

Impact of COVID-19 in South Africa – Mortality and Life Insurance

Introduction

The Actuarial Society of South Africa (ASSA) has formed the COVID-19 Task Team to consolidate the learnings from the pandemic and enhance preparedness for future pandemics.

In this article we review the large impact of COVID-19 on mortality and life insurance in South Africa.

We first look at the impact on mortality in South Africa, then focus on life insurance impact as well as impact on other risks covered by life insurers. We then look at how the life insurance industry and actuaries responded to these risks including risk mitigations put in place. We then go on to discuss potential future mortality impacts of COVID-19 and beyond COVID-19.

We close the document by sharing some of the initiatives being undertaken by the Actuarial Society to ensure that actuaries contribute to future / long-term / public interest.

Impact of COVID-19 on mortality in South Africa

COVID-19 has had a very large impact on mortality in South Africa over the course of the pandemic. The National Institute for Communicable Diseases (NICD) reports a total of 101,982 deaths to 29 July 2022.

This in itself represents a large loss of life, [however mortality experts, including actuaries](#), identified that COVID-19 deaths are being underreported.

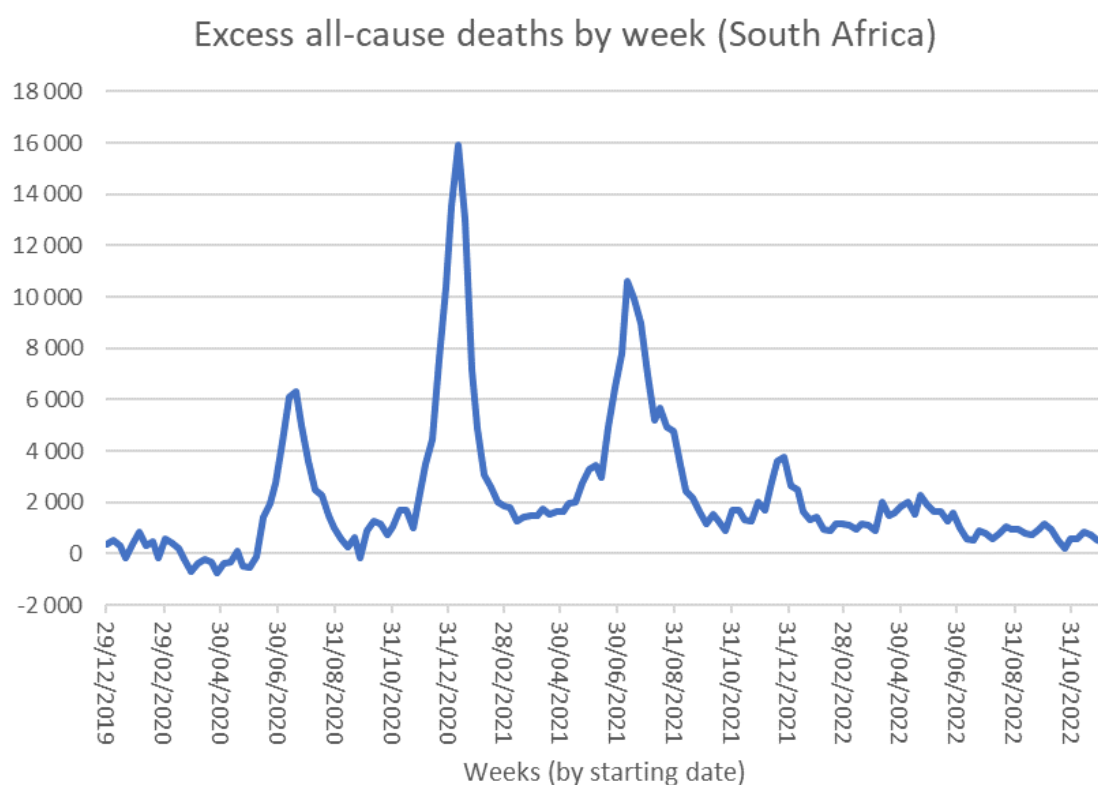
In the developing world including South Africa this underreporting is thought to be worse (see below). South Africa has a well-established death registration system with good coverage as well as demographers, including actuaries, working under the auspices of the Medical Research Council and the University of Cape Town. These researchers developed a reporting framework around this system to understand how total deaths changed during the pandemic. Death registrations tend to be relatively predictable on a year-to-year basis. The researchers developed a predicted number of deaths based on registration pre-COVID-19 and then compared actual death reporting during the pandemic. They then report on this figure on a weekly basis.

In their [latest report at time of writing](#) (covering deaths up to 2 January 2023), they estimate that there has been a total of 341,123 excess natural deaths since the start of the pandemic. These excess deaths are the difference between actual deaths due to natural causes reported since the start of the pandemic and the deaths due to natural causes that would have been expected if the period followed typical patterns. 341,000 is a very large number and represents in excess of 0.5% of the South African population, or 573 per 100,000 people in South Africa (since the start of the pandemic). The expected number of deaths (from all causes) is usually approximately 500,000 per year in South Africa. 341,000 is an extra mortality burden.

Below we summarise the researchers' predictions and all-cause death estimates for South Africa and calculate excess deaths (up until the week ending 10 Dec 2022). These would be different to the number above because the number above is calculated at the provincial level, and it is also estimated based on natural deaths only.

Year	Actual	Predicted	Excess
2020	595 614	518 018	77 596
2021	706 770	501 342	205 427
2022 (ytd)	523 073	456 530	66 543
	1 825 457	1 475 890	349 567

Below we plot these deaths by week



One can see the large numbers of excess deaths during the waves. The deaths were highly correlated with the waves of COVID-19 cases. In South Africa, detailed cause of death information is not published quickly as in

many developed countries. Our latest cause of death data is for 2017, so it is not possible to definitively estimate the proportion of deaths due to COVID-19. However, [in a separate analysis](#), the researchers conclude the following:

At both national and provincial levels, relative excess mortality (the p-score) rises and falls with a slight lag following the reported proportions testing positive. This and the close temporal correspondence between the confirmed COVID-19 deaths to the numbers of excess deaths for much of the epidemic, suggests strongly that the majority of the excess deaths from natural causes that have been identified in the country (probably 85%-95% of the excess deaths depending on extent to which the data used are missing deaths yet to be reported) are due to COVID-19.

There are also periods of negative excess deaths in the above chart. The researchers looked at excess deaths for unnatural causes and they show that during periods involving restrictions of the sale of alcohol and curfews that the number of unnatural deaths decreased to levels below expected. The stated goal of these restrictions is to increase hospital capacity by reducing the admissions related to alcohol abuse. It seems likely that these resulted in reductions in admissions given that the number of deaths reduced.

As the severity of more recent waves have decreased in terms of cases, hospitalisation and reported deaths it might be that the weighting in more recent waves may be shifting to other conditions. For example, early on in the pandemic it was clear that [rates of initiation of antiretroviral therapy for HIV/AIDS decreased](#). The delayed treatment is expected to result in higher mortality over the coming years for those who initiated later and hence may impact mortality in the longer term.

More research is needed to establish:

- a) How accurate the base line is given that it's based on data up to 2019 and we may need to be using an updated base line for expected deaths.
- b) How much of the recent excess deaths is due to other causes.
- c) Additionally, more work is required to determine whether it is possible to ascertain the extent to which the past excess deaths are directly attributable to COVID-19.

Research into (b) and (c) is hampered by the delayed release of cause of death data by Stats SA.

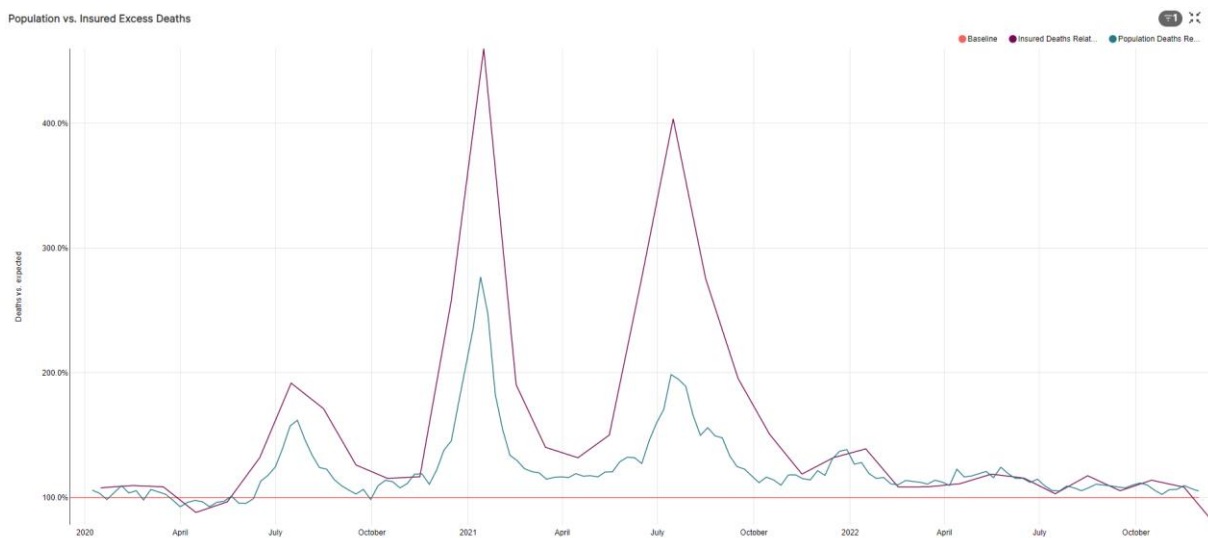
Impact on mortality of insured lives

The Society's Continuous Statistical Investigation Committee has been analysing mortality for underwritten risk products sold by most large life insurers. These studies are usually done based on annual data sets. When the pandemic started life insurers were asked to accelerate provision of summary data for this project to monthly data sets to enable the Committee to perform quick analyses to provide the industry with [up-to-date information](#) as the pandemic unfolded in South Africa. This work continues and [is available here](#) (after free registration).



The main conclusion of that work is that the life insurance industry observed significant excess mortality over what was expected for this period, leading to significant losses over 2020 and 2021 for the life insurance industry.

The chart below illustrates how actual claims deviated from what would have been expected for the insurance industry over the course of the pandemic. It shows in the worst months (January and July 2021) the industry incurred over 4 times the number of claims that it would usually occur during those months. Thus in two months of 2021 the industry incurred the equivalent of more than 8 months of claims. The other months of 2021 was still raised as well.



The chart does show that levels of claims are closer to normal levels during 2022 but it should be noted that this report does not make adjustment for late reported claims, and hence, that the more recent months can still deteriorate.

Analysis presented at the [ASSA 2022 convention](#) showed that the rate of excess mortality was lower for insured lives than the population. However, as the above graph shows, on a relative basis it is higher for insured lives because of the underlying mortality for insured lives being much lower than that of the population. The above only includes experience on fully underwritten new generation products. Data on other products (such as funeral, older generation products, group life) has not been centrally collected, though actuaries working in this field indicate similar high excess deaths for these products.

Less data has been collected about other risks covered by life insurers. Typically, life insurers cover disability (both income and lump sum benefits), critical illness (lump sum benefits) and some hospital cash type business.



The table below summarises anecdotal information on the experience to date on these products.

Product Line	Impact
Disability income products	Significant increase in claims in short waiting period products due to large numbers of people getting booked off for exposure to COVID-19 and/or infection from COVID-19 particularly in the medical occupations was seen. These occupations cannot work from home. Probably also some increases in incidence of other products with longer waiting periods is to be expected. There may also be some increased cessation of disability claims where the claimants have died due to COVID-19. Some lower-than-expected incidence may have occurred on these products as fewer people may have been claiming or able to claim during the worst pandemic periods.
Disability lump sum	These products either have long waiting periods or require the disability to be permanent. They also require significant levels of disability. These products may be unlikely to be affected significantly by COVID-19 to date.
Critical Illness	Possibly slightly better than expected experience during COVID-19 pandemic as fewer people sought medical diagnoses that would qualify for critical illness claims. Increased claims may be observed going forward as these diseases get diagnosed (and may be more severe when diagnosed).

Societal Responses

During the COVID-19 pandemic before the arrival of vaccinations, societies attempted to reduce the spread of the pandemic. The initial responses in cities in China were to “lockdown” and require people to stay at home as much as possible. Social distancing, reduced size gatherings and mask wearing were other typical responses. In addition, restrictions on the sale of alcohol and curfews were also imposed in South Africa.

These measures were linked to a reduction in the spread of the disease, [even in South Africa](#), but it’s also clear that these measures were less effective in South Africa compared to developed countries. South Africa



experienced a significant 1st wave of deaths during the strictest lockdown periods. It is also not clear which measures had more of an effect to curb the spread of the virus.

The lingering question will always be what the situation in South Africa would have been under different measures or even without such measures. Actuaries have modelled the impacts in South Africa and have shown the benefits of reduced transmissions and reduced mortality correlated with reduced mobility. There was also the risk of the collapse of the healthcare system under a severe pandemic wave that had been largely avoided (or at least delayed).

The economic consequences are also hard to study, as it's difficult to know what the economic consequences were due to the lockdowns but also what the economic consequences of uncontrolled rapid spread of COVID-19 may have been. These will continue to be interesting fields of study for public health specialists, epidemiologists, economists and indeed actuaries to try and understand this better, in particular in the developing world.

Many developed countries had earlier access to vaccines, in particular, they had significant levels of vaccine roll-out before the wave associated with the Delta variant hit these countries. South Africa had only initiated population level roll-out during this wave (which was the third wave in South Africa). In South Africa the levels of excess deaths were significant during this wave, as opposed to much lower levels of deaths in the well vaccinated countries (despite many of them having older populations). Studies on how further deaths could be avoided would be valuable as well as ongoing monitoring for any adverse effects the vaccines may have on mortality and/or morbidity.

Response of Actuarial Professional Bodies

The Society created a team of actuaries (mainly sourced from the health practice area) early on in the pandemic. This team looked at various aspects of the pandemic:

- They developed a [series of models](#) that were shared together with other available models. The assumptions underlying these models turned out to be somewhat optimistic (in terms of deaths projected) compared to the ultimate outcomes observed but were useful to understand and engage on the pandemic. These kinds of models are difficult to get right, especially when so little is known early on in a pandemic. The models used however were useful as they allowed for modelling the uncertainty in parameter assumptions which facilitated scenario testing.
- The team also shared information bulletins and articles to help update the profession in a timely manner.

The Institute and Faculty of Actuaries (the UK actuarial body) established the COVID-19 Action Taskforce (ICAT) that also published lots of material on the potential impacts of COVID-19 on actuarial practice areas.



The UK body also established the more informal [COVID-19 Actuaries Response Group](#). The thinking here was to establish a smaller team of actuaries that could provide actuarial thought leadership in a rapidly evolving world by operating more independently, thus enabling quicker responses to a very dynamically unfolding situation.

Response of life insurers

Life insurers responded relatively well to the COVID-19 pandemic:

- Life insurers continued to pay significant volumes of claims (well above normal volumes as shown above, [but also per ASISA statistics](#)).
- Life insurers adapted their claims processes to ensure they could manage the high volume of claims. In addition to that, underwriting criteria and product designs were adjusted. These underwriting and product design adjustments were made to make sure the products remained sustainable and affordable, but these can only be done for new policies. Life insurers are compelled to honour valid claims on existing policies.
- Pricing for some products needed to be updated to reflect the increased risks associated with the pandemic. This included group life cover (typically 1-year policies) to reflect the increased exposure on these products.
- Actuaries at life insurers had to continue to monitor financial implications of the evolving pandemic under significant uncertainty and derive assumptions and projections with significant financial implications in short time periods.
- Various life insurers also offered differentiated terms of cover for applicants who presented [proof of vaccination](#). This has shifted over the course of the pandemic also and some have identified the elderly or heavily impaired lives and/or policies with larger sums assured representing bigger risk to life insurers while others have identified broader groups.
- The Society's COVID-19 Task Team are surveying actuaries working at life insurers to gain a deeper understanding of the various responses and actions of life insurers.

Future mortality and morbidity impacts

Generally, the profession is continuing to predict a changed mortality and morbidity landscape going forward. We list some of the research areas below:

- COVID-19 is expected to continue to impact mortality as it (hopefully) shifts to an endemic disease. The size of this impact remains uncertain but is hoped to reduce over time.
- Impacts on mortality from delayed diagnosis and treatment of other conditions such as cancer, HIV/AIDS, tuberculosis, and other chronic diseases, where delayed diagnosis and treatment may result in worse outcomes than otherwise.
- Impact of worsening economy during COVID-19 and beyond is expected to have some potential mortality impacts as well as impact disability experience going forward.



- There may be some beneficial impacts such as medical technology advances due to COVID-19 that may have benefits in other areas of treatment. For example, vaccine technology advances may have benefits for other diseases. This is expected to take longer to emerge.
- Due to the impact of COVID-19 we expect some deaths that would have occurred in the coming years to have been accelerated and thus we may see some reduced mortality in the short-term. Early estimates indicate that these impacts are likely to be only observable in the very old and severely impaired lives.

Beyond COVID-19

COVID-19 has had a large impact on society at large and the life insurance industry. Considering this, society needs to rethink what the implications of this may be and what needs to be done.

The assumptions about the incidence and severity of future pandemics need to be rethought and recalibrated. Especially considering the significant burden of deaths observed in developing countries such as South Africa relative to developed countries.

At a societal level there does appear to be a need for better planning as well as independence from global supply chains of medical and pharmaceutical products. The delay in vaccination in many developing countries resulted in significant loss of life that may have been avoided.

The tracking of data and in particular death registration had been a great benefit to South Africans. Death registration and near real-time modelling of excess deaths proved beneficial for understanding of COVID-19 in South Africa. More rapid processing and/or release of cause of death statistics may also increase responsiveness in future.

For life insurers and actuaries there remains the task to establish how our capital regimes and solvency requirements operated during this pandemic. For example, considering whether the capital requirements were sufficient and whether the solvency requirements need to be recalibrated

The role of actuaries

Actuaries should have a significant role to play as these questions need to be addressed by life insurers, pension funds, medical aids, and in other practice areas where actuarial skills are traditionally used.

However, we also think the actuaries can have a role to play at a societal level to help society make better sense of a future that has become more uncertain than before.

This report was published in March 2023 and updated in July 2023. The ASSA COVID-19 Task Team membership at the date of publication included: Adam Lowe (lead – healthcare workstream), Alex Brownlee, Barry Childs, Claiton Manikai (chair), Karsten Roux (lead – life workstream), Louis Rossouw (vice chair), Michael Davies, Pamela Hellig, Paresh Prema, Phumla Tsematse (secretariat), Roseanne Harris, Sarika Besesar, Siebert Benade (lead – market conduct workstream), Simon Henderson, Thandanani Mbhele, Zandile Gobe (secretariat) and Zane Heyl

