform policy debates in the public interest, bringing our perspective to some of society's most strategic problems.

There is currently no shortage of challenges with the potential to affect everyone, wherever we might be – and they all require action. Along with climate change, sustainability, and the post-pandemic society, they include an ageing society that has many ramifications, including care for the elderly.

In my Presidential Address, I spoke about the need for actuaries to adapt and change, in order to help society adapt to its challenges. We need to approach the biggest problems with new mindsets; in the context of this issue's subject, for instance, perhaps moving from the classical actuarial dichotomy of 'alive or dead' to a three-state picture – alive, needing care, dead – or even thinking about a continuum of needs.

As the effects of climate change become increasingly prominent in the news, and after last year's emphasis on the (literally) exponential growth of viral spread, many people now appreciate what happens if problems compound, unimpeded. For climate risk, this cumulative compounding of problems is starting to be addressed by many countries; in the pandemic, it was addressed by lockdown and equivalent measures; but in the context of elderly care, it seems to me too few of us accept the need to tackle the problem.

The pandemic showed us how delaying action is a costly alternative to early action. While hasty, ill-conceived action for its own sake can be bad, none of the really large strategic problems facing us are in that early stage: we have had more than enough time to reflect. This is particularly true of the challenge of how society can best care for its most elderly population. The excellent and wide-ranging articles in this edition of the profession's Longevity Bulletin make it clear that none of the structural problems are new. The pandemic placed an awful, and for many people fatal, strain on the system, and this has only reinforced the need to change the structure.

We hope that this bulletin will help and empower readers, actuaries and non-actuaries to contribute to the solution. My thanks to all of the authors, and the editorial team, for their small but real contribution to this vital debate.

Louise Pryor
President of the Institute and Faculty of Actuaries

To care or not to care?

Sacha Dhamani, Head of Longevity at Royal London

The average length of time a person lives in a care home is estimated to be 2.5 years (Forder and Fernandez, 2011). This means that, to date, we have likely seen four 'care home cohorts' since the Dilnot Commission in 2011 and 12 since the Royal Commission in 1990. Indeed, since Prime Minister Boris Johnson's announcement in 2019 of a plan to resolve the care issue, another cohort will have almost completely passed through care homes.

This continuing uncertainty regarding a long-term settlement for care provision in the UK causes challenges for all stakeholders:

- Families are uncertain what the right decision is for their elderly relatives, specifically with regard to whether self-funding and insurance options will ultimately be cost effective
- Providers cannot make sound strategic decisions regarding their business when the funding situation may change, making investment particularly risky
- Local authorities, whose funding is insufficient to cover increasing care costs alongside their other public responsibilities
- Insurers cannot provide insurance products that directly meet customer needs when those needs are unclear.

Of course, the above list leaves out those most directly affected: those in need of care. The uncertainty means that this group – society's most vulnerable – are unlikely to be receiving the care they need to maximise their remaining lifespan, as well as the quality of that time.

Care during the pandemic

The effects of Covid-19 over the last year have severely affected the running of care homes and the provision of suitable care:

- The use of personal protective equipment and other shielding methods, while limiting transmission of the virus, will also have reduced the necessary engagement between carers and residents. This will have caused additional anxiety for those suffering from Alzheimer's and other forms of dementia and cognitively impairing diseases. These individuals may not have understood why these changes were implemented, would have missed the interaction that they were used to, and been unsettled by the changes to their daily routines.
- The restrictions on families being able to visit relatives has significantly reduced the quality of life of those people in care. This may have been particularly distressing to those with a cognitive impairment, for similar reasons to those identified above.
- The mental wellbeing of care staff has suffered greatly during the pandemic, caught between the pressures of protecting their care residents, while facing a significant increase to their own mortality risk, and risking the health and mortality of their own family members (Shembavnekar et al., 2021).
- Private providers, whose funding is dependent upon the number of care home residents, will have had additional financial challenges from the extra deaths of residents. In addition to the tragic deaths of many residents from Covid-19, the number of new admissions, specifically self-funded admissions, has fallen. The Care Quality Commission (2020) estimated that local authority funded admissions are 72% of those seen in 2019 but self-funded admissions are 35% of those seen in 2019.
- The proportion of staff vacancies in the care sector, while perhaps not directly affected by Covid-19, remains challenging at approximately 7% (Skills for Care, 2020), and the various demands of the pandemic make filling this gap more difficult. This is in conjunction with the increased difficulty of care workers' jobs in the pandemic.

The delivery of care is not just in the form of residential care, but also domiciliary care. Arguably, the challenges might be greater in that sector, with the necessary increased isolation of vulnerable people living in their own homes leading to increased morbidity and mortality risks.

The impact on morbidity and mortality of Covid-19 is likely to be persistent beyond the 'end' of the pandemic:

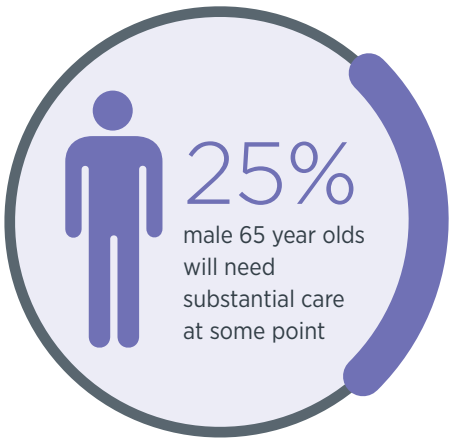
- The effects of isolation during the pandemic are likely to persist, especially for those receiving domiciliary care. Laugesen et al. (2018) estimate that social isolation is associated with a 60-70% increase in mortality, with those with no partner at highest risk, as would be expected. This value is likely to be an overestimate due to some 'reverse causation' (ie some people with 'high morbidity' being more likely to live alone), but a number of studies show a material effect of social isolation on mortality.

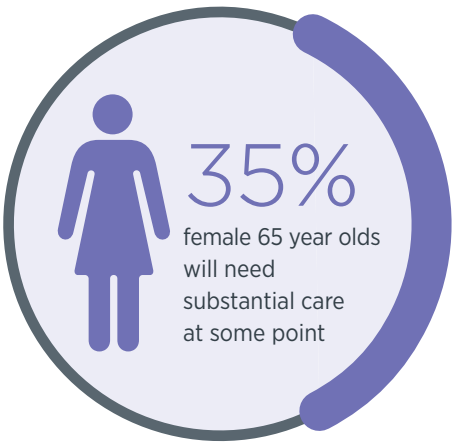
- The disruption to the normal routine, which causes confusion or uncertainty for those people most affected by conditions such as Alzheimer's and other forms of dementia, will likely persist as the essential reference frames of their day-to-day routine have gone.

What was already a bad situation has therefore worsened during the pandemic. However, one positive result of the pandemic is increased awareness of the issues affecting social care. While families who have experienced first-hand the challenges and uncertainty in accessing care were generally familiar with the issues facing the care sector, many people before the pandemic will have been much less aware.

Actuarial and lay perspectives

One of the causes of this lack of awareness is an under-appreciation of the likelihood of requiring care. Historically, few people survived to the oldest ages where they would be most likely to require care, but with increasing longevity the number of such older lives has increased, and will continue to do so. Rickayzen (2007) estimated that 25% of male and 35% of female 65 years olds in the UK will have substantial care needs at some point in their life. Estimates from the US, however, indicate that proportion may be significantly higher (Ruffenach, 2019).





Current 65 year olds should therefore be planning for their future care, but without accurate information to inform their specific likelihood of needing care it is almost impossible for them to predict such long-term needs realistically. Improved data and interpretation of this data are needed and one of the few positive elements of the government's recent white paper (which now forms the basis of the Health and Care Bill currently being considered in Parliament) was the recognition of the need to improve data availability to understand capacity and risk in the social care system. This was welcomed by the IFoA (2021) in its response to the white paper on health and social care.

One of the other factors affecting public awareness and engagement arises from public expectations – or more accurately the lack of expectations. This goes beyond the quantitative aspect above to a more qualitative gap, because the need for care conflicts with some of the key goals we have absorbed as part of Western society – freedom and independence. This could well lead to a choice to ignore it.

Personal perspective

From my visits to care homes over the years it is clear that there are some institutions that clearly aim to create the best possible living environment, but too few, despite the best efforts of staff and providers, offer a quality of life that anyone would aspire to.

However, as highlighted by Atul Gawande in his book *Being Mortal* (Gawande, 2014), there are many changes that could dramatically improve the quality of life for those in care. One example that particularly struck me was where one medical director decided to take action to improve the experience of those living in the care home he worked in. He introduced several measures to improve stimulation for the residents, such as bringing in animals that the residents would help to look after. This resulted in a number of benefits, but one that particularly stood out for me was seeing residents who were previously believed to be unable to speak starting to talk again.

We are at risk of continuing a form of 'self-fulfilling prophecy': if we continue to expect being in care to be an unpleasant phase of our lives, then that is likely to be what occurs, since we will not seek to change the situation based on better aspirations for what care could be. If, instead, consideration was made earlier in people's lives to understand the nature of the expected decline, and to identify what specific support would be needed to maintain those aspects of freedom and independence that matter most, then expectations of care would improve. One possible solution is the increased use in the UK of continuing care retirement communities (CCRCs) as discussed in Dan Ryan's article in this bulletin.

Covid-19 has increased public awareness of the issues facing the delivery of care for the oldest and most vulnerable in our society – if this awareness can be coupled with a raising of expectations of what life in care should be like then the political will to resolve the care issue may follow. We need to care more about long-term care.

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He is the current chair of the IFoA's Mortality Research Steering Committee and author of the prize winning paper 'The Nature of Longevity Risk'.

Continuing care retirement communities – still attractive in a post-Covid world?

Dan Ryan, Chief Science Officer at COIOS Research

The origins of continuing care retirement communities

Continuing care retirement communities (CCRCs), or life plan communities, have existed for more than 100 years, providing shelter and care for older people. The concept was originally developed in the USA, with many of the early communities supported by religious groups such as the Quakers and Lutherans. Since the 1960s the numbers of CCRCs have grown rapidly, in line with the growth in the elderly population; there are now almost 2,000 communities operating across the USA. About 80% are still run or owned by not-for-profit organisations; however, the largest for-profit provider, Brooksdale, has hundreds of senior living communities across the US. CCRCs provide a continuum of care for older people on one site. They feature all residential care types so that people do not have to move as their needs increase. Instead, people can move between independent living, assisted living and residential/nursing care centres depending on the level of care they require.

CCRCs take an active approach to maintaining health through facilities and programmes that encourage exercise and social engagement, as well as communal dining options and comprehensive medical and dental services onsite (Zebolsky, 2014). Ayalon and Yahav (2019) reveal that it is the close proximity of other residents in these communities that leads to close ties and a strong social ethos, rather than shared attributes or seeking out appealing characters. This aspirational lifestyle is attractive but also relatively expensive. Members must be able to demonstrate the ability to pay any future unmet costs and undergo physical and mental examinations on entry. As such, when people enter a CCRC they represent a particularly healthy subgroup of the older population.

CCRCs provide members with peace of mind that their care needs can be met within the community, either at home or in a central care facility, and provide the ability to move between settings as needed. This approach allows members to stay in their homes as long as possible, and avoids the jarring disruption of changing location and community at the point of requiring care when individuals are at their most vulnerable.

There are, however, concerns as to whether CCRCs, like other gated communities, promote age and social segregation and whether this leads to social discord and reduced interaction between generations. Some CCRCs have attempted to promote programmes that keep older people involved in the wider community, for example through links to other facilities such as schools, or siting CCRCs within an existing community.

Funding of CCRCs

In the UK, there are now around 350 retirement communities. The holistic approach taken by CCRCs around the world in providing care to their residents is reflected in the funding options available to members. At Hartrigg Oaks in York in England, developed by the Joseph Rowntree Housing Trust, members pay a residence fee and a community fee. The residence fee covers the cost of one of the bungalows and a room in the Oaks Care Centre, whenever it is needed. Residence fees can be paid up front, in which case the facility is obliged to provide whatever level of care is needed for however long is necessary during the remaining lifetime of the member, at no additional cost. Alternatively, fees can be paid on an annual basis.

There is also a more costly variation of the up-front fee structure, where the original fee is refunded to the person's estate on death or permanent transfer to the care centre. In the case of a refund, the CCRC benefits from any increase in the value of the property.

The separate community fee covers the maintenance of the bungalows and communal facilities, as well as provision of care at home. Community fees can be paid annually or upfront at the same time as entry into the community, but importantly do not vary with the amount of care required.

In the early years of a retirement village there is likely to be significant spare capacity in the central care centre due to the good health of those entering the community. This can offer a valuable source of revenue in providing care for those outside the community as a paid service.

In the US, approximately 40% of residents sign up on a pre-funded basis comprising an initial payment and then monthly fees, but where the fees are independent of the level of care needed and vary only with inflation (Cohen, 1988). A further 30% join on a restricted basis with lower fees, but where residents need to pay for any additional days of healthcare over a set limit. The remaining 30% agree a fee-for-services contract where care costs are charged as and when they are needed; this contract would also be the basis for those using the care facilities from outside the community.

While some will join CCRCs soon after retirement, the typical age at entry, both in the UK and the US, is high 70s or low 80s and is continuing to increase. However, given entry requirements for independent living, life expectancy is expected to be 10 years or more and CCRCs have a long-term financial obligation to their members, meaning that they have a need for expert advice on both demographic assumptions and investment choices. As with care homes, the typical business model of CCRCs is to maintain high levels of occupancy; this requires the central care centre to be used efficiently, and new entrants to be brought in quickly when there are vacancies.

CCRCs during the Covid-19 pandemic

In America the COVID Tracking Project (**https://covid.cdc.gov/covid-data-tracker**), sponsored by *The Atlantic* magazine, has used data from the Centers for Disease Control and Prevention and the Centers for Medicare and Medicaid Services to estimate that 35% of all Covid-19 deaths in the US were in the 1% of the population that were receiving care in nursing homes and long-term care (LTC) facilities.

While the impact of Covid-19 on residents of CCRCs would be expected to be broadly comparable to those receiving similar levels of care in other LTC facilities, Dalton and Zebolsky (2020) highlighted differences that would be expected to emerge because:

- CCRC residents are able to control when they transfer between different levels of care – but any delay because of fears of exposure runs the risk of higher mortality rates through insufficient care.
- CCRC morbidity relates to permanent transfers from individual homes to the central care centre. Concerns over the risk of infection in the central care centre would be likely to lead to fewer transfers during waves of infections, and a higher level of demand for care in the individual homes. Transfers that followed an acute event are likely to be unaffected as there is less scope for individual choice.
- Reductions in permanent transfers will keep occupancy rates for individual homes high, even where interest from new entrants is subdued by concerns over Covid-19 in LTC facilities.

A significant proportion of the deaths in care homes are likely to be occurring one or two years earlier than would otherwise be the case, since Covid-19 has had the greatest impact on those with reduced resilience. As such, those who remain in LTC facilities and did not require intensive care during the pandemic represent a healthier and more resilient cohort. Mortality rates in 2021/22 might be expected to be somewhat lower in this population, assuming that Covid-19 does not lead to poorer health outcomes on balance as a result of increased morbidity and/or increased frailty.

In March 2020 the Centers for Disease Control and Prevention advised anyone aged 60 or over in the US to stay at home. The continuing measures required to prevent further outbreaks in this potentially vulnerable population are posing a threat to the very ethos and attraction of a retirement community. Mealtimes are staggered. Social events have been cancelled. Restrictions over mixing deny residents the opportunity to meet with others and heighten worries about social isolation (O'Brien, 2020).

Separated from friends and family, this has been a distressing time for many. This experience will no doubt cause potential new entrants to CCRCs serious pause for thought. As Joseph Coughlin, Director of the Massachusetts Institute of Technology AgeLab, put it: "This pandemic fundamentally changes the [CCRC] business model" (O'Brien, 2020). And if so, for how long?

Argentum, the national association for operators of senior living communities in the US, has estimated that communities and facilities for older people have incurred losses of $30 billion up to the middle of 2021 as a result of the additional costs of protecting residents and care givers during the pandemic (Argentum, 2021). Operators face additional requirements on staffing, as well as retraining costs and high expenditure on cleaning and personal protective equipment.

At the same time, the experience of the pandemic has been invaluable in identifying which features of CCRCs and retirement communities are most and least appreciated by residents. CCRC operators such as Kendal Corp are considering alternative models. Due to advances in technological connectivity, they are looking at services and facilities that would allow future residents greater accessibility to a wider group of people (Novotney, 2020).

The possibilities of rewarding virtual experiences are almost limitless, bounded only by imagination and ambition and the willingness and ability of residents to engage with technology.

From virtual book clubs and virtual museum tours to remote wine-tasting evenings, residents at progressive CCRCs can benefit from live and pre-recorded activities. Outdoor enrichment activities and distributed games can be offered as an alternative for those that find technology daunting or difficult to master.

Future of care after Covid-19

Covid-19 has shone a harsh light on the long-term sustainability of many care homes. Care Choices (2020) highlighted that 6,500 smaller, older care homes in the UK were at risk and less likely to be able to cope with lower occupancy rates; additionally, half of these homes needed to be updated to en suite or wet room provision.

The experience of Covid-19 has made potential residents nervous of outbreaks in care homes and wary of future restrictions. Each lockdown has been harsher for them than the rest of the population. At the end of April 2021 in England, when others were allowed to visit non-essential shops and eat outdoors in groups of six, care home residents were required to isolate themselves in their room for two weeks after any visit to family and friends.

While these restrictions were relaxed after a public outcry, residents had to be accompanied by staff or one of two nominated visitors and should not meet in groups or go indoors. In line with changes to general government guidance regarding measures to combat the pandemic, these restrictions have been further eased more recently. The pattern of restrictions, and their timing, also differ between each of the constituent nations in the UK, reflecting the state of the pandemic and different political attitudes. Given the uncertainty and lack of control that residents have, it is no wonder that some long for the familiarity and freedom available outside institutional care.

Surveys consistently indicate that the over 65s would choose home care over care homes. Many are not prepared to take the risk that their independence might be compromised in a regulated care institution (Graham, 2020). That said, organising care for relatives who are frail, or have cognitive impairments, increases the burden on families, and results in a complex patchwork of formal and informal care – exacerbated further by the continuing limitations of the pandemic.

Here the continuum of care model provided by CCRCs demonstrates its value, offering the best of both worlds. Home modifications such as walk-in bathtubs or wheelchair ramps help people stay at home for longer. Residents are able to access the central care centre for short periods of acute care when needed, rather than having to make a permanent transfer from their own home to an institutional care facility.

The difficult choices facing those seeking care for themselves or their family members have prompted the Associated Retirement Community Operators (ARCO) in the UK to call for the establishment of a cross-government Housing with Care Task Force to accelerate the growth of the housing-with-care sector. Across the UK, there are currently only 70,000 housing-with-care units, compared to 444,000 retirement housing units and 477,000 care home beds.

This means that only 0.6% of the over 65s have access to housing-with-care. This compares poorly with the 5-6% of over 65s who are living in retirement communities in the US, New Zealand and Australia. In each of these countries, growth has been aided by sector-specific regulation at the state or federal level, whereas no such regulation exists in the UK.

ARCO has an ambitious vision for 250,000 people to live in housing-with-care communities by 2030, providing a more coherent and effective care model that would benefit the NHS and adult social care. The need for a cross-government task

force reflects the multiplicity of roles relating to care regulation, planning guidance, budgetary funding and care delivery, and the need to ensure a coherent landscape for social care for the long term. The CCRC model could provide a useful solution for supporting the provision of care, taking a more holistic approach in terms of provision and the approach to funding.

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Dan Ryan

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A broken system

Jules Constantinou, Regional Manager for Life and Health at Gen Re

The current UK system for the funding and commissioning of social care is broken. Care providers are going out of business at a time when the demographic trends associated with an ageing population should be encouraging them to invest further (Hodgson, 2020). More importantly, the system is failing the people requiring care and their families.

This article explores the current state of funding for social care and the demographic trends affecting this system and describes why change is needed now.

The current system

Each of the four UK nations has its own system and strategy for social care. Scotland is the only nation that provides free personal and nursing care services, similar to the 'free at the point of use' provision of health services by the National Health Service (NHS).

There are further complicating factors. There are various benefits that people are entitled to, but these are not provided by the same entities and some are means tested, while others are not. For example, Attendance Allowance is a non-means tested benefit provided via the Department of Work and Pensions (DWP) for those over State Pension age who can demonstrate a health or social care need.

While not a welfare benefit, some people, depending on the severity of their condition, may receive a personal health budget as part of NHS continuing healthcare, which is also not means tested, but paid for by the NHS.

Primarily though, the relevant local authority commissions most of the care required, but only for those assessed as demonstrating a 'Critical' or 'Substantial' need for care and only if they are below a complicated means test threshold, which includes savings and income, but does not include the primary residence, if the individual requiring care, or a close relative, still lives in the home.

This complexity can be confusing for families who are often in crisis situations trying to deal with a relative in need of care, and who may end up receiving suboptimal care packages, or none at all. The DWP (2020) showed that 30% of families that were entitled to Pension Credit and 11% of pensioners entitled to Housing Benefit didn't claim it. The situation for social care benefits may be worse, due to the added complications described above.

Local authority funding

Humphries et al. (2016) demonstrated how the number of people receiving care between 2011 and 2014-15 had reduced by 26%. Front-line services had been rationalised, non-statutory services had been cut and lower levels of support were being offered.

Local authorities are funded by central government and local taxes. More recently, central government has earmarked additional funding for local authorities to assist in the funding of social care.

In 2015 a Better Care Fund was established by combining NHS and local authority budgets to improve resilience and independence in adult social care (NHS, n.d.). The aim was to reduce emergency hospital admissions and hospital stays, as well as making the interface between the NHS and local authorities more efficient. At the time, initial calculations showed an expected £2bn annual benefit to social care budgets (Wikipedia, n.d.).

The government continues to support this national programme through annual grants. For 2021-22, the improved Better Care Fund grant of £2.1bn and the Social Care Grant of £1.4bn will be maintained at 2020-21 levels.

Local authorities may also raise additional funding subject to limitations. The approved House of Commons precept is a 3% maximum in any year for local authorities that have adult social care responsibilities. The precept represents the maximum increase in local authority taxes before a referendum needs to be called. The precept is expected to raise an additional £700m of funding for social care in 2021-22 (Foster, Sandford and Harker, 2020).

Depending on the age profile of the population covered by a particular local authority, they may have sufficient funding available to commission care for their communities, but as the population ages and the funding reduces in real terms, so does the commissioning. This results in a 'postcode lottery' for individuals in need of care, dependent on whether their local authority can afford to commission care for them and not whether they require care and qualify to be funded. An 'equalisation' grant of £300m has been earmarked to attempt to address these demographic imbalances between local authorities for 2021-22.

Due to these temporary funding injections, it's possible to get the sense that there is sufficient funding for social care and that these temporary injections will provide the time needed to improve the situation.

More recently there has been news of what should be a less temporary shift. The government announced in September the introduction of a cap on care costs and a change to the means test, in conjunction with the intention to fund social care by raising a ring-fenced levy on national insurance contributions. Although this is a positive step, the funding mechanism could be viewed as unfair from an intergenerational perspective.

Impact on care providers

As the means-testing thresholds for receiving care have shifted upwards over time due to budgetary constraints, fewer people are receiving the financial support and care that they need. When they eventually do obtain the care needed from care providers, the level of care required is generally far more intense, due to increased complications resulting from older ages and delays in receiving care. At the point that it is eventually provided, care is therefore more expensive for providers to offer.

At the same time, funding shortfalls from the local authorities result in the fees paid to providers not increasing in line with inflation, thereby squeezing their margins further.

The knock-on effect is that the care providers can only pay their workforce relatively low salaries, or are forced to create strict limits on the amount of time that staff can spend with their patients when providing care at home. These caregivers therefore don't earn enough, particularly when compared to comparable staff in the NHS. Staff turnover in the sector is around 30%, although many leave for other jobs within the sector (Skills for Care, 2020).

The lack of funding means that many providers are exiting the residential and domiciliary care sectors, or not investing in building greater capacity, despite the obvious growing demand that an ageing population brings. A leading indicator for the available amount of care is the number of beds available. The Nuffield Trust (2021) reports that between 2012–2020 the total number of beds (nursing and residential) per 100 people aged 75 and over in care homes had declined by 15%.

One option for care providers to improve their finances is to seek to create more beds for self-funders, who pay more than the local authority negotiated tariffs, but this doesn't solve the fundamental problem of underfunding and under-commissioning at the local authority level.

Impact on families

Another leading indicator of the lack of care is the number of informal caregivers, usually family and friends, who have taken on the role of unpaid part-time or full-time caregivers. As a result of assuming these additional responsibilities, they have either had to leave formal employment completely, or are juggling caring with part-time employment.

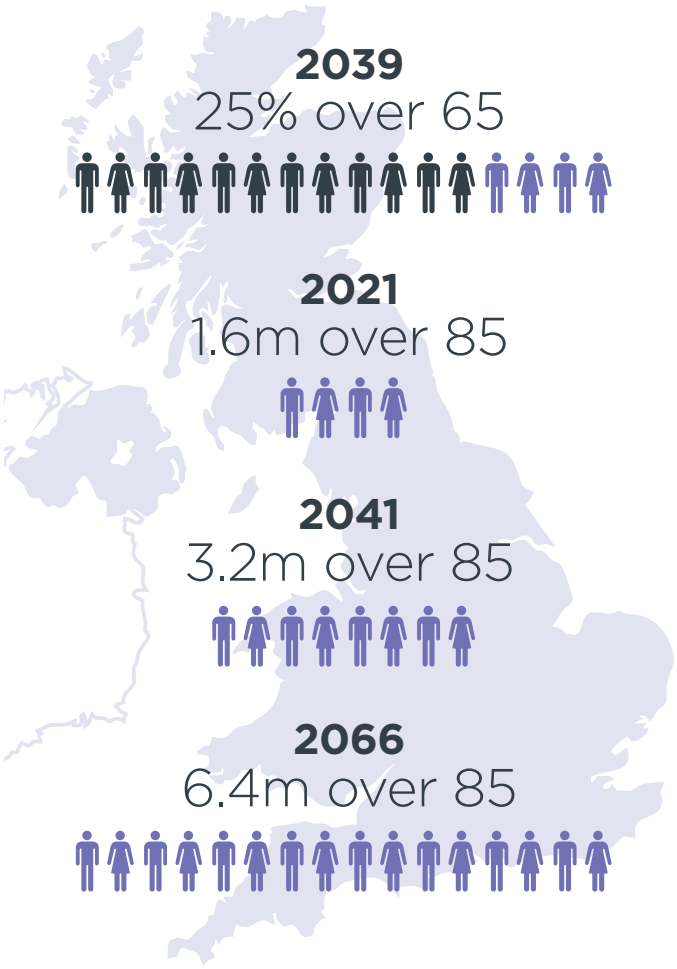
2019 9.1m unpaid carers
2020 13.6m unpaid carers

According to Carers UK (2019), there were 9.1 million unpaid caregivers before the pandemic. Since then, due to the restrictions imposed on care homes and the reported death rates in care homes due to the Covid-19 pandemic, this number has risen by another 4.5 million (Cripps et al., 2020). It is estimated that the value to the economy of this unpaid care is in the region of £132bn per annum.

Demographic trends

Due to demographic trends, the pressure on funding and the availability of services will only get worse. The effects of the pandemic may conceivably change some of the trends outlined below.

The UK has an ageing population. By 2039 it is expected that 25% of the population will be over the age of 65. The number of people over age 85 is projected to double to 3.2 million in 20 years' time and treble in 45 years (ONS, 2018a).



However, healthy life expectancy is not keeping up with life expectancy. In other words, people are living longer but in a state of poor health, meaning that the need for care is rising. Even though the number of life years at age 65 expected to be 'disability free' is increasing for males, so are the number of years spent with a limiting disability. For females, the number of years at age 65 expected to be 'disability free' has been steady in recent years; however, the number of years spent with a limiting disability has increased (ONS, 2018b). The expectation is that we will have a greater incidence of more complex health conditions, comorbidities and chronic illnesses, particularly dementia (Alzheimer's Disease International, 2015). As a consequence, the average level of care required in future will be more intense and hence more expensive.

Old-age dependency ratio

A consequence of an ageing population will be an increase in the old-age dependency ratio (OADR). This is the ratio of retired people to the working population and is used to determine the sustainability of any tax-funded system. Currently, the OADR is around 300 retired people per 1,000 working age population and is projected to increase to 500 by 2040 because of ageing. Possible methods available to manage the increase in this ratio are an increase in the State Pension age and expanding the volume of immigration, since migrants are typically younger. There are political challenges associated with each of these approaches. Some modelling has been performed on the former in the context of the expected increases to the UK State Pension age, but even this will only manage to limit the OADR to 365. This analysis doesn't take into account the increasing numbers of unpaid caregivers who may leave the workforce to provide the care that their families and friends need.

There are obvious issues of intergenerational fairness if an increase in tax is proposed to help fund the long-term liabilities around social care. Despite adverse appearances, these issues are surmountable. For decades, pensions actuaries have considered deferred and in-payment liabilities separately, if required, with similar concerns being addressed through the funding approaches developed for these different groups. For the system to be equitable, any state-funded benefit guarantees also need to be simpler to understand, and easier to access for those needing care.

Conclusion

We need to start to put the funding of the state social care system on a solid foundation now in order to give the community time to plan and service providers time to invest to build a robust infrastructure to support caregiving in the future. Actuaries have an important role to play in creating solutions for this problem, in the context of needing to ensure intergenerational fairness, given their experience of designing long-term funding arrangements, such as for defined benefit pension schemes.

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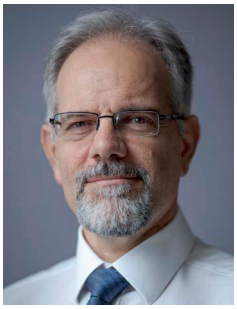
Jules Constantinou



Jules Constantinou is the Regional Manager for Gen Re's UK and Ireland Life and Health business.

He was President of the Institute and Faculty of Actuaries in 2018/2019 and is also a member of the Association of British Insurers (ABI) Protection Committee, chairing the Risk Sub-Committee, and a member and past Chair of the ABI's Social Care Working Group. He has presented on Social Care at ABI events and international and UK conferences, and in 2018 gave evidence on the subject to a Select Committee of Parliament. He was also on the Department of Health and Social Care's Expert Advisory Panel on social care reform.

Resilience and technology adoption among older adults

Amer Fasihi, CEO and co-founder of Kraydel

Until around 60 years ago the general attitude towards ageing centred on the individual gradually relinquishing their involvement in 'daily living'. As a person became older they were expected to transition to a quieter routine, moving towards less and less social participation. These expectations are likely to have been informed by the fact that people aged more quickly in the past due to a variety of factors. These include poorer healthcare, greater prevalence of jobs involving heavy manual labour, greater poverty, etc. At this time, the average lifespan in the UK was much shorter than today, with only nine years of life expected from retirement (compared to over 20 years currently).

During the 1960s, new theories of ageing emerged that encouraged engagement and involvement in social activities by older people. New models of 'successful' ageing started to be adopted; these explored what approaches led to better outcomes and why they were more effective. From these theories, the concept of 'resilience' gained popularity, defined as a high level of functioning after a negative event or some form of adversity (for example, bereavement, medical challenges, etc).

According to this definition, individuals who demonstrate a high level of functioning in the absence of adversity are considered as ageing in a healthy manner, while those maintaining the same high functioning levels while facing adversity are considered as both resilient and exhibiting healthy ageing. Studies showed that by including adversity into the definition of resilience, it gave the concept more applicability, making it more comprehensible and helping older adults to identify with it.

Research now shows that many of the characteristics that have been anecdotally understood as essential to healthy ageing for those over the age of 65 are essential components of the concept of resilience, and include mental, social and physical factors (see Table 1). Critical to healthy ageing are elements of mental resilience, including:

- Developing adaptive coping styles to deal with adversity
- Maintaining predominantly positive emotions such as optimism and hopefulness
- Regular participation in the local community and social connections (eg with family).

These mental aspects of resilience were historically less recognised than more overt abilities, such as the ability to carry out the activities of daily living that support independence, and being physically active.

Table 1: **Key characteristics of resilience**

Mental	Social	Physical
• Adaptive coping styles • Gratitude • Happiness • Lack of cognitive failures • Mental health • Optimism/hopefulness • Positive emotions/regulation	• Community involvement • Contact with family & friends • Self-rated successful aging • Sense of purpose • Social support and connectedness • Social support seeking • Strong, positive relationships	• Activities of daily living (ADL) independence, such as being able to wash and dress • High mobility • Physical health • Self-rated successful aging

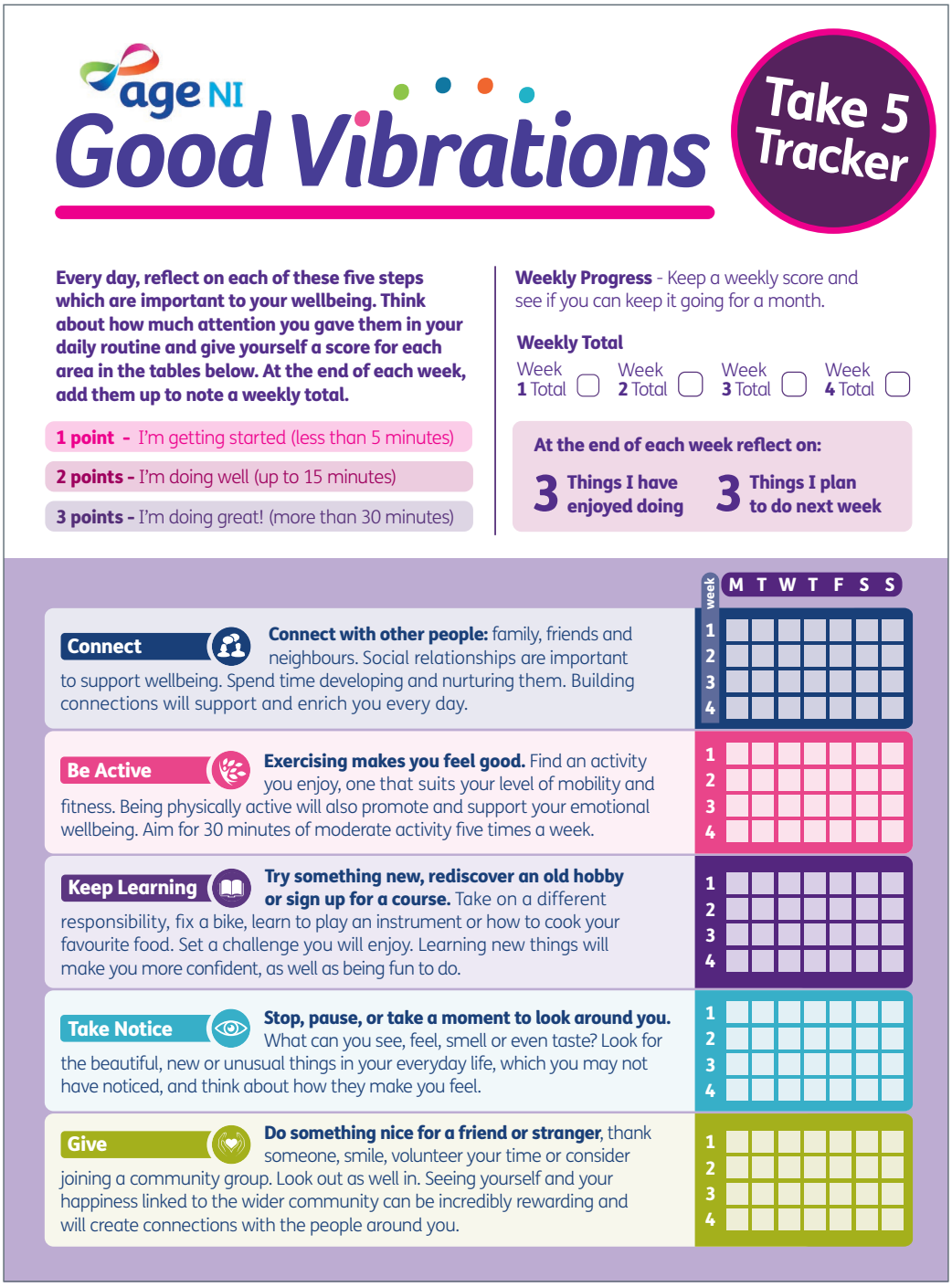
Several organisations are now adopting these concepts into actionable programmes looking to improve resilience in older adults.

In the leaflet below from the charity Age NI, older adults are encouraged to follow some simple steps to address the mental and social aspects of resilience.

By keeping the advice to hand and tracking their progress on the chart on the left, AgeNI seeks to increase resilience among individuals by encouraging beneficial behaviours.

Impact of loneliness and isolation on ageing

Given how important the mental aspects of resilience are, and how they play into the social characteristics mentioned in Table 1, the increasing prevalence of loneliness and isolation among older adults has become a pressing issue for society. While loneliness is not the same as isolation, being a subjective emotional feeling compared to the actual lack of social contacts that isolation represents, the two concepts are closely related – and both tend to increase with age and among those with long-term health problems.



Reproduced with permission from Age NI and the Public Health Agency (Northern Ireland).

Many studies have demonstrated that social isolation and loneliness are detrimental to health in older adults (eg Holt-Lunstad, Smith and Layton, 2010), with higher rates of mental health conditions, such as depression, and poor physical health. In terms of the latter, one report identified a 29% increase in the risk of coronary heart disease and a 32% increase in the risk of stroke among those suffering from loneliness and isolation. Loneliness increases older people's likelihood of mortality from all causes by 26% (Valtorta et al., 2016). Socially isolated individuals are 1.8 times more likely to visit a GP, 1.6 times more likely to visit A&E, 1.3 times more likely to have emergency admissions and 3.5 times more likely to enter funded residential care (Ofcom, 2017).

Clearly, it is important to address this problem, but the scale of the challenge is significant; the number of people aged 65+ living alone in the UK is 3.6 million and growing (Age UK, 2019), while in the US it is over 10 million (Stepler, 2016), and is close to 200 million worldwide.

Age UK (2018a) states that in 2016/17, 7% of people aged 50 and over living in England often 'felt lonely'. By including those who say they are 'lonely some of the time', the figure rises to 33%. More than a million older people say they go for over a month at a time without speaking to a friend, neighbour or family member.

The health impacts of loneliness are not limited to older adults — they also affect the families and caregivers who spend significant time and attention caring for these individuals. Loneliness places a heavy burden on caregivers already overwhelmed from trying to fill social care gaps and address the medical needs of the older population, with over half of caregivers reporting that their work was affected by their caregiving responsibilities and over one fifth reporting a decline in their own health as a result of caregiving.

The measures put in place to limit the spread of Covid-19 focused on shielding the vulnerable, resulting in even more isolation. Against this backdrop, it is perhaps not surprising that almost a third (30%) of 60–70-year-olds state that their mental health has deteriorated due to the pandemic. The effects have been greater on those who could be considered more vulnerable. It should also be noted that individuals who live alone are more likely to have said that their mental health had suffered during lockdown (43% versus 36% overall) (Centre for Ageing Better, 2020).

Challenges of smart technology for older adults

With the ubiquity of smartphones, and the extremely easy, and free, access to communication platforms such as Skype, Facetime, and so on, it might be considered unusual that loneliness and isolation are still so prevalent. However, Age UK (2018b) shows that 3.7 million people aged 65+ have never used the internet, and those who do only use a very narrow set of services, with low confidence.

Interviews carried out with a sample of older people have revealed that current technology is used as a work around but is not fit for purpose. Many older adults display high levels of anxiety when faced with PCs or smart screen technologies (smartphone, tablets). Much of this is driven by inappropriate design for this user group. As people age, blood circulation to the fingertips (and other extremities) diminishes, resulting in leathery skin, which does not induce the capacitance on the glass that smart screens require in order to function. This results in the older adult being less able to activate apps than younger people, which in turn provokes negative sentiments (low self-confidence, etc). Similarly, the icons for apps etc are sometimes too small for people who may have a tremor in their hands to easily select, resulting in the wrong app being activated, again resulting in negativity toward the device. Sight loss is also a significant barrier to using technology, especially on small screens such as smartphones where people may not be able to see the text and icons.

Along with these user interface challenges there are also wider factors, such as a visit to the local shops offering an opportunity for social interaction, thereby reducing the attractiveness of online services (and hence encouraging less frequent interaction with technology). Many older adults simply don't feel the same motivations to use technology (convenience, speed, efficiency, etc) that younger segments of the population typically do. The resulting low adoption of digital technologies leads to digital exclusion, further exacerbating the isolation of older adults.

Technology solutions for healthy ageing

The marginalisation of the needs for older adults was, and still is, prevalent, and is neatly encompassed in how marketers segment populations by age; for every age after 15 years, there is a ten-year cohort (eg 15–24 years, 25–34 years, etc). This continues to the 55–64 years range, after which the segment is classified as 65+. Today the population of 65+ is 12 million people in the UK (over 18% of the population), and around 700 million globally. These proportions are projected to account for 28% of the UK population by 2036, doubling to over 1.5 billion globally.

Due to the speed with which the population of older adults is growing, and the personal journeys that many people are on (caring for elderly parents, for example), there is a large amount of commercial interest in this segment, with many companies introducing a range of innovations to support healthy ageing and maintain independence in later life. The market that is developing to meet these needs comprises start-ups and major enterprises operating across various domains in the healthy ageing sector. A sample of the solutions that they currently offer is listed below.

- To address social isolation a number of companies have developed easy video-calling solutions which are effectively tablet devices that have easy-to-use interfaces tailored for older adults who do not like using smart screen technology.
- With the increasing burden on healthcare, several companies are making video consultations with doctors available. These are mainly for primary care (GP related), rather than secondary care, but only use smart screens and, as an additional hurdle for older adults, require patient transfer away from their GP to the provider (which older adults are reluctant to do).
- Seeking to maintain people's independence in their own homes, companies have launched home monitoring systems which have sensors placed around the home to enable remote oversight. These generally include motion sensors allied with some form of machine learning to monitor activities of daily living. These can also alert someone in case of a fall at home by the person being monitored. These systems generally only monitor a single type of event (eg physical movement) but do not have any social connectivity.
- Medication reminder systems are generally supplied as smartphone apps and only display reminders for medications but do not monitor compliance (and since they are smartphone operated have low uptake among the elderly). There are, however, some ingenious systems that are hardware based (smart pill bottles and dispensers), which focus only on this aspect of the user's health.
- Technology to monitor falls specifically has existed for a few years with wearables (wrist bands or pendants) and more recently sensors dotted around the home, as noted above. Some can 'see' through walls and discern whether an elderly person may be in distress, or remotely report where they are.
- Non-digital initiatives such as person-to-person contact for the elderly (befriending programmes, for instance) have positive results, but scaling up these programmes is extremely expensive.

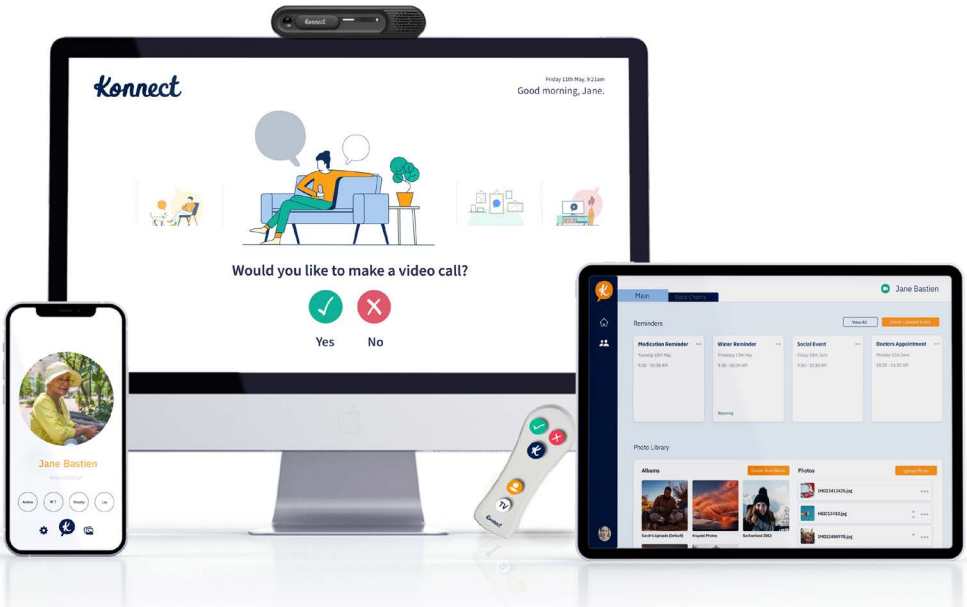
A more holistic approach to healthy ageing

The shortcomings of many of these solutions is that they have been designed to solve a single problem (such as social connectivity, fall detection, environmental comfort or medication adherence) and are therefore not holistic. Also, they often label the older adult as frail or vulnerable, and while this may be true, no consumer particularly wants to announce this. Finally, these systems have been designed to solve someone else's problem (generally the carer or service provider), and not the user's problems or aspirations. This could contribute to that person feeling marginalised or made to feel a burden.

I have been advocating for a more user-centric approach to design to deliver a non-threatening, engaging solution to the primary problem that the user has first (which I believe to be social connection with friends and family to reduce loneliness and isolation). A remote monitoring solution for service providers and the family can then be delivered as a secondary outcome.

One example of such a solution is the 'Konnect' system, launched by Kraydel last year. This comprises a hub (mounted to the top of the user's own TV), a specially designed remote control and a unique user interface that operates through 'Yes' 'No' responses to questions such as "Would you like to make a video call?". It does not require training.

- It operates via the internet, either on the wi-fi network, or through a 4G mobile signal (the SIM is integrated in the hub).
- The hub has built-in sensors (for light, sound and motion), and has been integrated with a wide range of environmental sensors (room temperature, smoke alarms, doorbells, etc) and health devices (oximeters, blood pressure monitor, activity monitors, etc) to remotely monitor the activities of daily living, supporting independence.
- The data is captured in a carer portal from which alerts can be sent to professionals, or reminders for appointments, medication etc can be displayed on the TV.



Kraydel Konnect

Case study

The use of Konnect in a care home

The challenge

Reducing the risk of loneliness and social isolation amongst residents during the Covid-19 pandemic.

- The residents are all living with varying degrees of frailty and medical conditions.
- None of the residents considered themselves to be tech savvy and there was some apprehension about using a new system that had to be overcome.

The trial

A three-month trial of Konnect to support video-calling between residents and their loved ones via their own television. The Konnect systems were installed onto the residents own televisions in their rooms.

Increased inclusion

- One family all joined their mother/ grandmother via Konnect from their home in Spain on her birthday as she opened her presents.
- Photo uploads to create photo albums for users proved very popular. Supporters can select pictures from their own device which can then be viewed by users, at their leisure and are played like a slide show or can be a screen saver on their TV.

Reduced loneliness

- All active users received multiple inbound and outbound calls with evidence of established routines of daily and weekly calls as well as a mixture of shorter calls along side a high percentage of calls lasting in excess of 18 minutes.

Providing peace-of-mind

- We received a message of thanks from loved ones, sharing how Konnect had helped both residents and their families during shielding and lockdown measures.

Benefits of a user-centred approach

Surveys out of users of Konnect have disclosed high levels of acceptance by users, with 93% saying that it was easy to use (compared with 23% for tablets and 14% for smartphones). Most importantly, 62% of users experienced increased contact with loved ones, and 65% of the family members interviewed said that they had increased peace of mind.

After using this approach in early deployments, healthcare professionals said that the system is easy to use and 95% of those involved in trialling the system said they would recommend it to colleagues. Of these triallists, 72% reported that it was effective to connect with patients through the TV, compared with 14%, 9% and 5% saying the same about tablets, smartphones and telephone calls respectively.

A useful 'silver lining' during the year of the pandemic has been that with this approach, vulnerable populations have been supported by health and care service providers in large numbers with no risk of infection.

Future applications of this kind of approach

Using the data from the remote monitoring platform (these are metrics on health and wellbeing from connected devices), combined with the data from the social functionality (video-calls, media-sharing etc), along with wellbeing assessments delivered through the TV, allows many of the characteristics that define resilience (see Table 1 on page 14) to be effectively measured. This makes this approach a constructive way to objectively monitor how resilience is changing at the individual level, and helps to identify ways of improving this.

Further developments will address the user's areas of interest, by including engaging content such as historical documentaries, educational content, live broadcasts of local community events and wellbeing activities (eg exercise videos, brain training games, quizzes, etc.) to keep the user engaged and alert.

Our expectation is that there will be many such systems launched soon. More and more companies are starting to recognise the importance of the older adult as a consumer, both in terms of the rapid increase in their numbers, as well as the diversity in requirements.

Along with the emergence of this type of consumer, a whole new sector centred on healthy ageing, will become much better defined. We expect qualities such as resilience will be key to defining how well interventions are working, and will help to bridge the current siloes of health and social care.

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Additional resources

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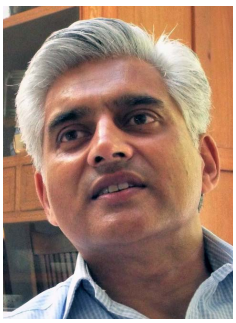
Amer Fasihi



Amer Fasihi worked in life sciences for over 20 years at GlaxoSmithKline, IQVia (formerly IMS Health), and IBM, after which he founded Caros Connect (which merged with Kraydel). He studied physics and biotechnology at Imperial College, has a PhD in remote sensing from Cranfield University, and is a Fellow at the Centre for Digital Innovation, Cambridge University.

Rethinking elderly living after the pandemic

Sze-Yunn Pang, CEO of Neurowyzr

With a particular focus on key factors for Asian countries, Sze-Yunn Pang offers her reflections on opportunities for governments and care providers to improve how and where elderly people are cared for in the wake of the pandemic.

The Covid-19 pandemic has been an anxious time for most people, particularly for the oldest in society who have seen more Covid-19 infections and deaths compared with other age groups. According to the US Centers for Disease Control and Prevention, 95% of Covid-19 deaths in the US have been among people age 55+, and 80% have been older than 65.

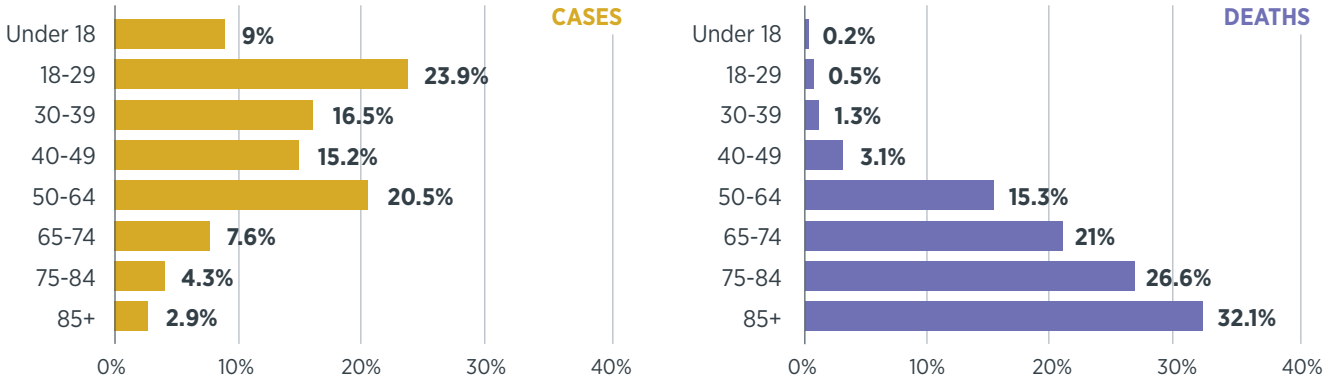
In the West, deaths at high ages have been overwhelmingly concentrated in care homes. The high death rates caused by Covid-19 may be due to care homes housing the frailest people with the weakest immune systems, and also due to the communal nature of care home living. Kamp and Mathews (2020) state that although only around 2% of the population in developed countries live in care homes, such homes have accounted for 30% of Covid deaths. Curiskis et al. (2021) have estimated that about 10% of the nursing home population in the US have died. Data on care home deaths in Asia is limited. Some Asian countries, such as South Korea and Singapore, were able to cap care home deaths because they were successful in controlling nationwide infections, and were helped by their earlier experience with SARS. While successfully protecting older people from Covid deaths, measures such as forbidding family visits and limiting staff from leaving care home premises can exert a severe psychological toll on residents, their families and employees.

Due to lower technology adoption, older people have also been more isolated than those who have been able to use technologies like Zoom or social media apps to stay in touch with the outside world. Finally, for the elderly, Covid-19 may exacerbate their age-related feelings of vulnerability and helplessness.

Covid-19 has therefore been a medical, social and personal crisis for the elderly. For the rest of society, this should be a source of concern. Whether viewed through a national, business or personal lens, there have been costs and missed opportunities. These developments have precipitated a much-overdue rethink about where elderly people should live, and how they should be cared for. Some countries have called for national commissions to examine what has gone wrong.

As we look beyond the pandemic, we consider three key areas that may help to provide improvements in caring for the elderly, and the related factors that have particular impact in Asian societies: increased home-based care, technology, and home and urban design.

The 95 percent - Coronavirus cases and deaths by age group



Source: Centers for Disease Control and Prevention, CDC Covid Data Tracker (**https://covid.cdc.gov/covid-data-tracker/#datatracker-home**). Based on available data as of Oct 29 2020. Public domain; use of this data does not imply endorsement by CDC.

Prioritise own homes

In many countries care homes are viewed as the 'default' place for frail older people without full-time caregivers. However, with the overwhelming proportion of deaths occurring in care homes, Covid-19 has highlighted how vulnerable institutional settings such as these are to disease.

One approach to addressing this would be increased prioritisation of the individual's own home as the preferred place of residence, even as the elderly become frailer, aiming to deliver care at home. Fazzi Associates (2017) state that 26% of pensioners said that their top fear was loss of independence, followed by 13% who identified their top fear as moving out of their home and into a nursing home. Death was the top concern for only 3% of respondents. The same survey showed that 89% of pensioners believed it was very important to continue living at home. For many, moving into a care home, however well-run, means leaving familiar surroundings and friends, to live in a place where they see themselves as having less independence and choice.

Continuing to live at home means ensuring that older people can be supported with home care and other attendant services. These can include personal-related services such as bathing, cooking and companionship, but also healthcare-related services like nursing, medicine reconciliation (eg prescription harmonisation across different sources) and GP visits. To be able to provide these would require a reorientation of countries' long-term care systems and health-financing systems to support this care model change. An array of household-related services, such as grocery shopping, home maintenance, concierge services and other services, would be required to make living at home easier (or even just viable for those less able to carry out such activities themselves); many of these services have become commonplace during the pandemic due to the growth in online shopping and activity. Businesses have the opportunity to create new 'silver market' segments by adapting these services to make them more accessible to older people.

In many Asian countries and communities the prevailing cultural norm is one of family care and respect for the elderly, which means that long-term care systems are often less developed. This can provide a positive impetus to prioritising care at home, but can also have significant implications for the burden of caregiving.

The availability of 24/7 assistance can often be one of the important elements that makes a care home the best choice. However accessible home care may become, it is still likely to require greater participation from family and other informal caregivers. In 2019, in OECD countries for which data is available, around 13% of people over the age of 50 said that they provided informal care at least weekly (OECD, 2019).

The work typically falls disproportionately on female family members, who need to coordinate and oversee care, and fill in care gaps. In the EU, women represent 62% of all people providing informal long-term care to older people or people with disabilities (EIGE, 2020). Women of pre-retirement age (50–64) are most likely to be providing such care. In many countries in Asia, where particular cultural norms and roles may shape practice and where sending an elderly person into institutional care may be considered shameful, unpaid caregivers (mostly wives, daughters, especially unmarried ones, and daughters-in-law) play an even bigger role in elder care. The loss of personal income and savings leads to greater insecurity for these women as they age themselves.

To enable home care, governments and employers would need to investigate how to support family caregivers in their roles. This could include providing tax relief, subsidies and even allowances to enable them to either be full time caregivers or to balance caregiving with part-time jobs.

Harness technology

Developments in the Internet of Things technology, including the emergence of Bluetooth medical devices capable of continuous data streaming, movement monitoring devices, chatbots, robots and digital health apps, mean that we now have more resources to monitor and assist older people at home. These have been successfully used for different purposes, from medical scenarios such as falls and movement detection, chronic disease monitoring, and dementia care to house cleaning, home security, and stairs climbing. Research has shown that these have benefits such as improving healthcare outcomes, or simply making daily chores easier.

It is no wonder that digital health start-ups have seen a boom in investment during the Covid-19 pandemic. Reuter (2021) states that digital health start-ups in the US raised a record US$15.3bn in 2020, with many companies raising more than $100m in funding. Asia saw similar trends, with start-ups such as Halodoc from Indonesia successfully raising US$80m. The bulk of the investment funding has gone into mental health, reflecting the overwhelming negative impact of Covid-imposed isolation and the realisation that brain health will soon be a key global concern. Traditional healthcare service providers have the opportunity to harness these technologies and integrate them into their offerings, while ensuring usability by the elderly and, importantly, data privacy.

Internet and smartphone usage can decrease the social isolation of less mobile older people. However, internet usage remains relatively low in older age segments, even during the Covid-19 pandemic. Statista (2019) states that those aged over 65 comprise only 7% of global adult internet users.

The European Commission (2020) shows that in the EU in 2020, 60% of those aged between 65–74 reported using the internet in the last year. However, there are still large gaps in internet usage between the old and young. Schumacher and Kent (2020) state that the gap in social media usage among young and old remains high, even during the pandemic. In most countries surveyed recently, the gap was more than 50%. This will need to be addressed in order for technology solutions to have a meaningful impact.

Improve home and urban design

By 2050 70% of the world's population is expected to live in cities. Of the urban population 22% will be over 65 years of age. Large elderly populations living in urban environments is a modern phenomenon. It is understandable that our homes and cities, built when the world's population was younger, are unsuitable for older people. Examples of urban and home design issues that can cause difficulties for older people include:

- Steps and staircases
- Unreachable shelves and cupboards
- Poorly placed electric sockets
- Long corridors and narrow doors
- Poorly lit streets and slippery and uneven pavements
- Traffic lights that change too quickly
- Long distances between public transport stops
- Illegible signs
- Insufficient seating and activity areas in public parks.

There is a clear imperative for governments to review national housing stocks to determine how much of their housing is 'age-friendly'. Initiatives could include starting to enact mandatory age-friendly and disability-friendly building standards, and the provision of funding for retro-fitting public housing for the elderly. Public transportation systems that are affordable and safe will encourage seniors to be active and connected to their community.

For city landscapes, concerted effort needs to be made to implement changes that make the built environment easier to navigate. The World Health Organization report *Global age-friendly cities: a guide* (WHO, 2007) identified green spaces as one of the most important features of an age-friendly environment, because these are places where older people can meet, rest and exercise. Green spaces also have greater social and economic value for the rest of the population.

Conclusion

Covid-19 has been a transformational experience for the world. The crisis has forced us to reassess and question some fundamental issues, such as how we work, the importance of relationships, who are essential workers in society, and what freedoms we are willing to trade for health. The disproportionate impact of Covid on the older population and on care homes should make aged living one of the top issues to be tackled.

In developed countries where care homes are already ingrained in the long-term care system, opportunities exist for governments, funders, healthcare providers and families to explore possible shifts to a community and home care model.

In less-developed countries, and countries in Asia where long-term care structures are still developing, a case can be made for home care as a core care model for ageing people, while still providing care homes for those for whom institutionalised care is the best, and sometimes only, possible option. As we focus our minds on post-pandemic improvements to our systems, let us make the most of the opportunity to do better for our elderly family members, and for our future older selves.

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Sze-Yunn Pang

Sze-Yunn Pang is CEO of brain health start-up Neurowyzr, based in Singapore. She was the former Head of Philips' Population Health Management business in Philips ASEAN Pacific, where she was part of many healthcare 'firsts' in Asia in the area of population health, remote monitoring and chronic disease management. Prior to Philips, she led NTUC Health Home Care, one of the largest providers of home care services in Singapore, during a period of rapid growth. She sat on the World Economic Forum Global Future Council on Longevity from 2019-2020. She is passionate about the use of technology to improve patient experience and outcomes, and healthcare productivity.

Sze Yunn earned her BSc (Econs) specialising in Government and History from the London School of Economics, and holds an MBA from the Ross School of Business at the University of Michigan in Ann Arbor, Michigan.

Continuous Mortality Investigation (CMI) news

As well as the CMI's 'business as usual' investigation work, our work has continued to include analyses to assist understanding of the impact of the pandemic. This article outlines the following:

- Mortality impacts of the pandemic – our ongoing **monitoring of mortality** in England and Wales, further analysis of annuitant experience over the period to the first half of 2020, and the publication of CMI_2020
- Regular investigation work – income protection methodology changes and the impact of data issues, '16' Series term assurance mortality and accelerated critical illness tables, and the first analysis of mortality in the self-administered pension scheme (SAPS) dataset by Index of Multiple Deprivation (IMD) and region.

Mortality monitor

The Mortality Projections Committee continues to produce weekly updates to the **CMI mortality monitor.** The update for week 44, for data to 5 November 2021, shows that mortality in 2021 was high at the start of the year but has since fallen, with mortality in Q2 being generally lower than expected based on mortality rates in 2019 (ie 'negative' excess deaths), and in Q3 typically being either slightly below, or within, the range of mortality for 2011–2019 (apart from weeks affected by bank holidays). As we move into Q4, mortality has moved above or towards the top of the range for 2011-2019. The cumulative mortality improvement for 2021 (compared to 2019) to week 44 was –5.9%.

The week 17 monitor included additional analysis on how mortality has varied by IMD during the pandemic:

- Due to the pandemic, people living in more deprived areas have seen a bigger increase in *absolute* mortality compared with those in less deprived areas
- However, there was a broadly similar *relative* increase in mortality during the pandemic across the socio-economic spectrum.

Additional analysis of annuitant experience

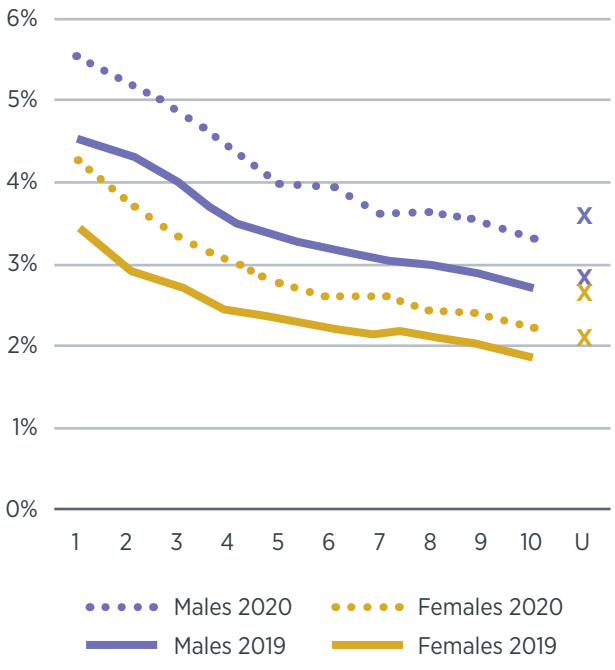
In April 2021 the Annuities Committee published additional analysis of the experience of pension annuities in payment in 2015–2020 in **Working Paper 148**. This paper analysed three areas:

1. Seasonal analysis of mortality in 2015-2019
2. Experience in 2019 and the first half of 2020 by IMD
3. Comparison of mortality in 2020 with that in 2019 by IMD.

The analyses show that:

- For both pension annuities in payment and the England and Wales population, a clear seasonal pattern in mortality can be seen over the period 2015–2019, with higher mortality in the earlier and later months of the year.
- Annuitant experience is heavier in the most deprived IMD deciles, and lighter in the least deprived deciles. The experience in 2020 is consistently higher than in 2019 across all deciles (see chart).

ASMRs in 2019/2020 for the annuities dataset by IMD decile (1 = most deprived, 10 = least deprived)



CMI_2020

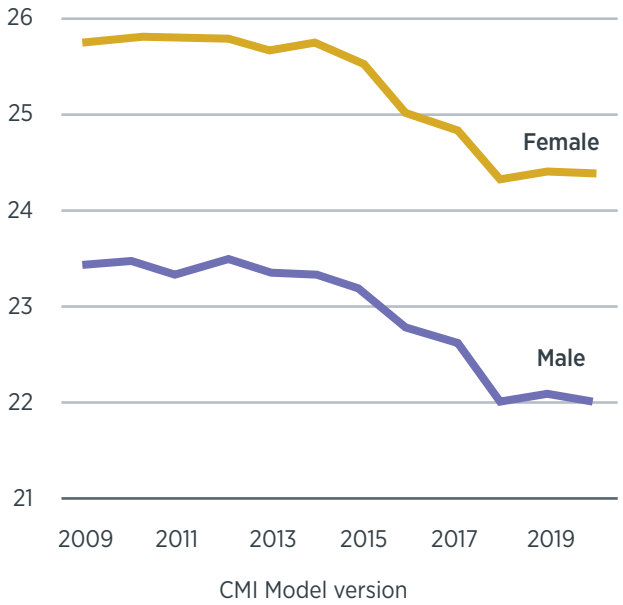
In March 2021 the Mortality Projections Committee published the latest version of the CMI Mortality Projections Model, CMI_2020, alongside **Working Paper 147.**

The coronavirus pandemic led to mortality rates in England and Wales being on average 12% higher in 2020 than in 2019. This is the largest year-on-year increase in mortality rates since 1929.

While mortality experience in 2020 will affect actuarial calculations, it is likely to be an outlier and not indicative of the future path that mortality rates will follow. A version of CMI_2020 that gave full weight to the exceptional mortality experience of 2020 would have shown substantial falls in life expectancy compared with CMI_2019, in excess of what most users of the model would consider reasonable. Following **consultation**, the core CMI_2020 model places no weight on the data for 2020 when projecting mortality rates; however, users can modify the model to take account of data for 2020, fully or partially, if they choose.

The core version of CMI_2020 produces cohort life expectancies at age 65 that are about four weeks lower for males and one week lower for females than in the previous version of the CMI Model, CMI_2019.

Cohort life expectancies at age 65 as at 1 January 2021 from CMI_2020 and earlier versions



Initial plans for CMI_2021

The Mortality Projections Committee intends to confirm its approach for the next version of the CMI Mortality Projections Model, CMI_2021, later this year, but has provided an early indication of its thoughts in a **CMI newsletter.**

The committee currently plans to release CMI_2021 in March 2022, at the same time of year as previous releases of the model. The results from the 2021 census could lead to revisions to ONS estimates of current and historical mid-year populations for England and Wales that are used to calibrate the CMI model; the committee considered whether to delay the release of CMI_2021 to accommodate this. However, mid-2021 population figures are not expected to be published until September 2022, with revised population figures for 2012–2020 to follow later, so the committee does not expect to delay the release of CMI_2021.

The unusual nature of mortality during the coronavirus pandemic led to the introduction of 'weights' in the CMI_2020 version of the model, with no weight being placed on 2020 data in the core version of CMI_2020. The committee currently expects to use a consistent method for CMI_2021, calibrating the model to data for 1981-2021, but placing no weight on data for 2020 or 2021 in the core version. Due to the unusual nature of mortality during the pandemic, the committee considers that mortality data for 2021 will convey little information about longer-term mortality improvements so it is not beneficial to use it to calibrate CMI_2021. Analysis in **Working Paper 147** shows that using a 0% weight for 2021 data would lead to a small fall in life expectancy in CMI_2021 compared to CMI_2020. As always, the committee encourages users of the model to consider whether to modify its parameters to reflect their views and to tailor the model to their specific population.

The committee considers the model flexible enough to accommodate a range of plausible views and therefore does not intend to consult on further changes before CMI_2021 is published.

IP methodology

In April 2021 the Income Protection Committee published **Working Paper 149**, giving details of changes to analysis methodology for the CMI Income Protection Investigation and the impact of past data issues.

The paper describes the key elements of the analysis methodology underlying the new income protection processing and analysis system, and highlights additional analyses that the new system provides capability for. In particular, the paper includes an analysis, based on sample data, of the impact of the methodology changes on reported experience.

The paper also discusses issues with past data, identified through this work. The issues affect the 'all offices' claim inception experience for 2011–16 and the 'IP11' claim inception graduations. An indication of the impact on the previously published outputs is included in the paper and a set of indicative adjustments to the 'IP11' claim inception rates have been made available alongside **Working Paper 136**, which presented the final 'IP11' rates.

In July 2021 the Income Protection Committee hosted a webinar giving an overview of recent changes in analysis approach, and discussed the adjustments to the IP11 claim inceptions graduations. It also provided an overview of the Income Protection Committee's current work and ran a number of polls to gather information from attendees on the impact of Covid-19 on their IP businesses. A recording is available to authorised users **here.**

'16' Series term assurance mortality and accelerated critical illness tables

The CMI Assurances Committee has released the '16' Series term assurance mortality and accelerated critical illness tables. The proposed '16' Series tables for mortality (including terminal illness) and accelerated critical illness under non-rated term assurance policies, based on 2015–2018 data, were issued for consultation in April 2021 in **Working Paper 150**.

Working Paper 150 provides an overview of the dataset, describes the methodology used to produce the tables, including extending the tables to younger and older ages, and sets out accompanying analyses.

The tables represent a significant step forward in that they are based on a much larger dataset than the predecessor '08' Series tables. They are also more up-to-date, and reflect aspects where the experience appears to have changed from that in the previous tables, in particular:

- The mortality tables reflect significantly higher smoker differentials at older ages, particularly for males, and changes in the select period for smokers.
- For accelerated critical illness, the select periods are generally shorter than in the AC08 tables – most notably for female non-smokers, where it is now one year instead of five. In addition, the accelerated critical illness rates now reflect an apparent hump in female incidence rates around age 50 that we believe results from the commencement of routine NHS breast cancer screening (as shown in the chart below).

The Assurances Committee has since also published:

- Analysis of accelerated critical illness (ACI) business by cause of claim to help provide context to the ACI rates, in **Working Paper 151**
- A description 'all offices' experience of term assurances for 2015–2018 and 2019, as well as initial analysis of experience to June 2020 in **Working Paper 152**
- **Working Paper 154**, which summarises the feedback received to the consultation on the proposed '16' Series tables. The final tables are unchanged from the proposed tables.

Additionally, **Working Paper 132**, which described the 'all offices' results for 2015–2018, has been reissued. In the original paper, some data was misallocated by commencement year and sum assured band; the results have been corrected in this version of the paper.

On 15 June we hosted a webinar in which we provided an overview of the key points of the '16' Series tables and briefly covered the cause of claim analysis and analysis of term assurances experience to mid-2020. A recording is available to authorised users **here**.

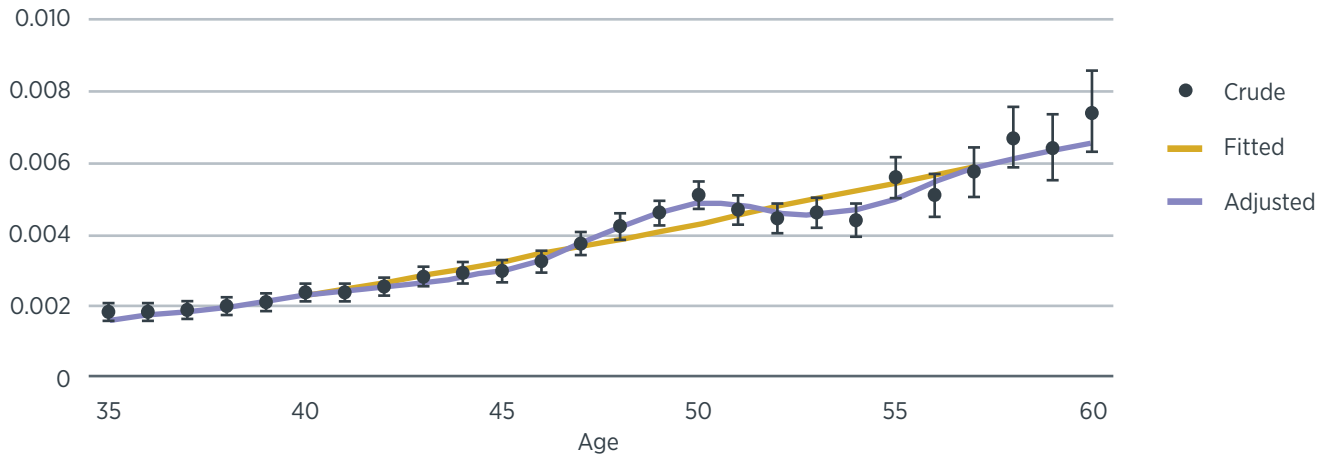
The committee now turns its attention to describing 'all offices' experience of underwritten and non-underwritten whole of life assurances in recent years.

SAPS experience by IMD and region

In February 2021 the SAPS Committee published the first analysis of the SAPS dataset by region and Index of Multiple Deprivation (IMD) in **Working Paper 146**. The analysis covers the period 2012 –2019 and the dataset is a subset of that used for the experience analysis in **Working Paper 142**.

The paper considers differences in mortality rates and the distribution of exposure by IMD decile, and shows how the results vary by calendar year, age band, pensioner type and pension amount band. It also compares the SAPS dataset to the general population and the annuities dataset.

Crude, fitted and adjusted rates by age for female non-smokers



The analysis shows that there is more variation in mortality by IMD decile than by amount band. However, mortality varies materially by amount band within IMD deciles, particularly the more deprived IMD deciles, so it is helpful to consider both amount band and IMD decile, rather than just one of those measures.

April 2021 SIAS meeting – outlook for mortality improvements

On April 13 the Mortality Projections Committee, in conjunction with the Staple Inn Actuarial Society (SIAS), held a meeting at which guest speakers discussed the outlook for mortality improvements in light of the coronavirus pandemic. A recording is available from **https://zoom.us/rec/share/7x_g9W3-YqWKUFnnKdjqt2t-CYpXMG1WStA02bkTIDTGKHwF80Hx8rLm-0Rm-vha.Wi-tnh6hgILEZ5QZ**, with the passcode DA4@G4SD.

CMI subscriber webinars

We noted above the subscriber webinars hosted by the Assurances Committee and the Income Protection Committee. As part of our drive to improve value for subscribers, we intend for all major working papers in future to also be presented in the form of subscriber webinars.

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