Willis Towers Watson

Scenario Analysis of the COVID-19 Pandemic

Analysis of key classes in the US and UK (including London Markets) P&C Insurance Industries

Edition 1 – 1 May 2020

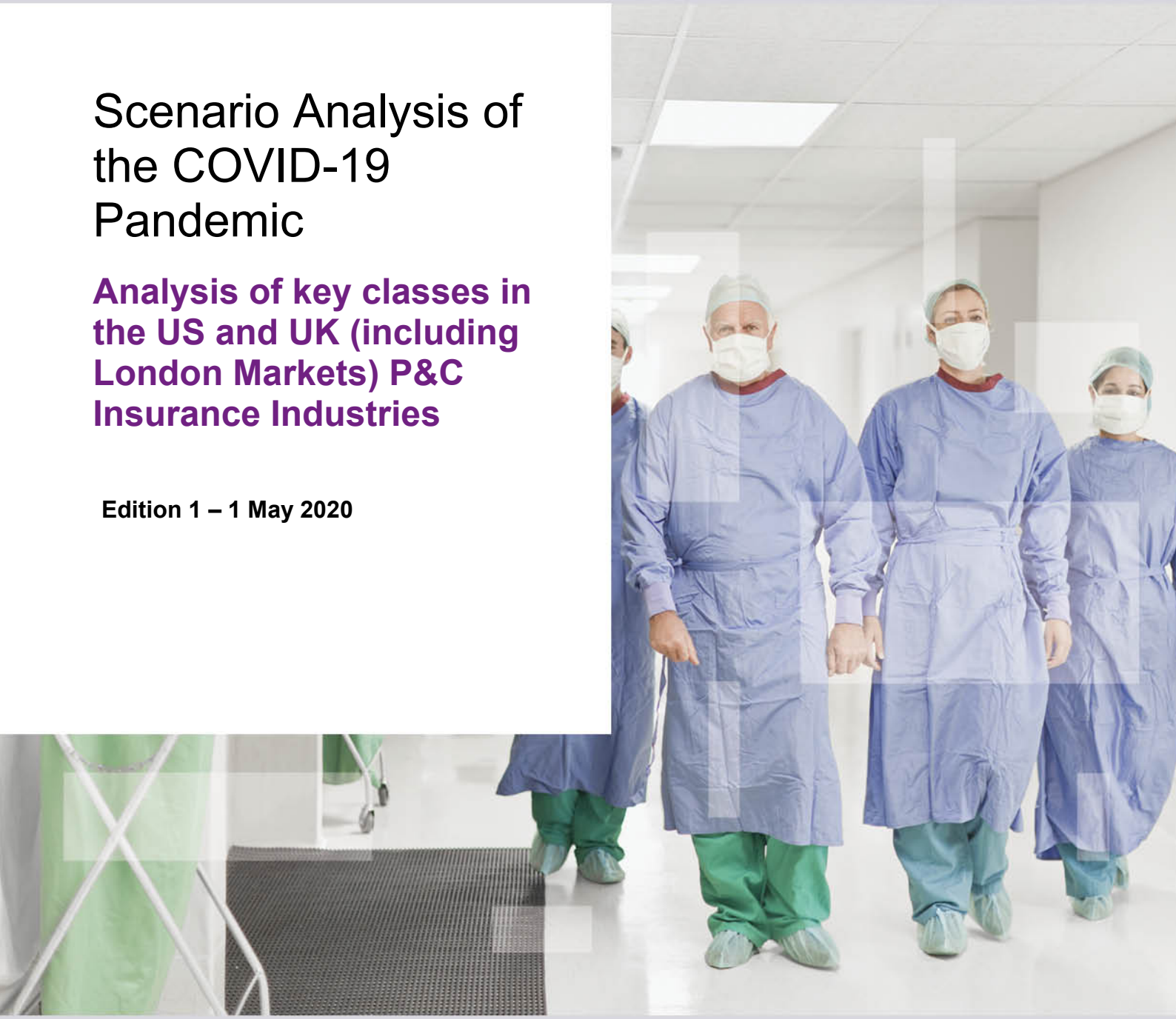


Table of Contents

Preface

At the time of writing, there are 3 million COVID-19 reported cases worldwide and 200,000 deaths, and much of the developed world has instituted social distancing measures intended to curb the transmission of the disease. The human and economic toll of the virus is undeniable, although the magnitude and scope of the impact is yet to be seen. While most of the economic damages will not be borne by the insurance industry, it is clear that there will be significant impacts on insurance company operations, balance sheets, and underwriting results. In addition, insurers have an important role to play in helping its customers and society at large in the journey back to normalcy.

This paper, which complements the COVID-19 report by Willis Re published on 23 April 2020, offers an independent assessment using a scenario-based approach to add a quantitative dimension. Our initial focus is on business written in the US and UK (including the London Market), while noting that the reinsurance of this business could impact other insurance markets.

The situation is fast moving and complex, and whilst we set out a range of loss drivers by class, there are other dynamics at play which impact the overall position of an insurer. These range from changes in customer buying behaviour, the role of governmental interventions, exposure changes following economic volatility and insurer responses. In this report we have created four epidemiological scenarios, each of which have economic attributes, so we can begin to consider how these might affect each class.

Within the Insurance Consulting and Technology business, we will be helping our clients consider both the immediate as well as the more longer-term challenges posed by COVID-19. As this is being written, insurers need to be reviewing their reserves and how they might be impacted, expected underwriting results over the next year and beyond, as well as their capital models, pricing and other quantitative analysis. Longer term, the focus is expected to shift towards the role of portfolio management, scenario testing, stress tests of the book and how probabilistic modelling (such as the WTW Pandemic Model) can build resilience into organisations.

If you would like to get in touch to discuss any area of this report please contact us on the details below, and we hope that the contents help you as you develop your response to the challenges presented by COVID-19.

Richard Clarkson
Head of London Market Consulting
D: +44 207 170 2352
M: +44 7876 006 028
richard.clarkson@willistowerswatson.com

Christopher Bozman
Senior Director
D: +1 215 246 7405
C: +1 610 764 1418
christopher.bozman@willistowerswatson.com

Executive summary

The COVID-19 pandemic presents a rapidly developing situation for insurers. In this report we produce an initial estimate of the financial impact to the insurance industry for key impacted lines of business/geographies and outline a framework to assist insurers to manage their business during these challenging times. Our focus is on the US and UK markets, where the UK market includes that business transacted through the London Market.

This represents an early attempt to understand the different dynamics affecting insurers. Our efforts at quantification should provide directional insights and illustrate relative orders of magnitude around this event. However, they should not be considered as point estimates and are almost certainly going to change as more information becomes available.

Each section of the report sets out different elements of our framework, built up logically with a range of scenarios assessing potential impacts by line of business, and finally, with suggested mitigating activities that could be undertaken for insurers.

In **Section 1** we share our overall estimate of the potential COVID-19 insured losses across a range of pandemic scenarios, with loss estimates provided for those insurance classes that we expect to be materially affected by COVID-19. These comprise US and UK Business Interruption, Contingency, Directors & Officers, General Liability, Trade Credit and Workers Compensation. Additionally, we estimate the potential offset effect from US and UK Motor classes.

Based on our 'Moderate' scenario (six months of social distancing) we estimate there could be US$32 billion of COVID-19-related insured losses from the adversely affected lines and geographies we have quantitatively reviewed.

Where an insurer has a large motor book, especially in the US, their COVID-19 losses will likely be mitigated as a result of an expected reduction in motor-incurred claims. This is manifesting in mono-line motor insurers offering significant premium rebates.

Our scenario-based approach is described in **Section 2**. The scenarios used are based on epidemiological models developed by our Life Insurance experts and informed by the latest mortality information. Each scenario includes the assumed duration of social distancing (3, 6 or 12 months) and an estimate of the economic impact; including forecasts of the length of the resulting economic recession and timeframes on how long GDP will take to recover to 'pre-COVID' levels.

The scenarios have been applied in **Section 3** to offer thought-provoking insights on a class-by-class basis for property and casualty (P&C), as well as in **Section 4** for UK life. Each section has been designed to offer the reader a range of possible loss drivers and premium impacts, for which we offer initial quantifications for those that are most affected.

- **Economic losses** – associated with COVID-19 that insureds will seek to recover, including BI, contingency, construction, marine, aviation, trade credit, political risks, surety, mortgage and income protection. The impact on BI and contingency is most difficult to assess given the lack of data on types of policy wording, inner limits and use of exclusions.

- **Traditional liability** – Arising from insured's actions (or inactions) in response to the COVID-19 threat including (for example) any mismanagement of their responsibilities to either the general public, their employees or investors. We consider the impact on US general liability, US employment practices liability, marine, aviation, US medical malpractice, and US directors and Officers. In addition to liability coverages we also consider the impact on workers compensation.

- **Temporarily changed exposures** – as a result of changing behaviour by insureds. Classes particularly impacted are US and UK motor, travel, marine, political risk, trade credit and surety as well as changes to the base mortality in annuity.

- **Reduced premiums** – as a result of either the insured's premium being exposure-rated or the insurer offering ex gratia premium rebates. Classes potentially seeing reduced premiums include US and UK motor, US workers compensation, general liability, travel, marine and aviation. In these classes, insurers will face the challenge of managing their fixed cost bases in the context of lower premium income.

While lines and geographies beyond those analysed in this report will experience differing levels of disruption, our scenario approach creates an estimation framework for (re)insurers to work within to quantify these impacts too.

Finally, in **Section 5** we offer some ideas on areas in which insurers can take practical actions, either in the short or medium term, such as an immediate impact assessment on reserves, portfolio management and pricing considerations as well as balance sheet and capital considerations.

With the world heading towards a recession, the length of which in our scenarios ranges between six months and three years, with falling payroll, GDP, global trade and travel, it has never been more important for insurers to perform a strategic assessment of their portfolios. Expected falls in premium income opportunities, combined with changing risk profiles, will challenge any insurer's pre-COVID-19 business plans. We see strategic portfolio management as a major area of focus to achieve adequate returns, and indeed profitable growth, over the next three years.

We hope you find this report helpful in assisting you to navigate your business through these challenging times. As circumstances change and more information becomes available, we may look to update this report. However, if you have questions or issues that you'd like to discuss please feel free to reach out either to the contacts listed in the appendix of this report or to your usual Willis Towers Watson, Insurance Consulting and Technology contacts.

Section 1: Portfolio perspective on COVID-19

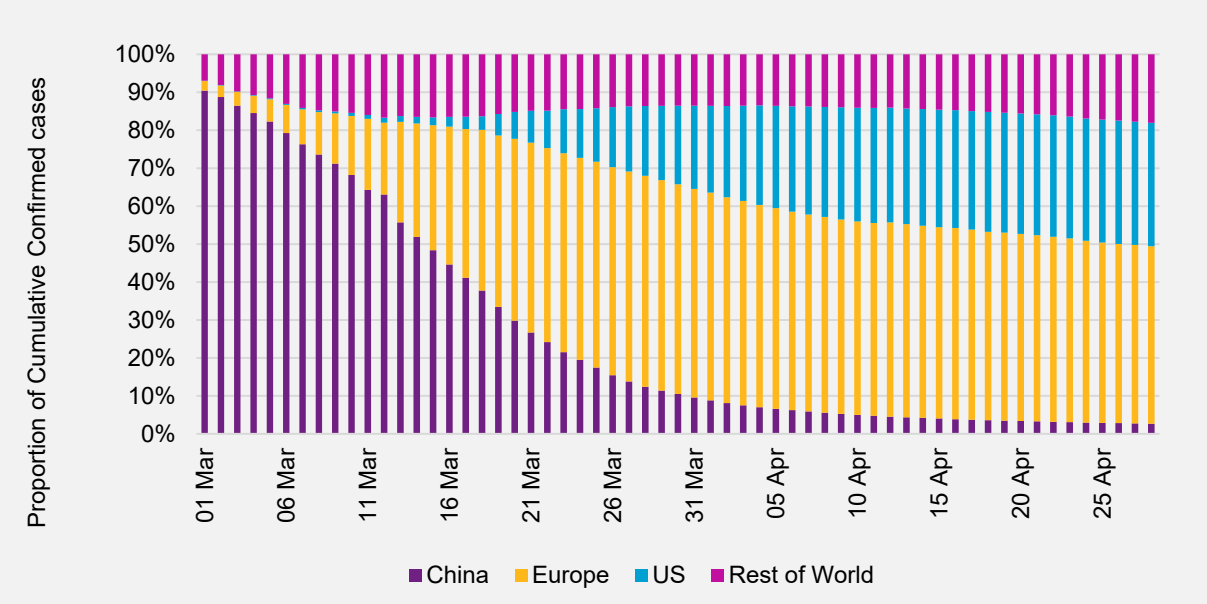
Coronavirus overview

In late December 2019 China informed the World Health Organisation (WHO) that there was an outbreak of pneumonia with an unknown cause in Wuhan province. The virus causing the pneumonia was quickly established to be a novel coronavirus and was subsequently named as SARS-CoV-2. This virus in turn can cause what has become known as the COVID-19 disease which can lead to serious illness and in some cases death in humans.

On 11 March 2020[1] the WHO designated the coronavirus outbreak as a pandemic reflecting concerns about the high transmission rates of the virus and the severity of the situation worldwide.

Originally China was characterised as the epicentre of the outbreak. However, the director general of the WHO declared Europe as the new epicentre of the outbreak on 13 March[2] with the cumulative number of confirmed cases in Europe overtaking the cumulative confirmed number in China on 18 March. On 26 March the USA became the country with the most confirmed cases of coronavirus, overtaking China, but still with fewer confirmed cases than Europe. The situation is rapidly evolving and may have changed further when this paper is published.

Figure 1. Cumulative confirmed reported cases since 1 March 2020



[1] https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020
[2] https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-mission-briefing-on-covid-19---13-march-2020

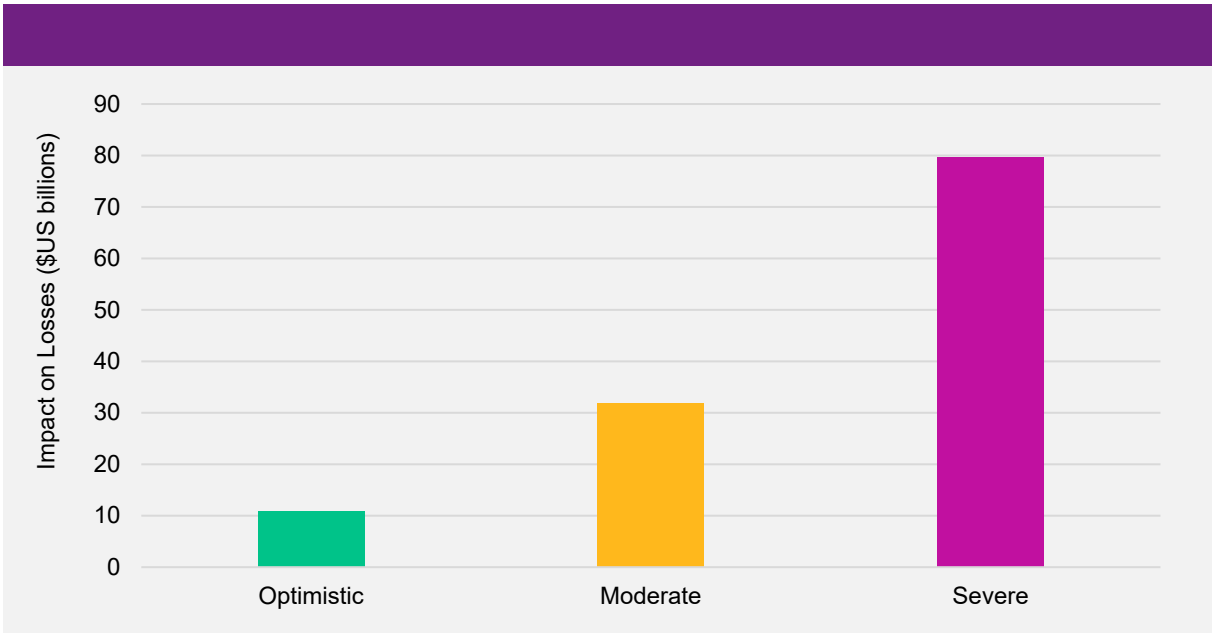
Aggregated insurance losses

In this paper, we quantify the possible impact on the main insurance classes affected by COVID-19 with a focus on the UK and US markets. The scenarios we use for this purpose are explained in **Section 2**, and the detail by class with the associated loss drivers is set out in **Section 3**. Our focus is quantifying the change in insured losses and premiums as compared with expectations pre-COVID-19. The time horizon is principally accident-year 2020, with some impacts in accident-year 2021 being seen as well.

Whilst we have only profiled a selected number of logically high-impact classes, it is clear that the overall narrative is best understood in the context of a diversified portfolio. We see there are several classes where there could be marked increases in losses, especially around BI, contingency, directors' and officers' (D&O), general liability, trade credit and workers compensation.

The value of claims relating to COVID-19 will depend on the which of our scenarios (more fully described in **Section 2**) turns out to be closest to the final outcome, but our estimation is that across these classes in the UK and the US the additional insured losses may well be as high as US$32 billion. This is our 'Moderate' scenario (based on up to six months of social distancing) which seems to align with recently published ranges by other sources. We extend this to a further 'Severe' scenario (based on up to 12 months of social distancing), which implies US$80 billion in losses (see Figure 2). Finally, we have modelled an extreme pandemic scenario (our 'Limited Success' scenario, as described further in **Section 2**), which would result in approximately $140 billion of losses for the classes modelled, driven by US Workers Compensation and General Liability.

Figure 2. Potential ultimate loss impact of COVID-19*



*UK and US market loss estimates for BI and contingency, US D&O, US employment practices liability, US general liability, US mortgage, trade credit, surety and US workers compensation combined.

However, this is potentially more than offset by a reduction of motor losses in the UK and US which we estimate as US$52 billion in our ‘Moderate’ scenario and US$73 billion in our ‘Severe’ scenario. In the same vein we estimate that marine and aviation may net out in additional losses versus reduced premium, although we would imagine with greater volatility in the account.

Of course, it would be erroneous to see this possible favourable impact as an upside for the industry, given that insurers initially in the US and latterly the UK are returning premium to customers to reflect reduced exposure and risk. The extent of these rebates under the various scenarios is unknowable at this point; we have extrapolated this into the future based on the current level of rebates being reported, but insurers may well alter these plans as additional data and clarity become available.

Therefore, to calculate an aggregated impact for the industry we need to assess expected changes in premium and ultimately pro forma contribution levels. The differences in potential impacts by class reinforce that this event will play out differently depending on the nature of any given portfolio, alongside how the reinsurance programme has been designed around that portfolio. In addition, it underscores that tail risk scenarios should incorporate both premium and loss effects.

With these broad estimates in mind, we now turn to **Section 2** where we set out our scenario-based approach.

Section 2: Scenarios

COVID-19 is a global health crisis and its mitigation measures have also resulted in an economic crisis. Its impact on the insurance industry will be determined by both these aspects. Understanding how the health and economic impacts combine and then proceed to cross the risk transfer barrier into the insurance industry lie at the heart of this paper.

In order to assess how the various classes of business are impacted, we have developed epidemiological scenarios using a Willis Towers Watson (WTW) pandemic model built in our stochastic software product Igloo, which we then aligned to economic scenarios. The loss drivers in each of the classes of business is predicated on these scenarios.

The impact of the virus on the insurance industry will depend on a number of interrelated factors, including:

- The infection rate of the virus.
- The number of deaths from COVID-19, as well as excess deaths not directly related to COVID-19 (for example, due to the health system being overloaded).
- Mitigative actions taken by governments to control the spread of the virus, including social lockdown measures.
- The economic impact of the health crisis and government actions.

The interplay between health and economic outcomes is complex, and not necessarily directly correlated. Most governments around the world have now introduced social distancing measures to control the spread of COVID-19. These have had a significant economic impact already and will continue to do so as long as these measures are in place. However, the latest trends in the data suggest they have also had some success in reducing the spread of COVID-19. Nevertheless, it remains to be seen how well the virus can ultimately be controlled.

Health scenarios

The impact of the COVID-19 pandemic is still highly uncertain, and as such we have presented four different potential scenarios for the health outcomes. These are summarised in Figure 3, and although these should not be considered as ‘predictions’ on the future, they do help to illustrate what could happen in different scenarios of the future. They are provided as a basis for discussing and analysing potential impacts of the virus.

Figure 3. Four potential COVID-19 scenarios for health outcomes

Scenario	Description	Months of controls	Number of cases**	Number of deaths**
Optimistic	Strong social distancing programs and medical research are effective in reducing the spread and severity of the disease relatively quickly.	2 (strong) 1 (light)	6 million reported cases*	540,000
Moderate	Social distancing and lockdowns help to reduce the spread of COVID-19 gradually over a period of six months, until both medical advancements and long-term societal improvements in transmission reduction, such as through improved hygiene, are able to keep new infections at a low level.	4 (strong) 2 (light)	390 million true cases*	3 million
Severe	Similar to the 'Moderate' scenario, except that mitigative actions are slower and less effective. Lockdowns are in place at varying levels of severity for most of 2020, as governments attempt to balance mitigation of economic damage with the ability for healthcare systems to manage severe infections. The result is a global spread that approaches the scale of the 1918 flu pandemic.	6 (strong) 6 (light)	1.2 billion true cases*	10 million
Limited Success	While strong social distancing programs have some impact on controlling the pandemic, the disease resumes spreading rapidly when controls are lifted. Controls are ultimately abandoned after three months due to the catastrophic economic impact and the spread eventually slows as a result of global herd immunity.	2 (strong) 1 (light)	5.9 billion true cases*	96 million

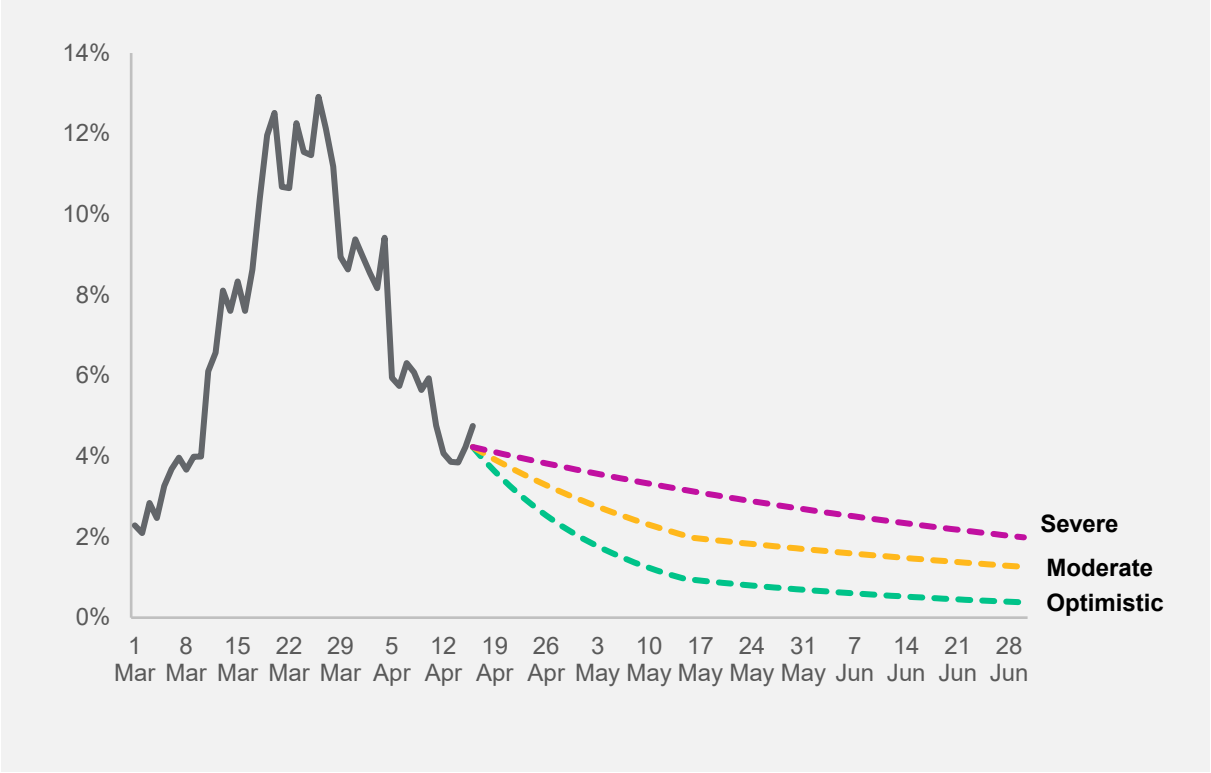
* Not all cases are officially reported (for example, asymptomatic cases, mild cases where people recover without needing medical treatment, or the differing policies for access to COVID-19 tests in different countries). 'Reported' cases refer to the number of cases expected to be officially reported in that scenario and are comparable to the current official figures (assuming the pattern of underreporting remains broadly unchanged). 'True' cases refer to the total underlying number of people who have contracted the disease and includes mild and asymptomatic cases.
**The numbers of cases and deaths shown are projections of total amounts, not just those incurred during periods of lockdown.

The health and economic outcomes in each of these scenarios are interlinked. For example, the first three scenarios involve strong social distancing measures which have significant impacts on economic activity and unemployment throughout the developed world (discussed later in the 'Economic scenarios' section) but are also able to improve the health outcomes to differing extents. As the spread of the virus reduces, the social distancing measures are also gradually loosened to enable the economy to recover. However, it is also possible that the virus continues to spread despite these social distancing efforts, perhaps uncontrollably if the control measures are prematurely lifted (as described in our 'Limited Success' scenario) which may also result in higher case fatality rates as health systems around the world are overwhelmed. We have not associated probabilities with these scenarios, but we regard all of them as possible and at this point should not be considered extreme tail scenarios (although some of them may have been before the COVID-19 outbreak).

There is the potential for multiple outbreaks of the same strain of coronavirus, leading to multiple instances of societal lockdown. Our scenarios implicitly allow for the occurrence of waves of new cases and societal lockdown but we do not explicitly model timings and durations of such waves. As countries move to adopt different lockdown strategies with differing degrees of social distancing from May onwards we will subsequently model the economic impact on the classes analysed in **Section 3**.

To understand the implied degree of control over the spread of the virus within each scenario, we have shown below several charts of the growth rate in cumulative COVID-19 cases (defined as the number of new cases in a day divided by the cumulative cases in the previous day). The historical data are based on known reported cases, while the projections are calibrated to achieve the outcomes in our four scenarios.

Figure 4. Rate of change in COVID-19 cases globally



From Figure 4, we make the following comments:

- Note that these growth rates will always decrease in the long term (whether this is due to the disease being controlled or the entire population becoming infected and therefore no longer having susceptible people). However, **the recent historical and short-term future decreases** in this growth rate illustrate the effectiveness (or not) of control measures in place.
- The '**Optimistic'** (■) rate of change is decreasing by approximately 5% per day in the short term as a result of the continued effectiveness of controls and medical advancement. This is broadly in line with recent reductions achieved in the past month across countries that have already enacted social distancing policies for some time.
- The '**Moderate'** (■) rate of change is decreasing by approximately 2.5% per day in the short term. This is broadly in line with the lower reductions observed across some countries over the past two weeks. As the most significant causes of spread (for example, travel and large gatherings) are eliminated, it becomes increasingly difficult to achieve further reductions in the growth rate over time.
- The '**Severe'** (■) rate is higher, and this quickly leads to a significantly higher number of cases due to the daily compounding of new cases.

Comparison with other research

Other researchers have already produced a range of projections of COVID-19 health outcomes, some of which are publicly available. We have compared our scenarios with some of these projections in Figure 5.

Figure 5. Comparison of COVID-19 projection scenarios

Source	Comparison Outcome	Comparison to WTW Scenarios
Imperial College London (ICL)[1]	ICL produces estimates of total infections and deaths under three scenarios (unmitigated, strong mitigation and weak mitigation).	The ICL scenarios with weak or no mitigation are broadly similar to our Severe and Limited Success scenarios, although we project a higher number of deaths. The ICL scenario with strong mitigation lies between our 'Optimistic' and 'Moderate' scenarios, with the number of cases and deaths at approximately half of those projected in our 'Moderate' scenario.
University of Washington – Institute for Health Metrics and Evaluation[2]	As of 27 April 2020, the projected deaths are approx. 68,000 for the US and 32,000 for the UK	This is reasonably close to our 'Optimistic' scenario

The range of views in both our scenarios and other research demonstrates the high uncertainty associated with COVID-19 health outcomes. We consider these projections by other researchers to be equally plausible as the scenarios we have presented in this paper.

1 https://www.imperial.ac.uk/media/imperial-college/medicine/mrc-gida/2020-03-26-COVID19-Report-12.pdf
2 https://covid19.healthdata.org/

Modelling the health impact of COVID-19 — an example based on the UK

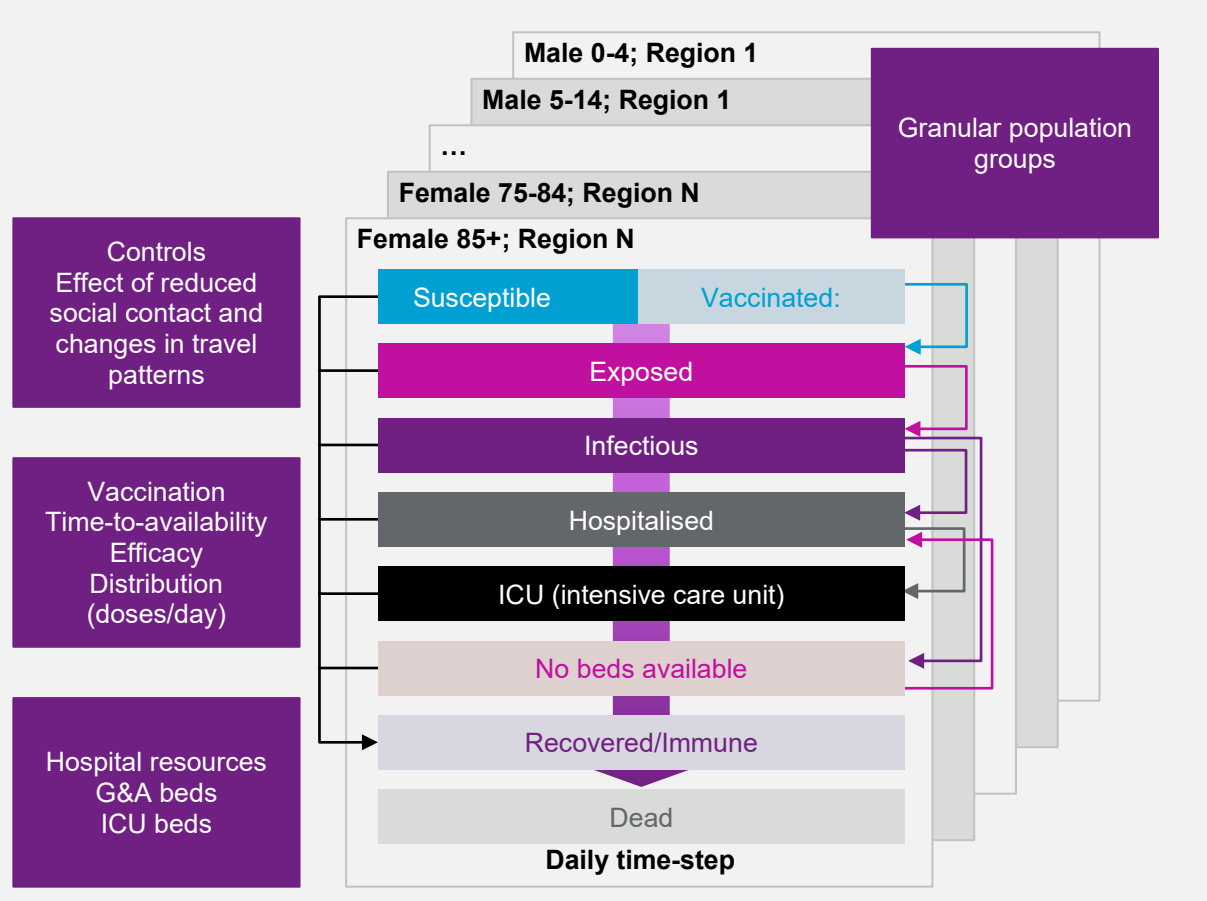
It is important to understand the impact of COVID-19 at both a broad industry-wide level and a more detailed and granular level. The former is the focus of this paper, whereas the latter requires more detailed modelling of COVID-19 for specific geographical regions and/or cohorts of the population.

Understanding the impact of a pandemic (such as COVID-19) on excess mortality and on the range of other losses arising from a pandemic event, means having a model that produces more information than simply a death toll.

The WTW pandemic model has been developed to allow both granular modelling and the generation of information beyond simply the risk of death from the disease – information that insurers can use to properly understand the risks to their business.

The model uses a time-inhomogeneous, multi-state approach and is flexible and transparent, allowing calibrations that capture a wide range of potential pathogens with very different features.

Figure 6. WTW pandemic model

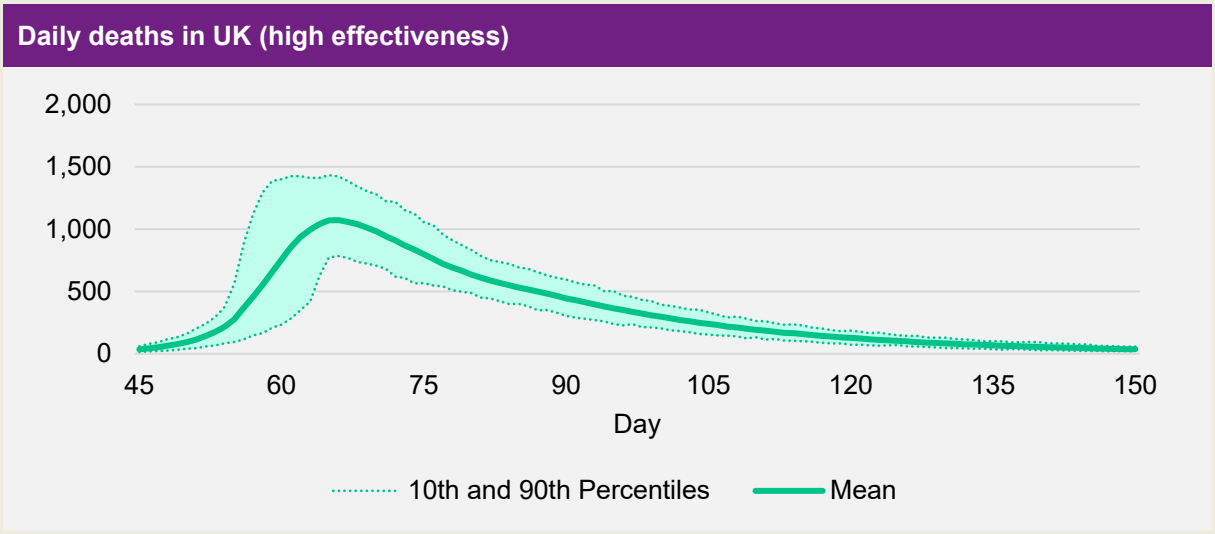


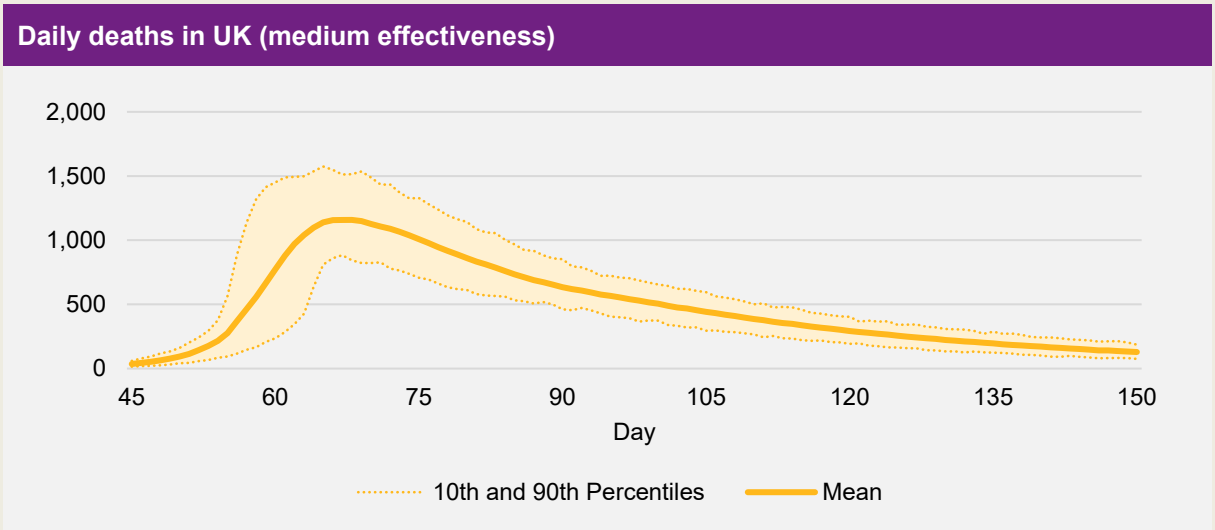
It allows investigation of the role of healthcare availability and the impact of stress on public health services over the course of a pandemic.

It also allows the impact of population level behavioural changes to be addresses e.g. social distancing and changes in travel patterns.

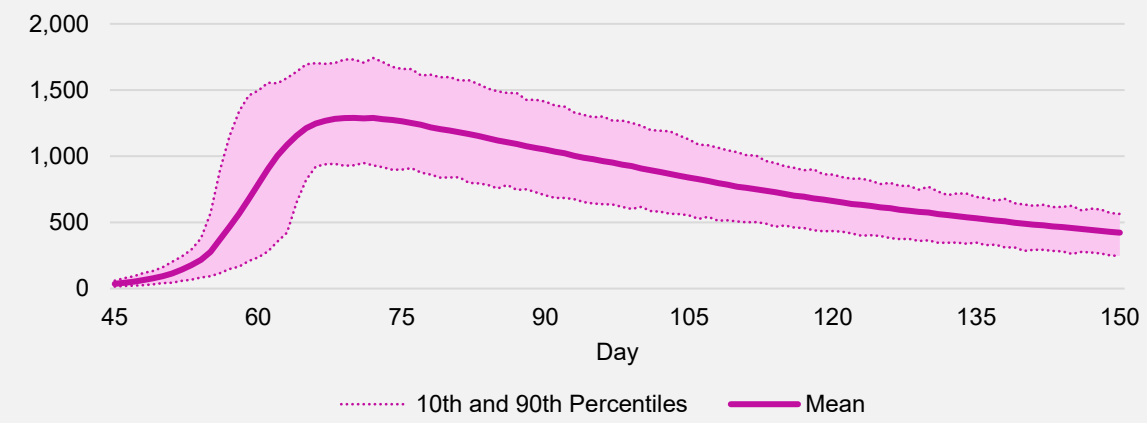
Modelling the disease in such a way allows us to overlay potential interventions or policies and understand their impact under various scenarios. For example, our UK model has produced projections of daily deaths under three scenarios of control effectiveness as measured by the reproductive rate of the disease after controls are in place (Figure 7).

Figure 7. Daily death projections under three scenarios in the UK





Daily deaths in UK (low effectiveness)



For more information please contact:

Richard Marshall PhD FIA CERA
Director
Insurance Consulting and Technology
richard.marshall@willistowerswatson.com

Matthew Edwards FIA
Director
Insurance Consulting and Technology
matthew.edwards@willistowerswatson.com

Economic scenarios

We have considered the economic impact that could arise within the first three health scenarios: 'Optimistic', 'Moderate', and 'Severe'. The economic impact is primarily driven by the extent to which governments implement social distancing measures and lockdown regions, shutting down businesses and economic activity. To date, we have already seen significant measures implemented in many countries, and in each of our scenarios we have assumed these measures will continue at least in the short term.

There are therefore two key assumptions underpinning the economic outcomes, the **duration** and the **severity** of government mitigative actions such as social distancing, travel bans and lockdowns:

- **Duration** – strong social distancing measures are assumed to be in place for two, four and six months for the 'Optimistic', 'Moderate', 'Severe' scenarios respectively; as health outcomes improve, social distancing measures are loosened before being completely removed.
- **Severity** – we assume that the severity of mitigative actions is similar to those that have been in place across many developed countries during April; these include restrictions on non-essential gatherings and businesses and worldwide travel restrictions.

Figure 8 summarises our assumptions on the expected economic outcome of these measures. More information on how these scenarios have been derived and their wider implications for insurers can be found here:

https://www.willistowerswatson.com/en-GB/Insights/2020/03/global-markets-overview-covid-19-scenario-updates

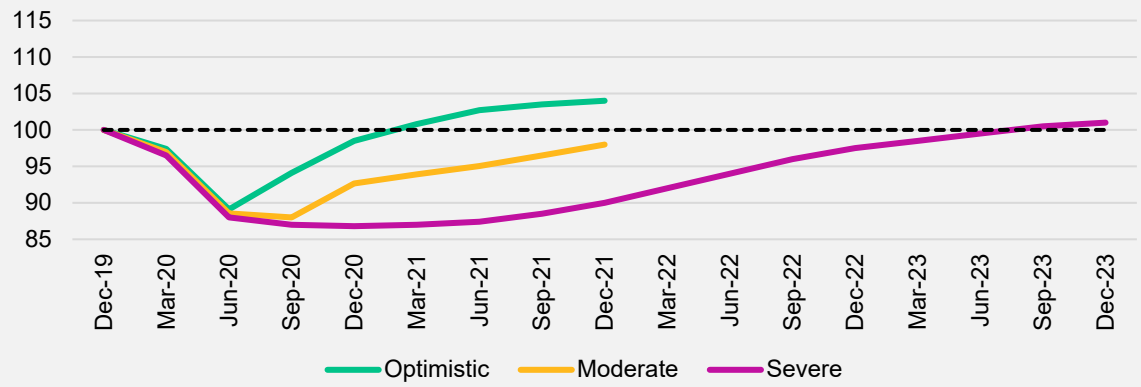
Figure 8. Economic outcome assumptions based on three scenarios

Region	Optimistic	Moderate	Severe
Duration of strong social distancing	2 months	4 months	6 months
Duration of light social distancing	1 month	2 months	3 months
Impact on US and Europe	▪ Acute contraction until mid-to-late Q2 2020 ▪ Highly effective government credit support for households and businesses ▪ Small and medium-sized enterprises (SMEs) certain service sectors (aviation, travel, tourism) are significantly affected ▪ Energy sector affected by lower oil price to Q3 2020	▪ Contraction until Q3 2020 as part of a global recession ▪ Acute, sustained and broad-based decline in corporate earnings in 2020 ▪ Large-scale government credit support for households and businesses ▪ Consumer confidence does not recover until Q4 2020	▪ Contraction until Q1 2021 ▪ A shock to employment, incomes and global trade drives deleveraging given high debt levels ▪ Company funding and credit conditions are acutely affected leading to defaults ▪ Policy is insufficient or ineffective; economic recovery is weak from Q2 2021
Impact on China	▪ Recovery in factory output is largely complete by early-to-mid Q2 2020 ▪ Consumer confidence recovers in Q3 2020	▪ Recovery in factory output is delayed until Q3 2020 ▪ Consumer confidence recovers in Q4 2020	▪ Recovery in factory output is delayed until Q3 2020 ▪ Consumer confidence recovers in Q4 2020 ▪ Slower recovery in export sectors

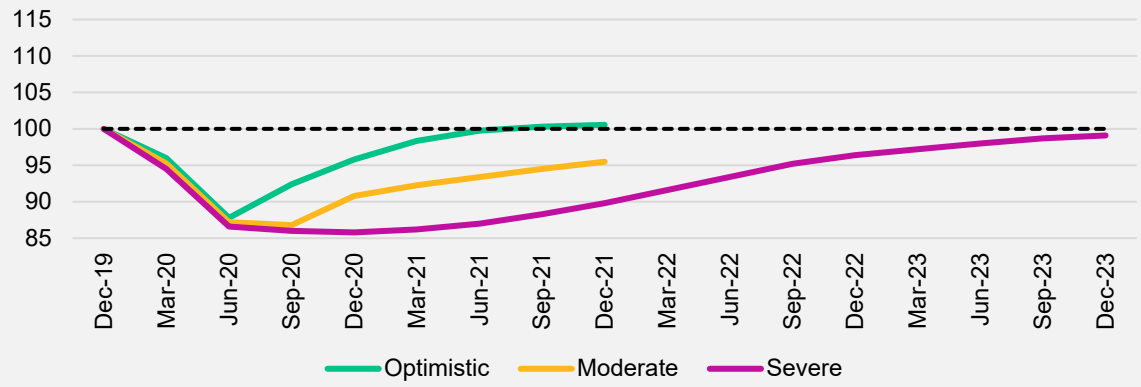
Under these scenarios, we have projected the impact on the real GDP of the US, Eurozone and China. These are shown in Figure 9 (they are presented as a quarterly index, relative to the real GDP in Q4 2019, which has an index value of 100).

Figure 9. Projected impact on real GDP (US, Eurozone and China)

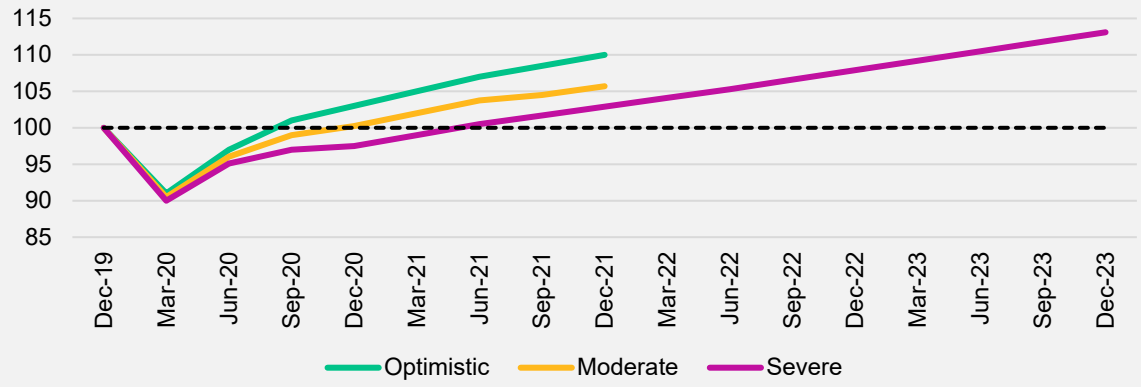
Projected GDP – US (relative to Q4 2019, which is assigned an index value of 100)



Projected GDP – Eurozone (relative to Q4 2019, which is assigned an index value of 100)



Projected GDP – China (relative to Q4 2019, which is assigned an index value of 100)



The economic impacts of the Limited Success scenario are very uncertain at this time. It is likely that even if governments reduce the strict social distancing controls that have currently been put in place, without a significant reduction in the number of new cases of COVID-19, after four months the economic impact will be greater than in the Moderate scenario, but it is unclear as to how that will compare with the Severe scenario.

We are developing forecasts for unemployment, which when available we will use to update our view on the loss drivers by class of business. This is especially difficult given the very high numbers of people displaced from the employment market as a result of lockdown, and the assumptions on how many of these will quickly return to the workplace is dependent on (a) how many SME businesses permanently fail during lockdown, and (b) whether those that survive will re-hire all of their employees. Additionally, this is without historical precedent meaning we have no similar occurrences to guide our assumptions.

Having summarised the health and economic scenarios we now apply these to the classes of business in **Section 3**. We recommend property and casualty (P&C) insurers consider incorporating probabilistic pandemic modelling into their risk processes, where the epidemiological scenarios can be linked to economic factors. This modelling can help insurers develop a better understanding of their risk retention, and can be used to develop new products, including parametric covers.

Longer-term economic effects related to the impact of significant increases in government spending on interest rates and inflation are not explored in this paper, but certainly should be considered within the context of a robust enterprise risk management program.

Section 3: Property & Casualty class analysis

In this section we apply the scenarios described in **Section 2** to select P&C lines of business. This is an independent assessment by Insurance Consulting and Technology of how these classes could be impacted, which has utilised the combined expertise of Willis Towers Watson in all its forms – with the consulting and actuarial skills in Insurance Consulting and Technology, the macro market perspective in Willis Re, the knowledge of buying behaviours and coverage in Corporate and Retail Broking, overlaying the expertise in Investments, Claims Resilience Hub for sovereign and governmental perspectives, and the academic input via Willis Research Network. The views expressed in this section are ultimately those of the Insurance Consulting and Technology team.

This section complements the work presented in Willis Re's COVID-19 impact report titled "Moving On From the Initial Assessment Phase of COVID-19" published on 23 April 2020[1] which discusses the potential issues facing the different insurance lines of business from the perspective of both insurers and reinsurers. We build on that report to offer a scenario based quantitative analysis for the lines of business that we expect to be most materially financially impacted by the coronavirus outbreak.

We have focused on the US and UK markets[2], and in some instances, we only focus on one market. However, we expect that the themes and ideas presented for a particular market will be relevant to other markets and therefore provide a thought framework for participants in other markets to think about their own circumstances. In our view, the development of a framework such as the one laid out in this paper is an important attribute of an effective enterprise risk management response to the COVID-19 impact.

Below, we present our summary of the class impacts using a traffic light system to categorise the potential impact of the coronavirus outbreak on the profitability of that class. This categorisation is presented separately for three distinct groups of classes:

- Classes where we have quantified the impact of the COVID-19 pandemic and that are expected to have materially higher losses.
- Classes where we have quantified the impact of the COVID-19 pandemic and that are expected to have materially lower premiums *and* losses as a result of lower risk activity (that is, lower exposure), which are predominantly motor, marine, aviation and transport.
- Classes where we have not explicitly quantified the impact of the COVID-19 pandemic, although we have still considered the potential impact at a high level as well as the key uncertainties.

[1] https://www.willistowerswatson.com/en-GB/Insights/2020/04/covid-19-willis-re-impact-report
[2] Includes risks located geographically outside the US and UK, but placed in these markets

Classes where COVID-19 impact has been quantified and is expected to result in higher losses

Figure 10 summarises the potential impact of COVID-19 on the losses for these classes under the Optimistic, Moderate and Severe scenarios. Further detail is provided in Figure 11 and in the individual class sub-sections.

Figure 10. Potential impact of COVID-19 on losses (US$B)

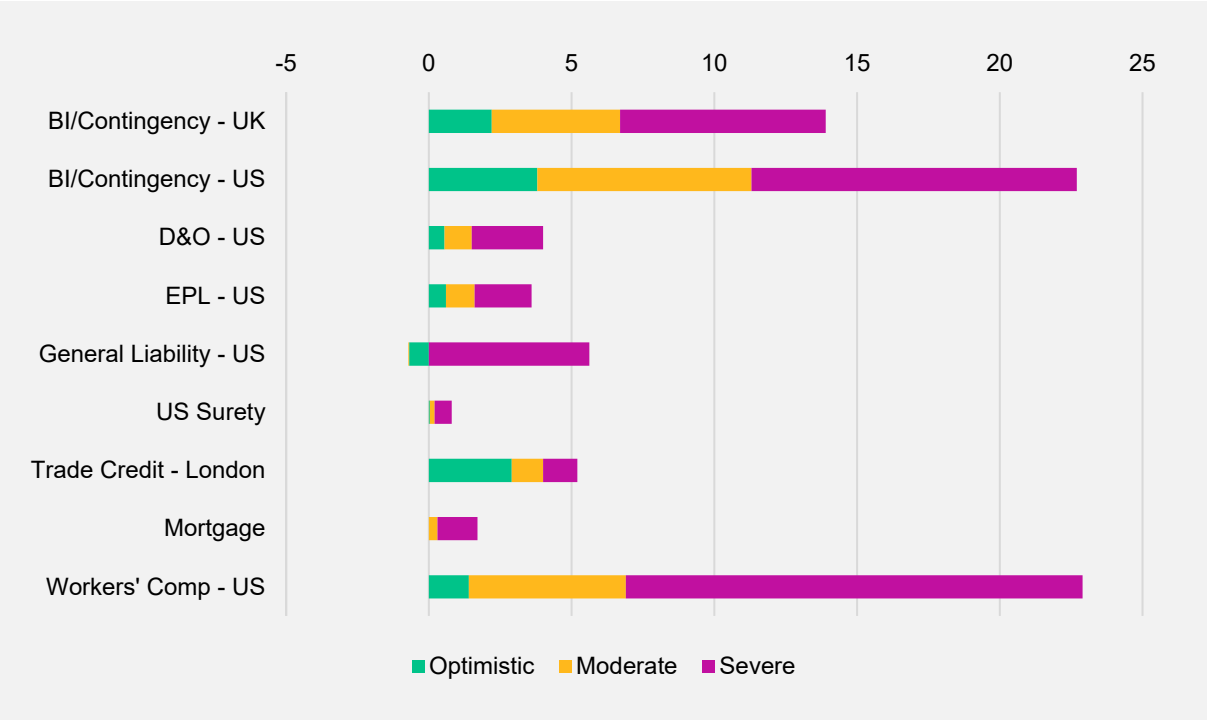


Figure 11. Loss assumptions for classes with overall higher risk activity

Line of business	Overall impact	Premium impact	Claims impact[1]	Key uncertainties
BI and contingency (event cancellation)		Reduction of between 7% and 13% compared with 2019 premium volumes (US and UK)	Market loss of US$1.1B to US$13.9B (UK) and US$2.0B to US$22.7B (US), excluding potential BI claims due to government social distancing policies	■ Extent of claims for BI due to government mitigative actions such as lockdowns and social distancing policies ■ Policy wordings and effectiveness of wordings in having intended impact: ■ Physical damage trigger ■ Explicit pandemic exclusions ■ Coverage for named perils only
D&O		Not quantified	US$0.6B to US$4.0B loss across US and Bermuda markets	■ Propensity for lawsuits to be brought against D&O in respect of statements made to the market about their response to coronavirus. ■ Claims arising from incorrect or misleading regulatory filings ■ Extent of company bankruptcies.
Employment practices liability		Not quantified	US$0.3B to US$3.6B loss in US market	■ The propensity for those employees who are made redundant to claim wrongful termination or discrimination
General liability (includes nursing home professional liability)		US$1.5B - US$6.3B reduction in US premiums	US$(0.7B) to US$27B loss across US and Bermuda markets	■ Propensity for plaintiffs to bring lawsuits alleging companies were negligent in the transmission of coronavirus ■ The ability for plaintiffs to prove negligence on the behalf of the accused
Mortgage		Not quantified	US$0 to US$1.7B loss across US and Bermuda markets	■ Future unemployment rates and impact of economic downturn on home prices
Political risk, credit and surety		12% to 34% reduction in US surety written premiums	US$1.1B to US$5.2B loss in London Market; US$0 to US$0.8B loss in the US surety market	■ Severity of economic downturn ■ Extent of government support provided to businesses
Personal travel		29% to 78% reduction in 2020 policy year written premium (US and UK)	Not quantified	■ How quickly the demand for holidays returns
Workers compensation		12.5% to 25% reduction in 2020 written premiums in the US	US$0.2B to US$92B loss in the US market	■ The number of claims brought by healthcare workers, who are most at risk of contracting COVID-19

Key: Potentially significant impact | High expected impact | Little expected impact | Positive impact

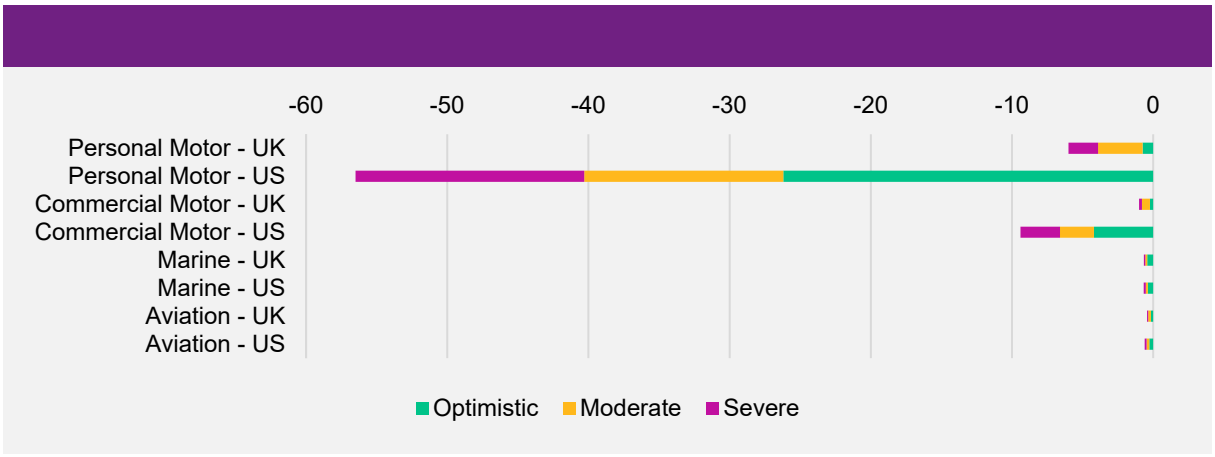
[1] *High end of range for some classes in this table considers the 'Limited success' scenario, which is not displayed on Figure 10.

The results shown in Figures 10 and 11 imply significant losses across a number of classes that are directly impacted by COVID-19 either due to the direct health impact or the social distancing measures and lockdowns (and the subsequent economic damage) to control the spread of the virus.

Classes where COVID-19 impact has been quantified and is expected to result in lower losses and premiums due to overall lower risk activity

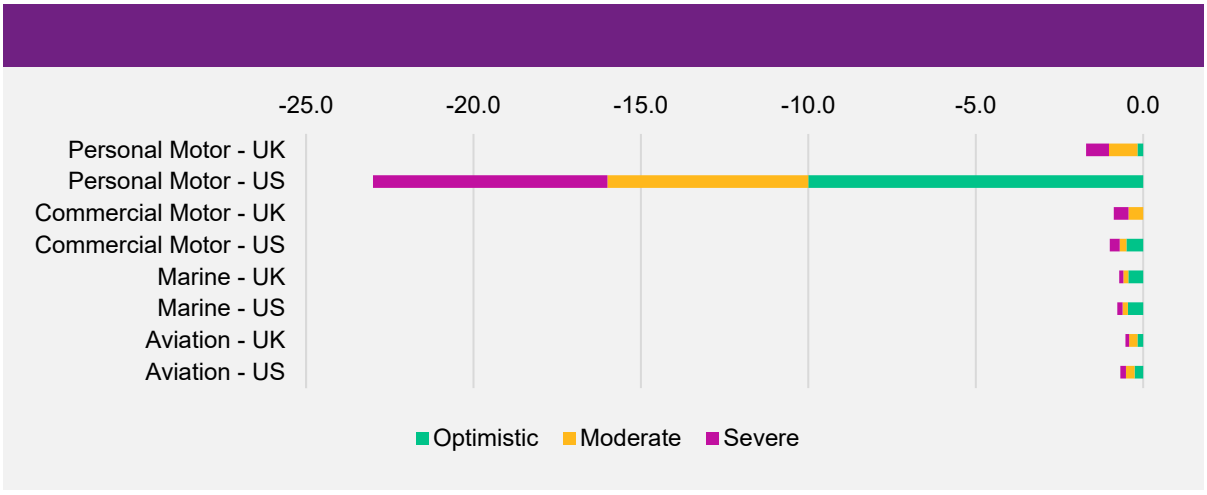
Figure 12 summarises the potential impact of COVID-19 on the losses for these classes under the 'Optimistic', 'Moderate' and 'Severe' scenarios. The data shown are the expected reduction in claims activity. Further detail is provided in Figure 14 and in the individual class sub-sections. The data in Figures 12 and 13 for the US personal motor market should be contextualised in the US$260B annual premium.

Figure 12. Potential savings from reduced losses (US$B)



A key reliance in the estimation of expected premium reductions is the amount of premium rebated to customers. We have assumed that rebate volumes are similar to what we are currently seeing in the market, however the amount of premium returned to customers could significantly change as the full impact of the pandemic on claims experience becomes clearer. The chart below shows the expected reduction in premium volumes, offsetting the reduction in claims activity.

Figure 13. Estimate of reduced premiums (US$B)



Line of Business	Overall Impact	Premium Impact	Claims Impact	Key Uncertainties
Personal and commercial motor		0% to 11% reduction in 2020 earned premiums (UK) Rebates in US personal auto of 40% of loss reduction. Rebates in US commercial auto of 10% of loss reduction	US$1B to US$7B reduction in losses in the UK market US$26B to US$57B reduction in personal auto losses in US market US$4.2B to US$9.4B reduction in commercial auto losses in US market	■ Magnitude of premium rebates in US ■ Overall reduction in vehicle miles ■ Possible reductions in frequency per mile driven ■ The impact of supply chain disruption on the average cost of damage claims
Marine, aviation and transport		Reduction of between US$0.7B and US$1.5B for the US market Reduction of between US$0.6B and US$1.2B for the UK market	Reduction of between $0.8 bn and $1.3 bn for the US market Reduction of between US$0.6B and US$1.1B for the UK market	■ Future global trade volumes ■ How quickly the airline industry recovers

Key: Potentially significant impact | High expected impact | Little expected impact | Positive impact

The results shown in Figures 12,13 and 14 imply significant savings in the motor classes. If such profits do eventuate, there may be calls to return some of these profits to policyholders directly or via a windfall tax. We have not made any allowance for such profit returns in our analysis

.

Classes where COVID-19 impact has not been quantified

Figure 15 provides a summary of our view on the overall impact of COVID-19 and the key uncertainties for each class which we have considered but not explicitly quantified. The link between COVID-19 and these classes is generally less direct compared to those discussed earlier.

Figure 15. Key uncertainties for classes not quantified

Line of business	Overall impact	Key uncertainties
Construction		■ Delays to, or cancellation of, future projects ■ Claims arising from delays to current projects
Cyber		■ Claims arising from the expanded use of technology to enable home working
Medical malpractice (excluding nursing home professional liability)		■ In the US the key uncertainty is whether the Public readiness and Emergency Preparedness Act truly provides medical professionals with liability immunity in practice

Business interruption and contingency

Class overview

BI insurance generally provides coverage to businesses *for financial losses sustained as a result of an interruption caused by property damage*. For example, this could be a fire at a factory that not only causes physical damage to the factory itself, but also interrupts the production of goods by the business leading to a loss of profits for a period of time.

Contingency insurance provides *specialist coverage for special events*, including conferences, sporting events, exhibitions, shows, concerts, and private events. While the exact coverage provided varies significantly depending on the nature of the event, some common types of losses covered include cancellation or disruption of the event, public liability, or non-appearance of a key performer or speaker.

We have discussed these two classes of business together as they are both impacted by coronavirus in a similar manner: *the coronavirus outbreak could lead to claims from the interruption and cancellation of business activities or events*. Due to the severe disruption of businesses and events from social distancing policies, coronavirus related losses for both BI and Contingency are expected to be very large.

Key loss drivers

Figure 16 summarises the two key outcomes (the health impact and the impact of social distancing measures) of the coronavirus outbreak and their impact on the loss experience and premium volumes for the BI and contingency classes – in the case of contingency, we believe that losses from COVID-19 will primarily comprise event cancellation losses.

Figure 16. Impact of health and social distancing measures on BI and contingency losses

COVID-19 Outcome	Impact on BI and contingency losses
Direct health impact	Businesses and events may be interrupted by: ■ Specific cases of COVID-19 at the premises, requiring the business or event to close and be de-contaminated. ■ Key people becoming sick from COVID-19 and therefore unable to work – many events have a key person dependency (for example, the performers or certain athletes), and smaller businesses may have a strong reliance on a small number of key personnel.
Social distancing and economic impact	The key driver of losses due to mitigative actions is the cancellation of specific events including major sporting events (for example, Wimbledon), festivals, shows, concerts, and so on. There may also be some losses from major events that are postponed to a later date, depending on the contract wording of those associated policies. However, it is also important to note that there are substantial economic losses to businesses as a result of: ■ Forced closure of businesses as a result of broader government action to reduce the spread of COVID-19. ■ Closure of businesses or reduced profits as a result of a change in the way people live and work (for example, lower customer volumes as people avoid public places, or key personnel unable to travel to work due to transport system closures). There may be a small number of policies for which these economic losses were intentionally included in scope. However, for the majority of BI policies, insurers are generally interpreting these economic losses to be outside the scope of the contract, although it remains to be seen how successful insurers will be in upholding this interpretation, particularly in cases where there is soft policy wording. For the purposes of this investigation, we have made some allowance for potential claims from soft policy wording but are avoiding speculating on the results of potential government challenges to policy wording and have not included a quantification for this potential.

Responsiveness of insurance contracts

Three aspects of BI/contingency contracts are most relevant for determining whether a claim will be triggered by COVID-19:

- The **standard trigger event,** which is usually **property damage** of some sort for interruption cover, whereas event cancellation policies generally allow for a broader range of **unforeseen events**
- Any **add-ons** that allow the policy to be triggered by other **non-damage-related events**, such as denial of access to premises

- Any **explicit inclusions or exclusions** relating to pandemics or infectious diseases

Therefore, a number of factors will determine whether a claim can be made or not, some of which are discussed in Figure 17.

Figure 17. Factors for triggering a COVID-19-related claim

Factor	Willis Towers Watson commentary
Whether there was a specific case of COVID-19 on the insured premises	There are some limited precedents in the US that contamination of the insured premises (or at a customer's or supplier's premises in the case of contingent BI insurance) can be considered 'property damage'. As such, specific cases of COVID-19 at the premises could also be sufficient to trigger BI policies. In these cases, the insurer will pay for the clean-up costs, brand rehabilitation activities and any loss in profit during the time the business is closed to clean up the contamination.
Interpretation of non-damage trigger events such as denial of access	Non-damage triggers in BI policies are generally worded to cover events *relating to a specific underlying insured event*. For example, a business may be covered for the interruption caused by a civil authority denying access to their premises as a result of a nearby fire. With respect to COVID-19, insurers are generally applying the principle that for any communicable disease cover, there must not be a communicable disease exclusion and there must be property damage at the insured property (or in the vicinity of the insured property, depending on the terms) that results in the closure or inability to access the insured business.
Interpretation of government mitigative actions for BI policies	It is important to note that insurers are generally *not* considering broader government action to reduce the spread of COVID-19 (such as lockdowns and social distancing advice) as 'property damage' or an insured event. This has several implications: ■ BI policies are unlikely to be triggered unless the closure can be linked to a specific case of COVID-19 contamination. ■ The insured losses from policies activated as a result of specific COVID-19 cases will be limited to the losses during the time taken to clean up the specific case of COVID-19 contamination. Any further losses beyond this time (for example, due to continual lockdown or lower customer traffic) will not be covered. There may be some cases where the policy wording allows for coverage in this situation (for example, if there is a broadly worded infectious disease extension), but we expect this to be rare.
Interpretation of unforeseen events in event cancellation policies	It is generally accepted that COVID-19 is an unforeseen event, provided that the policy was purchased prior to the epidemic occurring. This means that event cancellation policies will generally be activated as long as there are no pandemic or infectious disease exclusions in place.

Factor	Willis Towers Watson commentary
Whether the contract specifically includes/excludes pandemics or infectious diseases	From our experience, many BI and event cancellation contracts contain a pandemic or infectious disease exclusion and therefore will not be triggered by COVID-19. Inclusions for pandemics and infectious diseases are more common for event cancellation policies for the largest events (for example, Tokyo 2020 Olympics). Whether COVID-19 is covered will depend on the exact policy wording and may also depend on whether the losses were incurred before or after certain key dates (for example, COVID-19 was listed as a notifiable disease on 5 March in the UK and declared a global pandemic on 11 March).

We further note that some governments or lobbyists have placed pressure on insurers to pay BI/contingency claims even when infectious diseases or pandemics were explicitly excluded in the contract. It is possible that governments may enact legislation to force insurers to pay claims that they would otherwise not be liable to pay. The situation presents some reputational risk, in that the public could perceive insurers to be declining claims unfairly, which could adversely affect future business as potential policyholders place less value on coverage. This is discussed in more detail in **Section 5**.

Impact on losses

We expect COVID-19 to result in significantly higher BI/contingency losses in the short term:

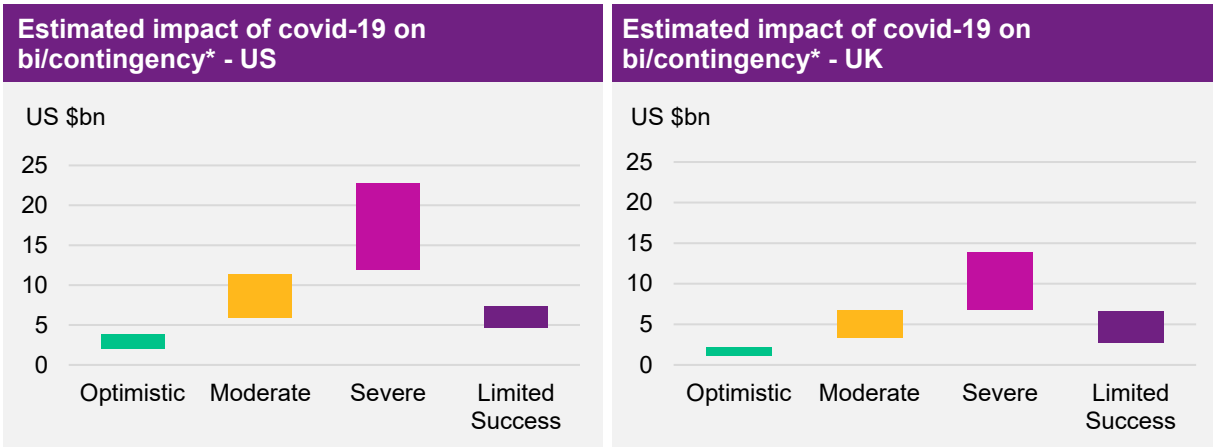
- This is primarily due to the cancellation or postponement of major events, including sports tournaments (for example, Wimbledon, cancelled; Tokyo Olympics, postponed until 2021), arts and music festivals, concerts, and so on.
- There will also be some losses due to specific cases of COVID-19 on the premises of various businesses. Individual losses will probably not have high severity, since restoring property to its undamaged state will in the majority of cases only require a deep clean of the premises, which should only last a matter of days.
- There will also be some losses from a small number of BI contracts where the economic loss from COVID-19 was intentionally covered.

Due to the significant mitigative actions taken by governments, it will be (at least) several months before many businesses return to normal operations, and no significant new events will be organised for some time. This significantly reduces the overall premiums and exposure to risk for the upcoming policy year, which will have a corresponding effect on the aggregate losses.

However, the key uncertainty in the losses is the *extent to which insurers will have to pay for business interruption due to government mitigative actions* such as lockdowns and social distancing policies. This is highly uncertain and is subject to the strength or otherwise of policy wording (which in turn will be dependent on the specific coverage in place, the circumstances of any loss and the jurisdiction involved) in addition to a range of political and legal considerations. The extent of such losses would also depend on the quantum and effectiveness of any economic stimulus packages put in place by governments around the world, which would vary significantly by jurisdiction and industry. *We have not quantified the potential losses due to governments retrospectively overturning or modifying policy wording,* although it is not unreasonable to expect that a tail scenario could be extremely significant.

We have attempted to quantify the possible impact of the coronavirus outbreak on the US and UK insurance markets, noting the high degree of uncertainty around the pervasiveness and ultimate interpretation of soft policy wording. This has been done separately for each of the four scenarios outlined in **Section 2**. While these estimates should not be considered as specific predictions, they provide some insight on the potential order of magnitude on losses and loss ratios that could eventuate. Figure 18 summarises our estimated potential range for COVID-19 losses.

Figure 18. Estimated impact of COVID-19 on BI/contingency in the US and UK



Further detail on each scenario is provided in Figures 19 to 22.

Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months.	
Impact on businesses and events	■ Events scheduled for the next two months will be cancelled. Major events (including the Tokyo 2020 Olympics) that have been postponed to after June 2020 will go ahead as planned. ■ Approximately 10% to 20% of the total losses from events is assumed to be insured under event cancellation policies that will trigger for COVID-19. ■ A small allowance is made for some BI claims triggered by government social distancing and lockdowns for insurance policies that intentionally covered this risk. ■ A small allowance is made for some businesses to make BI claims due to contamination from the specific presence of COVID-19 on their premises. Minimal further claims of this nature will be incurred, as most businesses are already closed due to government mitigative actions. ■ An allowance is made for some BI and event cancellation claims from key personnel becoming sick. This is based on the number of projected COVID-19 cases. ■ Premiums are expected to reduce in line with the contraction of the economy before gradually recovering as social distancing measures are relaxed. Most of the premium impact is expected to occur in 2020.	
Estimated potential losses	US	UK
	US$2.0B to US$3.8B	US$1.1B to US$2.2B
Estimated impact on future premium	US	UK
	6.7% in 2020 compared with the coronavirus outbreak not occurring	-8.1% in 2020 compared with the coronavirus outbreak not occurring

Scenario 2: Moderate

Figure 20. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months	
Impact on businesses and events	▪ Similar to the 'Optimistic' scenario, except that cancellations and closures persist for longer (six months instead of three months). ▪ Some allowance is made for BI claims from policies with soft wording triggered by government social distancing and lockdowns. ▪ Premiums are expected to reduce in line with the contraction of the economy before gradually recovering as social distancing measures are relaxed. There continues to be lower BI premiums beyond 2020 as the economy is still recovering.	
Estimated potential losses	US	UK
	US$5.9B to US$11.3B	US$3.3B to US$6.7B
Estimated impact on future premium	US	UK
	-9.9% in 2020 compared with the coronavirus outbreak not occurring	-11.1% in 2020 compared with the coronavirus outbreak not occurring

Scenario 3: Severe

Figure 21. Scenario 3: Severe

Scenario	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months	
Impact on businesses and events	▪ Similar to the 'Optimistic' scenario, except that cancellations and closures persist for longer (12 months instead of three months). ▪ A greater allowance is made for BI claims from policies with soft wording triggered by government social distancing and lockdowns compared with the 'Moderate' scenario. ▪ Premiums are expected to reduce in line with the contraction of the economy before gradually recovering as social distancing measures are relaxed. There continues to be significantly lower BI premiums beyond 2020 as the economy is still recovering.	
Estimated potential losses	US	UK
	US$11.9B to US$22.7B	US$6.7B to US$13.9B
Impact on businesses and events	US	UK
	-11.8% in 2020 compared with the coronavirus outbreak not occurring	-12.9% in 2020 compared with the coronavirus outbreak not occurring

Scenario 4: Limited Success

Figure 22. Scenario 4: Limited Success

Scenario	**Limited Success** – strong mitigative actions by governments for three months with some success, but controls are lifted afterwards due to their catastrophic economic impact and the virus continues to spread uncontrollably	
Impact on businesses and events	■ Events scheduled for the next three months will be cancelled. Major events that have been postponed to after this time will not be further postponed or cancelled. ■ Approximately 10% to 20% of the total losses from events is assumed to be insured under event cancellation policies that will trigger for COVID-19. ■ A small allowance is made for some BI claims triggered by government social distancing and lockdowns for insurance policies that intentionally covered this risk. ■ A small allowance is made over the next three months for some businesses to make BI claims due to contamination from the specific presence of COVID-19 on their premises. No further claims of this nature are projected beyond that time as mitigative actions are assumed to cease. ■ An allowance is made for BI and event cancellation claims from key personnel becoming sick; this is significant in this scenario due to the high number of projected COVID-19 cases.	
Estimated potential losses	US	UK
	US$4.7B to US$7.4B	US$2.7B to US$6.6B

Construction

Class overview

Construction and engineering policies cover a wide variety of insureds, including contractors all risk policies, single project policies (‘erection all risk’) and machinery breakdown covers. Typically, policies will include advanced loss of profits (ALoP) or delay in start-up (DSU) coverage that indemnify the insured against claims arising from a construction project overrunning and hence the end user of the project not being able to use it for revenue-generating activates until later than planned.

It is possible that construction and engineering will see limited loss experience as a result of the coronavirus outbreak and given the inability for the construction workforce to work from home, it is likely that construction sites will generally be subject to less stringent social distancing measures than other industries.

What is likely to be more important to the construction industry and therefore premium volumes for construction insurance contracts is how the global recession affects the number of new projects started. Here the actions taken by governments on public infrastructure decisions will be key, as well as more generally how the political decisions impact on the duration of the recession.

Key loss drivers

Figure 23 summarises two of the key direct outcomes (the health impact and the impact of social distancing measures) of the coronavirus outbreak and their impact on the loss experience and premium volumes for the construction and engineering class. We believe that, with respect to coronavirus, the most material issue for the construction and engineering class will be construction site shut downs.

Figure 23. COVID-19 impact on construction and engineering losses and premiums

COVID-19 outcome	Impact on construction and engineering losses and premiums
Direct health impact	■ Specific cases of COVID-19 at a construction site leading to liability claims – construction sites typically have a large number of different sub-contractors arriving day to day who may be carrying the virus; however, these types of claims are more likely to occur under the employer's workers compensation or employers' liability coverages.
Social distancing and economic impact	The key driver of losses may be as a result of site shutdowns leading to losses arising from the following: ■ Delay to the completion of projects resulting in ALoP/ DSU claims, although it should be noted in most cases ALoP/ DSU sections will only activate on the occurrence of a set list of perils and there is usually a certain grace period before a claim can be made. ■ However, underlying contracts between the property developer and contractors may include a force majeure clause that protects the contractor against ALoP/ DSU claims by the developer mitigating some of the risk of the above to insurers. ■ If sites are shut down with little notice, there may not be time to protect them (including machinery stored on site) against natural perils such as floods or windstorms over and above any government mandated site regulations. ■ Of potentially less significance, it also may not be possible to fully secure sites against theft. ■ Contractors and sub-contractors may rush to complete projects out of fear of the sites being shut down leading to defective workmanship claims. ■ When sites reopen after shutdown there may be some costs involved in restarting operations that have been laid bare or mothballed, for example, revalidating existing works. ■ Generally, there are heightened risks when sites are restarted from reduced maintenance and risk management during the lockdown period and workers being less familiar with site-specific risk mitigation initiatives. There may be a number of contributing factors that affect premium volumes over the short to medium term, including: ■ Some contractor all risk policies may include an exposure premium adjustment clause where exposure is measured by the annual revenue of the contractor. Site shut-downs could lead to reduced revenues culminating in reduced premiums. ■ There may be less financing available as a result of adverse economic conditions for future construction projects and hence fewer construction projects started. ■ Government priorities shift to responding to the coronavirus outbreak, leading to the commission of fewer infrastructure projects. ■ Temporary site closures lead to insureds requesting temporary lapses to their insurance coverage. Typically, insurers will not be under any obligation to accept this pause in coverage but may wish to do so to prevent reputational damage.

Responsiveness of insurance contracts

There are three main aspects of Construction and Engineering contracts that are most relevant for determining whether a claim will be triggered by COVID-19:

- The *inclusion of pandemics* as a predefined peril in policy wordings
- Any *add-ons* such as a notifiable disease extension that cover losses arising from certain infectious diseases
- Any *explicit exclusions* relating to pandemics or infectious diseases

Therefore, a number of factors will determine whether a claim can be made or not, some of which are discussed below.

Impact on losses and premiums

We do not expect the coronavirus outbreak to result in significantly higher construction and engineering losses in the short term as the actual direct impacts of the virus outbreak will be limited. What is potentially of greater importance for this class is how the outbreak will impact future economic growth and construction industry activity and its resulting changes to insurance premium volumes. The European construction industry saw its largest decline in output since the financial crisis[1] during March of this year, although in a number of countries' construction sites are starting to reopen.

Given the expected limited impact of the COVID-19 outbreak on construction insurance claims, we have not quantified the impact of the coronavirus outbreak on market loss ratios. Rather, for each of the scenarios in **Section 2**, we have provided a qualitative discussion on what the impacts on the construction class may be. See Figures 24, 25 and 26.

[1] https://www.ft.com/content/6449c634-cf20-4334-a5fa-d5c610a035d6

Scenario 1: Optimistic

Figure 24. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months.
Impact on contractors and construction projects	■ Construction sites either remain open throughout the period, or those that are forced to shut reopen within two months. ■ Most of the lost time is made up over the remaining lifetime of the projects, resulting in few significantly delayed projects. ■ There is limited impact on financing for new construction projects and few new projects have a delayed start date.

Scenario 2: Moderate

Figure 25. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months.
Impact on contractors and construction projects	■ Construction sites that are currently open are forced to close. ■ Some of the lost time cannot be made up over the remaining lifetime of the projects, resulting in project delays, but mostly within timelines excluded within contract wordings. ■ Some new construction projects struggle to raise finance and new government infrastructure projects are temporarily put on hold during the lockdown period.

Scenario 3: Severe

Figure 26. Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months.
Impact on contractors and construction projects	■ Similar to the Moderate scenario but construction sites are closed for longer, more new projects struggle to raise finance and government infrastructure projects are put on hold for longer. ■ After the lockdown ends, governments introduce large economic stimulus packages with infrastructure a key part of that, leading to a number of new construction projects.

Cyber

Class Overview

Cyber insurance provides protection to businesses in the event of loss, damage, theft or corruption of data or IT systems. The market for cyber insurance is relatively immature as this is an emerging risk type even without the effects of the COVID-19 pandemic. There are a wide range of coverages and policy types available with varying types of cover, terms, and conditions and exclusions.

Typically, cyber insurance will cover the costs associated with recovering from cyber-attacks or security breaches and other events that cause damage to IT systems or the loss of data. Some policies may include technical support during times of crisis, others may pay for the investigation of a cybercrime committed against a company and some include brand and public relations rehabilitation after a cyber event.

A key component of cyber insurance is indemnity for the insured against claims brought against it by a third party as a result of a cybersecurity breach or mismanagement of data. An example of this would be claims brought under the EU's General Data Protection Regulation (GDPR) where there are strict rules around the handling of personal data.

There may also be a business interruption component included in the event that a business has to shutdown part or all of its operations after a cyber event. However, it is not expected that the COVID-19 pandemic will directly result in any BI claims from cyber insurance products.

.

Key loss drivers

Figure 27 summarises two of the key direct outcomes (the health impact and the impact of social distancing measures) of the COVID-19 outbreak and their impact on the loss experience and premium volumes for cyber insurance.

Figure 27. Impact on cyber insurance losses and premiums

COVID-19 outcome	Impact on cyber insurance losses and premiums
Direct health impact	■ None.
Social distancing and economic impact	■ Many governments have mandated that where possible people should work from home. This has caused a rapid change in the way businesses operate and forced them to rely far more heavily on technology solutions such as video conferencing, virtual private networks (VPNs) and cloud solutions than they would have done previously. This adoption of technology, much of which is untested at such a scale, brings with it an increased cyber risk. ■ Additionally, organisations will find it more difficult to quickly deploy patches or updates, increasing the vulnerability to cyberattack. ■ For example, there has been widespread discussion in the press about the security of certain video conferencing platforms and whether cyber criminals are able to intercept supposedly encrypted video conference communications. ■ Many SMEs may not have business continuity plans for home working and are therefore more vulnerable to cyberattack. ■ Employees may be using personal IT equipment to log into company networks, increasing the risk of cyber-attacks as companies have less control over what programmes are installed on personal technology equipment compared to company property. ■ Incident response times by insureds may be slower than normal given the lack of on-site presence of company IT teams, potentially leading to more severe incidents. ■ However, the economic impact of the coronavirus outbreak is likely to reduce most companies' turnover over the next year, reducing the potential size of regulatory fines that are calculated as a percentage of company annual turnover such as GDPR.

Responsiveness of Insurance Contracts

As noted above there are a wide variety of different cyber insurance products in the market and therefore it is difficult to categorically state how the contracts will respond.

However, it is likely that there will be no claims directly associated with cases of COVID-19 or as a result of government mitigative actions. Rather, claims are more likely to occur as a result of companies using new or untested technologies and processes that are exploited by cybercriminals or lead to process errors on the part of employees. It is likely that these types of claims would normally be covered under cyber insurance contracts.

Impact on losses and premiums

Given the immaturity of the cyber insurance market, there is insufficient data to assess the impact of the scenarios on losses and premiums.

Directors and officers

In this section we consider the US D&O market as it is the largest market for this type of coverage and the themes highlighted here are applicable to other markets.

Key loss drivers

At a broad level, we expect key loss drivers arising from pre- and post- pandemic actions (either brought as individual or class actions) brought against directors and officers to be fundamentally different.

In our view, the potential for severe systemic D&O claims activity is greater for post-pandemic actions taken by companies than for pre-pandemic actions.

Figure 28. Pre-pandemic claims: Impact on directors' and officers' losses

COVID-19 outcome	Impact on directors' and officers' losses
Direct health and social distancing/ economic impact	The initial tranche of class actions displays signs of relatively short class periods. If this trend continues, severities are likely to be lower than that of claims arising from the global financial crisis in 2008 and will potentially impact primary coverage to a larger extent than excess layers. In the financial crisis, we saw longer class periods and allegations that could point to more relevant disclosures further back in time that subsequently proved to be inaccurate. However, the current extreme volatility in the stock market makes any predictions very uncertain, as the quantum of market capitalisation losses is significant. The allegations within the claims will likely include, but are not limited to: ■ Allegations of misrepresentations or omissions in financial statements. ■ Allegations of weaknesses of cybersecurity exposed as staff are requested to log in remotely from home.
Mitigative factors	The nature of the COVID-19 pandemic could make it difficult for plaintiffs to identify pre-pandemic inaccuracies or misrepresentations that are the direct cause of a stock price drop, for example, specific public statements that proved to be incorrect specifically in the context of the pandemic.

Figure 29. Post-pandemic claims: Impact on directors' and officers' losses

COVID-19 outcome	Impact on directors' and officers' losses
Direct health and social distancing/ economic impact	Claims arising from post-pandemic actions are likely to relate mostly to mismanagement and insolvency, however may include breaches of duty of care and potential insider dealing. Allegations, in addition to those listed with the pre-pandemic claims section, will likely include, but are not limited to: ■ Allegations around actions that a company took or didn't take. ■ Allegations of negligence relating to directors' and officers' duty to supervise employees during the period of the crisis. ■ Potential for D&O cover to be targeted in the event that business interruption is not covered elsewhere. ■ Allegations of proprietary/confidential information breaches where employees have moved from one company to a competitor. This will be exacerbated in an environment of scarce quality skilled labour. The sudden economic depression is likely to cause large numbers of insolvencies, a situation that typically drives high levels of claims against directors and officers and where exposure of Side A covers could be greater. The sectors at highest risk will likely be those experiencing the most severe consequences such as airlines, cinema chains, cruise lines and the hospitality sector, with investors and other interested counterparties looking for ways to partially recoup large financial losses. In the context of the potential for misrepresentations, we expect close scrutiny of companies' 8-K, 10-Q and 10-K filings with the Securities and Exchange Commission (SEC) granting a 45-day extension for 10-K filings for those companies impacted by COVID-19 pandemic. The identification of all potential exposures related to the pandemic is complicated by its unprecedented social and financial impact. With the SEC requirement that companies disclose an assessment of their plans for addressing the pandemic and the material risks to their business publicly held companies are "caught between a rock and a hard place" according to Rob Yellen, New York-based executive vice president of Willis Towers Watson PLC's FINEX North America practice, as quoted within the *D&O Diary*. He also pointed out that they "do not have the benefit of safe harbors from liability with respect to what is happening today." We expect that identification and transparency around risks such as supply chain risk and non-reliance of any one supplier through alternative contingencies, where appropriate, will be especially important. A later tranche of claims may target inaccuracies in statements regarding a company's ability to rebound and return to 'business-as-usual'. These claims might typically relate to statements about getting/being back to business-as-usual and/or full capacity, including statements on items such as supply chain reliance and cash flow cover.

COVID-19 outcome	Impact on directors' and officers' losses
Mitigative factors	The impact of the COVID-19 pandemic on the D&O insurance market is still highly uncertain. The level and duration of the impact will be driven by the eventual length and depth of social and economic disruption caused by the pandemic, and will influence the split of claims between those arising from pre-pandemic actions versus post pandemic actions. Insolvency-related claims will likely form a significant component of the actions, in contrast with the financial crisis. This may have a material impact for private companies, as SMEs are expected to be at the most risk of insolvency. This may be mitigated by the effectiveness of government stimulus packages to reduce bankruptcies.

Responsiveness of insurance contracts

D&O insurance coverage is written on a claims-made basis and subject to terms and conditions and exclusions would cover loss and defence costs resulting from actions made against the insured company. Insurers have sought COVID-19-related exclusions in recent renewals that may reduce the coverage for these claims.

There may be an increased insurance gap for private companies due to a lower take-up rate for D&O insurance compared with their public company counterparts.

Impact on losses

Recognising the high level of uncertainty of the ultimate impact of the pandemic on the US D&O insurance market, we propose three illustrative scenarios for what could transpire, in comparison with the effects of the global financial crisis a little more than a decade ago. For the purposes of this exercise, the latter is assumed to have caused a 25-percentage-point loss ratio increase, spread across a number of years.

Figure 30 compares the relative frequency and severity of D&O insurance claims under the first three scenarios outlined in **Section 2**. The relativities are split between claims arising from lawsuits filed in relation to actions taken before the full scope of the crisis was understood (that is, 'pre-crisis') and those that were in respect of company actions taken or not taken after the full impact of the crisis was becoming understood (that is, 'post-crisis'). The base for these relativities is taken to be the frequency and severity of D&O claims arising from lawsuits filed relating to actions taken after the full scope of the financial crisis was understood. These cells are highlighted in Figure 30.

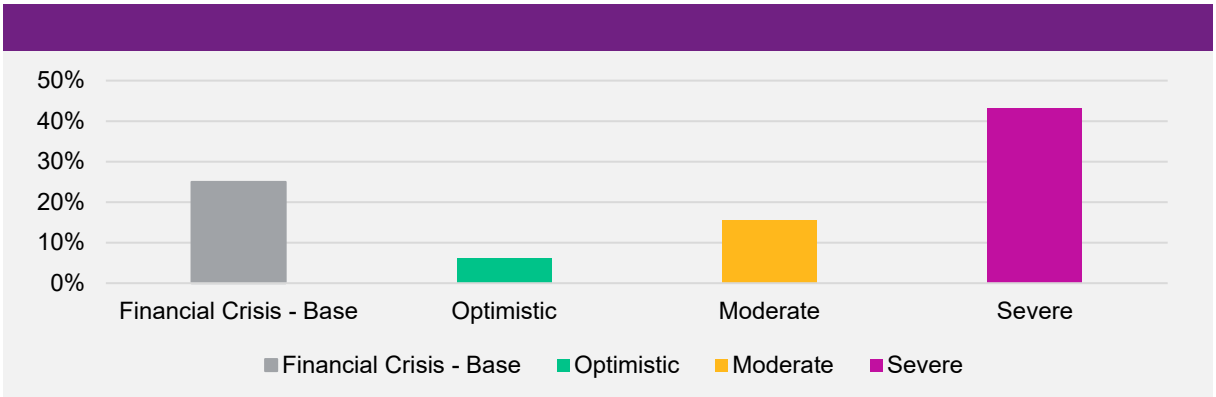
These relativities are then used to estimate a loss ratio deterioration for each scenario.

Significant judgment has been applied in both the Financial Crisis assumptions and the Pandemic scenarios and the figures quoted here should be used for discussion purposes only.

Figure 30. Relative frequency and severity of D&O claims compared to the 2008 Financial Crisis

	Pre-crisis uplifts			Post-crisis uplifts			Pre + post total uplift	% of base	Loss ratio point impact
	Frequency	Severity	Total	Frequency	Severity	Total			
Scenario	**(1)**	**(2)**	**(3)=(1)x(2)**	**(4)**	**(5)**	**(6)=(4)x(5)**	**(7)=(3)+(6)**	**(8)**	**(9)**
Financial Crisis - Base	3.00	1.00	3.00	1.00	1.00	1.00	4.00	100.0%	25.0%
Optimistic	0.30	0.60	0.18	0.80	1.00	0.80	0.98	24.5%	6.1%
Moderate	1.50	0.60	0.90	1.60	1.00	1.60	2.50	62.5%	15.6%
Severe	1.50	0.60	0.90	4.80	1.25	6.00	6.90	172.5%	43.1%

Figure 31. Estimated loss ratio deterioration



Scenario 1: Optimistic

Figure 32. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months.
Impact on losses	■ Few allegations are made, or no link is found to inappropriate actions by the board or officers. This significantly limits claims related to pre-pandemic actions and reduces, to a lesser extent, the potential of claims relating to post pandemic actions. ■ This would curb the impact of the coronavirus outbreak on the D&O class to levels similar to prior SARS and MERS outbreaks, which were not material events.
Impact on loss ratio	■ The resulting estimate of pandemic-related losses is 25% the level of financial crisis claims, at around six loss ratio points (measured against 2020 premium), or approximately US$550M in claims made in year 2020.

Scenario 2: Moderate

Figure 33. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months.
Impact on losses	■ There are fewer claims, and their severity is on average lower than seen through the financial crisis. ■ The impact on private companies and smaller public companies might be greater than in the financial crisis due to insolvencies.
Impact on loss ratio	■ The resulting estimate of pandemic-related claims is 63% of the level of financial crisis claims at around 16 loss ratio points (if measured against just one year of premium), approximately US$1.5B potentially spread across 2020 and 2021.

Scenario 3: Severe

Figure 34. Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months.
Impact on losses	■ There is a larger number of claims with higher-than-average severities, as a larger proportion of claims relate to post-pandemic actions with longer class periods. ■ We may see more claims with longer class periods leading to higher severity of losses. This may be partially offset by increased exposure from private companies exhibiting on average lower severity of losses than the public companies.
Impact on loss ratio	■ The resulting estimate of pandemic-related claims is approximately 175% the level of financial crisis claims at around 43 loss ratio points (if measured against just one-year premium), or approximately US$4B expected to be spread across claims made years 2020 and 2021.

Future of the line of business

At time of writing, there have already been three COVID-19 class action filings.

- Inovio Pharmaceuticals, Inc., et al
- Norwegian Cruise Lines against the company, CEO and CFO
- Zoom Video Telecommunications

The Inovio Pharmaceuticals and Norwegian Cruise Lines class actions both exhibit the characteristic of having short class periods. The Zoom class action, with a longer class period, is an example of how actions may arise from the strain of the current environment on different companies.

As mentioned earlier, we are already seeing some impacts of COVID-19 within the recent D&O policy renewals. According to Angus Duncan within Willis Towers Watson's Corporate Risk and Broking

segment: “In recent policy renewals, many insurers have sought to impose COVID-19-related exclusions on D&O policies. These exclusions will likely reduce the potential future exposure to COVID-19-related claims. Some sectors, including retail, manufacturing, travel/leisure/hospitality and real estate, have experienced increased rates. The overall market is continuing to see rate increases; however, with the hardening of the London D&O market, it is hard to determine the direct impact COVID-19 has had on premium increases.”

Employment practice liability (EPL)

Key loss drivers

Figure 35 summarises the two key outcomes of COVID-19 and our view on their impact on employment practice liability (EPL) losses in the US.

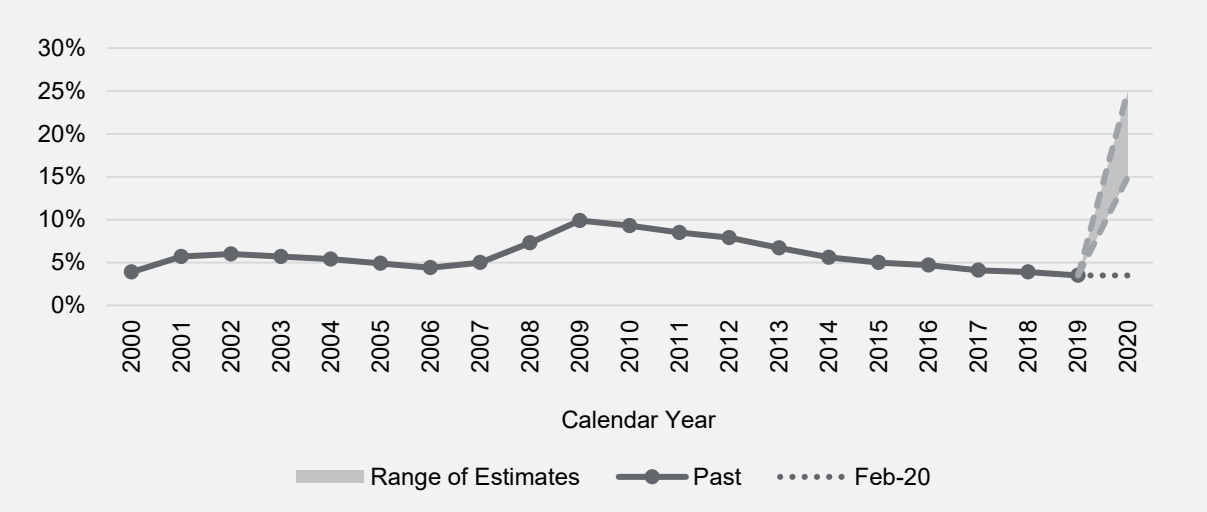
Figure 35. Impact on employment practice liability losses

COVID-19 outcome	Impact on employment practice liability losses
Direct health impact	The actions of employers (and employees in the workplace) to deal with the challenges of COVID-19 will likely lead to various types of employment practices liability claims, including: ■ Alleged mistreatment or harassment due to illness or suspicion of illness, workers alleging that they are being forced to work in unsafe conditions. ■ Release of an infected employee's identity. ■ Discrimination and/or retaliation related to inconsistent application of company policies such as personal time off (PTO), paid sick leave, Family Medical Leave Act (FMLA) benefit, allowance and/or accommodation to work from home, exercise of unemployment rights. We expect that these types of claims will tend to be brought by individuals or small groups of employees and hence fall toward the smaller claim size for EPL.
Social distancing and economic impact	We expect that the more significant volume of EPL claims may stem from alleged wrongful termination or discrimination related to layoffs, furloughs and reduced work hours. Industries with the greatest expected increase in unemployment are retail, transportation, leisure and hospitality, at least in the short term. A depressed economy for an extended period of time would lead to higher unemployment in additional segments such as financial institutions, professional services, construction and manufacturing.
Mitigative factors	EPL claims related to layoffs will tend to be larger, potentially involving class action suits and Equal Employment Opportunity Commission (EEOC) charges. This was seen in response to the rise in unemployment during the 2008-2009 timeframe during the economic downturn following the financial crisis. However, we expect that the volume of EPL claims will be proportionately less this year due to: ■ The government stimulus and expanded unemployment and other benefits will mitigate the push to file claims. ■ With the pandemic, employers will be considered less responsible for the job loss than was the case in 2008-2009 which may further mitigate claim filings.

Impact on losses

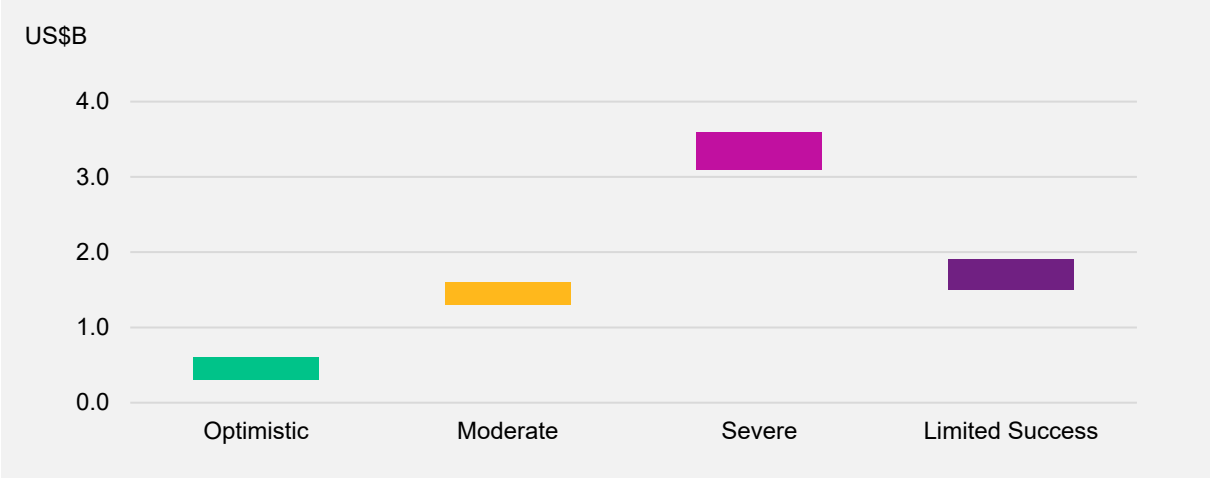
The US unemployment rate for February 2020 was 3.5%, the lowest level since 1969. We are assuming that unemployment rates reach 15%, 20% and 25% for the 'Optimistic', 'Moderate' and 'Severe' scenarios, respectively. The duration of unemployment will vary based on the specifics of the economic scenarios described in **Section 2**. We are assuming that the unemployment rate reaches 20% for the 'Limited Success' scenario.

Figure 36. US unemployment rate at year-end



The potential impact of the COVID-19 pandemic is highly uncertain. Notwithstanding this uncertainty, we have attempted to quantify the possible impact of the coronavirus outbreak on the US market under each of the four scenarios outlined earlier. While these estimates should not be considered as specific predictions, they provide some insight on the potential order of magnitude on losses and loss ratios that could eventuate. As shown in Figure 36, we are estimating insurance losses at US$0.5B for the 'Optimistic' scenario, US$1.5B for the 'Moderate' scenario, US$3.5B for the 'Severe' scenario, and US$1.7B for the 'Limited Success' scenario. Further detail on each scenario is provided in the figures below.

Figure 37. Estimated impact of COVID-19 on employment practice liability (US)



Scenario 1: Optimistic

Figure 38. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months, unemployment rate reaches 15% then declines fairly quickly after three months but does not reach the previous level for several years.
Impact on 2020 underwriting year premiums	■ Modest decline due to closed businesses cancelling/non-renewing insurance.
Estimated potential losses	■ US$0.3B to US$0.6B, with 20% due to health impact and 80% due to economic impact.

Scenario 2: Moderate

Figure 39. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months, unemployment rate reaches 20% and then declines rapidly after six months but does not reach the previous level for many years.
Impact on 2020 underwriting year premiums	■ Moderate decline due to closed businesses cancelling/non-renewing insurance.
Estimated potential losses	■ US$1.3B to US$1.6B, with 13% due to health impact and 87% due to economic impact.

Scenario 3: Severe

Figure 40. Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months, unemployment rate reaches 25% and then gradually declines.
Impact on 2020 underwriting year premiums	■ More significant decline due to closed businesses cancelling/non-renewing insurance for a longer period of time.
Estimated potential losses	■ US$3.1B to US$3.6B, with 8% due to health impact and 92% due to economic impact. The economic impact is much greater than the 'Moderate' scenario.

Scenario 4: Limited Success

Figure 41. Scenario 4: Limited Success

Scenario description	**Limited Success** – strong mitigative actions by governments for three months with some success, but controls are lifted afterwards due to their catastrophic economic impact and the virus continues to spread uncontrollably; unemployment rate reaches 20% and then declines rapidly after six months but does not reach the previous level for many years.
Impact on 2020 underwriting year premiums	■ Moderate decline due to closed businesses cancelling/non-renewing insurance.
Estimated potential losses	■ US$1.5B to US$1.9B, with 27% due to health impact and 73% due to economic impact. The economic impact is similar to the 'Moderate' scenario, while the health impact is much worse than the 'Severe' scenario.

General liability

Key loss drivers

COVID-19 will have direct and indirect effects on general liability (GL) insurance (understood to include occurrence coverages under monoline general liability, other liability and the liability component of commercial multi-peril for the US, as well as Bermuda or London market excess liability coverage for large US companies). This section discusses our views of potential insured losses emanating from insureds operating in the US, which may be insured in the US, Bermuda or London Markets. Similar impacts may be seen for non-US based insureds, although the impact on the insured losses arising from the coronavirus outbreak may be more severe in the US than in many other jurisdictions due to the nature of the US tort system.

Figure 42. Impact on general liability losses

COVID-19 outcome	Impact on general liability losses
Direct health impact	■ We expect lawsuits brought against businesses that plaintiffs' attorneys will claim were negligent in stopping the transmission of the virus in early stages. Obvious targets include nursing homes, hotels hosting conferences, and organizations that provide services in or are responsible for other high-risk locales (for example, correctional facilities). The likelihood of these lawsuits will depend on the facts and circumstances of each claim and are very difficult to determine at this time. We note that while claims against nursing homes related to deaths of patients would likely be considered medical malpractice, we are including these potential losses within the general liability estimates in this paper as the nature of potential claims (alleged negligence in allowing exposure to COVID-19) have some similarities to potential general liability claims. ■ Once the virus spreads within the community, it may be difficult to demonstrate negligence as standards of care shift rapidly; however, there is the potential that stores and pharmacies could face allegations such as allowing sick employees to work or not taking sufficient precautions to avoid infecting customers (for example, employees not wearing masks). As the devastating toll on nursing homes throughout the US becomes apparent, certain institutions with poor safety records in the past may be targeted in particular. ■ Also, with enhanced social distancing measures being taken (and eventually contact tracing), it may be possible for infected individuals to more reliably trace the source of infection (for example, if an infected person stayed at home except for going to one grocery store in the two weeks before becoming ill). For nursing home patients there is little question as to where exposure occurred.
Social distancing and economic impact	■ Reduction in economic activity is expected to greatly reduce exposures and potential for losses for non COVID-19-related claims. With fewer trips to retail establishments, restaurants, hotels and so on, there will be fewer chances for injury. ■ We have assumed that service sectors will see declines in revenue between 15% and 50%, with even larger declines in tours, casinos, sports and hotels. ■ Manufacturing activity will decrease by 20% and building investment by 37.5%.

Impact on losses and premiums

Before considering additional losses due to COVID-19-related lawsuits, the impacts on overall premium and losses based on economic assumptions are as follows:

Figure 43. Impacts on overall premium and losses based on economic assumptions

Scenario	Impact on premium	Impact on losses
Optimistic	-2.6%	-3.3%
Moderate	-6.0%	-7.5%
Severe	-11.3%	-14.0%
Limited Success	-4.3%	-5.4%

The reduction in losses is expected to be more significant than the reductions in premiums because not all exposure bases are tied to economic activity (for example, some risks are rated based on number of units or square footage).

We also examined the potential impacts of negligent transmission lawsuits in the US. We examined three basic types of claimants: cases where the claimant dies from COVID-19, and cases where claimant survives severe COVID-19 (that is, is hospitalised) with and without health insurance. We start by examining the expected impact of the pandemic scenarios on the US population, as shown in Figure 44.

Figure 44. Expected impact of the pandemic scenarios on US population

Scenario	Deaths (000s)	Insured survivors (000s)	Uninsured survivors (000s)
Optimistic	100	1,364	241
Moderate	300	5,215	1,304
Severe	750	12,222	4,074
Limited Success	4,000	35,824	8,956

In each scenario, we estimated a propensity to sue. The baseline propensity is 10%, with a 15% propensity in the Severe and Limited Success scenarios. In our view, the propensity to sue for nursing home patients will be considerably higher than the remainder of the exposed population. In addition, the propensities are doubled for the uninsured survivor population, as claimants will be looking for means to pay for medical care. Note that these parameters are extremely uncertain but are likely to be much lower than other mass torts such as asbestos or environmental claims, where the propensity to sue is above 50%. The propensity to sue for COVID-19 is expected to less than that of mesothelioma because mesothelioma has a much more direct causal chain that is more fully accepted by courts and jurors, as well as a well-developed industry of plaintiffs' attorneys whose sole focus is asbestos litigation.

We assume a payment rate of 5% on average for the suits that are brought forth. This is much lower than other torts such as asbestos, where payment rates can range between 20% to 90% depending on the defendant. It is assumed that proving the source of transmission given community spread of the virus will be difficult. It is also unclear how easy it will be to prove negligence given the rapidly-changing perception of standards of care as the pandemic progresses. Again, nursing homes cases may have different characteristics.

We assume a payment rate of 100% for defense and cost containment expense (DCC) because of the insurer's duty to defend, prior to consideration of deductibles and self-insured retentions (SIRs).

The severity of losses is estimated at US$350,000, based on the median award of business negligence suits as estimated by the Insurance Information Institute[1]. The estimated DCC per claim is set at a level that produces a 100% overall expense-to-indemnity ratio for death cases.

1 https://www.iii.org/fact-statistic/facts-statistics-product-liability

Based on our view that many of the defendants targeted will have meaningful SIRs or deductibles, we expect a large portion of the losses and loss adjustment expenses to be retained by the insureds. Aggregate deductibles and the potential for batch treatment of claims could force more to losses into the commercial insurance market. We assume 25% will ultimately be insured in these scenarios.

Based on these assumptions, industry losses and defense costs due to COVID-19-related lawsuits under these scenarios shown in Figure 45.

Figure 45. Industry loss and defense cost assumptions due to COVID-19-related lawsuits

Scenario	Loss (US$M)	DCC (US$M)	Total (US$M)
Optimistic	246	246	491
Moderate	987	987	1,974
Severe	4,948	4,948	9,896
Limited Success	14,380	14,380	28,760

We note that many of these parameters are extremely uncertain. Among the key uncertainties related to GL:

- The percentage of recovered patients without health insurance is uncertain. Although we assume that one-in-seven Americans lacked health coverage prior to the pandemic, that percentage is expected to increase as workers become unemployed.
- The longer-term health impacts on the survivors of the disease are uncertain. The nature of such impacts will affect the propensity to sue and the average severity.
- The propensity to sue and payment rates are completely unknown and unmeasurable at this time, but it is expected that they will be far lower than currently well-established mass torts like asbestos. It is also unknown what the impact of class-action suits on these statistics will be at this time.
- The average award for negligent transmission suits is extremely uncertain, as business negligence cases can have multi-million awards.
- The amount that will ultimately be self-insured is subject to significant uncertainty. We assume that a majority of target defendants will be large businesses with meaningful self-insured retentions and therefore a relatively high percentage of the loss will ultimately be self-insured.

Scenario 1: Optimistic

Figure 46. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months; economic activity drops sharply in the short term but the economy recovers in Q3 of 2020.
Impact on businesses and events	■ Economic activity is greatly reduced in Q2, with the greatest impact in the service sector, and milder impacts in construction and manufacturing, but mostly recovering by Q3.
Impact on 2020 underwriting year premiums	■ Decrease of US$1.5B, or 2.6% of US and Bermuda market estimated premiums.
Estimated potential Losses	■ Decrease of US$692M, composed of a US$1.2B decrease in premises/operations losses offset by US$491M increase in additional losses related to COVID-19.
Estimated impact on loss ratios	■ Accident year 2020 loss and DCC ratio remains nearly flat at 62.7%.

Scenario 2: Moderate

Figure 47. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months; economic contraction lasts through 2020 Q3.
Impact on businesses and events	■ Economic activity is greatly reduced in Q2 and Q3, and slowly recovers over the course of the remainder of the year.
Impact on 2020 underwriting year premiums	■ Decrease of $3.3 billion, or 6.0%.
Estimated potential losses	■ Decrease of US$722M, composed of a US$2.7B decrease in premises/operations losses offset by US$2B increase in additional losses related to COVID-19.
Estimated impact on loss ratios	■ Increase in accident year 2020 loss and DCC ratio from 62.7% to 65.3%

Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months.
Impact on businesses and events	■ Economic activity is greatly reduced and does not fully recover until late in 2021.
Impact on 2020 underwriting year premiums	■ Decrease of US$6.3B, or 11.3%.
Estimated potential losses	■ Increase of US$4.9B, composed of a US $5.1B decrease in premises/operations losses offset by US$10.0B increase in additional losses related to COVID-19.
Estimated impact on loss ratios	■ Increase in accident year 2020 loss and DCC ratio from 62.7% to 79.8%.

Scenario 4: Limited Success

Scenario description	**Limited Success** – strong mitigative actions by governments for 3 months with some success, but controls are lifted afterwards due to their catastrophic economic impact and the virus continues to spread uncontrollably.
Impact on businesses and events	■ Economic activity falls between the Optimistic and Moderate scenarios.
Impact on 2020 underwriting year premiums	■ Decrease of US$2.4B, or 4.3%.
Estimated potential losses	■ Increase of US$26.B, composed of a US$1.9B decrease in premises/operations losses offset by US$28.8B increase in additional losses related to COVID-19.
Estimated impact on loss ratios	■ Increase in accident year 2020 loss and DCC ratio from 62.7% to 114.0%, assuming all of the COVID-19 related losses occur in 2020. In reality, some claims may go in to accident year 2021.

Marine and aviation

Class overview

Marine insurance is a broad category of different insurance products designed to protect ship operators, shipowners and port operators. In most markets it is usually split into three categories of coverage:

- Marine cargo covers **loss or damages to the cargo whilst in transit**, which often includes time in warehouses
- Marine hull covers **loss or damages to the physical vessel and its fixtures**
- Marine liability can take many forms, including shipowner's liability, water's edge liabilities and marine general liability, which can cover **damages to the property of third parties and indemnify the insured against third parties (including employees) for illness or bodily injury suffered**

Of these covers marine cargo represents over half of the total global written premium, with marine hull accounting for approximately a quarter and marine liability representing less than 10%.

Aviation insurance is also an umbrella term comprising a number of different types of coverage for a range of insureds, including airlines, general aviation, manufacturing and space risks. These in turn can be further split into hull and liability cover, providing similar benefits as for marine insurance.

Some markets also consider energy insurance as a subset of marine insurance business, although this usually forms a small proportion of premiums and is likely that the effects of the coronavirus outbreak will be less significant compared with other market forces, especially the current historically low price of oil. We have therefore not considered this in our analysis.

For the purposes of this analysis, we have also excluded space risks from the marine and aviation classes.

Key loss drivers

Whilst there may be some claims that arise as a result of the coronavirus outbreak and governments' mitigative actions, these are likely to be offset by a decrease in exposure leading to fewer claims overall. This reduction in claims activity has to be assessed against the potentially large reductions in written premium volumes to understand the total impact of the pandemic on the marine and aviation classes.

Figure 50 summarises the two key outcomes (the health impact and the impact of social distancing measures) of the coronavirus outbreak and their impact on the loss experience and premium volumes for the marine and aviation classes. We believe, that with respect to the coronavirus, the most material issue for these classes will be the reduction in trade volumes and the grounding of flights, respectively.

Figure 50. Impact on marine and aviation losses and premiums

COVID-19 outcome	Impact on losses and premiums
Direct health impact	Specific cases of COVID-19 could potentially lead to a wide range of claims, for example: ■ Passengers on airlines and cruise ships will come in contact with staff who would have interacted with a large number of other passengers and employees who have the potential of being carriers. Without sufficiently robust mitigation plans in place, claims could arise from plaintiffs alleging that the airline or ship operators were negligent in protecting them from contracting the coronavirus. ■ Aviation policies that include employers' liability cover could see claims from employees for not providing adequate face masks, gloves or sanitisers for them to work safely. ■ Repatriation costs associated with crew or passengers who contract COVID-19. ■ Expenses could incur as a result of cargo or passenger ships being placed into quarantine. ■ Cargo policies could see increased claims arising from the rejection of goods given health and safety fears, or damage to cargo resulting from quarantine and disinfection. ■ Airports and ports will have a large volume of people passing through on a day-to-day basis who may be carrying the virus. If these are seen not to have followed the correct procedures to minimise exposure to the virus, it could lead to liability claims. For ports, however, some of these claims may arise on an operator's general liability insurance policy.

COVID-19 Outcome	Impact on Marine and Aviation Losses and Premiums
Social distancing impact	Mitigative actions imposed by various governments and authorities could also affect claims experience. For example: ■ In an attempt to manage isolation requirements, some shipowners are delaying crew changeovers, which may cause increased human-related accidents. ■ While cargo policies usually exclude loss or damage caused by delays in transit, claims could arise from additional costs and charges associated with re-routing goods to or through alternative destinations as usual trade routes are closed or have reduced capacity. ■ Goods spending an increased amount of time in hangers and ports increases the accumulation risk for insurers. Where there is a concentration of exposures such as cargo stored in a warehouse, aircraft mothballed on the ground at an airport or vessels in port multiple policies could be affected by the same peril such as a fire, attack or natural perils. ■ Average claim costs may increase as a result of supply chain disruption making it more difficult to source materials for repairs. It may also be more difficult for damaged vessels to find a berth in a repair yard if they are already full potentially leading to further damage to the vessel. There may be a number of contributing factors that affect premium volumes over the short to medium term, including: ■ Increased time of planes on the ground and ships in ports is likely to increase the risk of accumulations and possibly increase the demand for certain covers, such as ground-only cover and war cover. ■ The economic downturn associated with the coronavirus outbreak has reduced demand for air travel and has led some airlines into financial distress. This could lead to both a short- and longer-term contraction in capacity in the airline industry, especially if some airlines cease trading. In turn this will reduce the demand for insurance coverage in the airline industry until the lost capacity is replaced. ■ The demand for business and personal travel has reduced; therefore, fewer flights and cruises are operating. Even when government and border control restrictions are lifted, it is likely that companies and individuals will try to limit and business travel for the foreseeable future out of fear of the or their employees contracting COVID-19.

One of the areas of potentially greatest exposure to direct health claims for the marine insurance industry is from cruise ships. How insurance contracts may respond to claims from cruise ship passengers and crew will depend on a multitude of factors, some of which are discussed below. The majority of claims relating to cruise ship exposures have already been incurred as at the date of this report as no cruises are currently under way. Whilst there is uncertainty in the ultimate cost of these claims, the variability does not come from the epidemiological and economic scenarios set out in **Section 2.** However, it should be noted that insurance of passenger and cruise vessels only forms a small part of the overall Marine class.

Responsiveness of insurance contracts

For covers including employers' liability, we expect that any COVID-19-related claims from employees will largely be treated similar to any other occupational disease claim. The extent of losses and number of claims will, however, depend on the policy wording and the application of deductibles. For example, some protection and indemnity (P&I) clubs may consider that multiple COVID-19 infections across different crew members and vessels could be considered as a single claim, rather than multiple claims, if these are thought to have originated from a single source.

Claims from passengers will depend on whether best practices for responses to pandemics as defined by WHO and relevant trade associations have been followed, such as for passenger screening when boarding and obtaining port health clearance. Passengers would then need to prove that they contracted the virus on the aircraft, vessel or premises or while embarking or disembarking rather than at any other point of their journey. This would be particularly difficult for airline passengers.

For passengers of cruise ships, it may less difficult to prove that contagion occurred onboard given that passengers spend a longer period of time on a cruise compared with a flight. The COVID-19 outbreak has also increased this length of time in some cases, with examples of cruise ships being denied permission to dock and remaining at sea for prolonged periods of time without passengers disembarking. However, the cruise line industry is no stranger to outbreaks given previous bouts of norovirus, which can be spread through food, and a type of bacterial pneumonia called Legionnaires' disease that have hit a number of ships in recent years. This has prompted the companies to implement cleaning protocols mandated by the Centres for Disease Control and Prevention that can be drawn upon in defence of coronavirus suits.

Where passengers dispute that the ship was negligent in allowing passengers that were potentially infected onboard, some lawyers have suggested that there is a comparative fault argument that could be relied upon. When the outbreak of the virus became more widely known in February, some passengers still chose to go on a cruise despite knowing the risk of contracting COVID-19 and so assumed that risk.

Some of these claims may also be shared with other lines of business as passengers may submit claims on personal medical insurance and travel insurance policies, further reducing the loss potential for the marine liability class of business.

Quarantine claims from marine business require an infectious disease to have occurred onboard (as opposed to in the port) and a general public decree or specific quarantine order to the particular vessel. The extra costs above basic daily running costs and operating expenses associated with the quarantine could be covered, hence limiting the extent of potential loss, although certain exclusions do exist. For example, if the vessel was previously aware that it would have to be in quarantine after returning from a particular destination.

Generally, marine policies require some form of physical damage to have occurred in order for a claim to be valid. However, for polices written through P&I clubs, there may also be a component of liability coverage for passengers and crew that does not require a physical damage trigger.

Cargo-related losses due to quarantine are unlikely, although claims for diversion expenses could arise where the diversion resulted from securing treatment for the infected crew member or passenger. The claims would also only over costs over and above normal running costs.

Impact on losses and premiums

Claims from crew and employees associated with COVID-19 are unlikely to be significantly different from previous experience and are likely to be offset by the reduction of other types of claims given the reduced working hours imposed by social distancing regulations.

There could be a significant increase in the number of claims from passengers; however, the number of successful claims is likely to be few given the need to prove that the infection wasn't contracted elsewhere and assuming carriers and airports followed minimum and best practices requirements. Legal fees in defending against these claims may be covered in some cases.

Claims for reclaiming extra costs incurred from quarantine and diversions will mostly be composed of fuel, salary, provisions and so on; hence they are unlikely to be significant in the context of the marine insurance industry, and any increased losses arising from increased accumulation risk of aircraft/vessels being stored in hangers/harbours are very difficult to predict.

The impact on premium volumes, however, is likely to be of greater significance, with the World Trade Organisation expecting world trade to fall between 13% and 32% in 2020[1] and the International Air Transport Association estimating that the passenger airline market could contract by 40% in 2020 according to some measures.[2]. We have provided a range of estimates of premium volumes compared with pre-coronavirus outbreak expectations for the classes.

[1] WTO press release 855, 8 April 2020: https://www.wto.org/english/news_e/pres20_e/pr855_e.htm
[2] IATA Air Passenger Market Analysis, February 2020: https://www.iata.org/en/iata-repository/publications/economic-reports/air-passenger-monthly-analysis---feb-2020/

Figure 51. Scenario 1: Optimistic

Scenario description	**Optimistic -** government mitigative actions are highly effective and are able to control COVID-19 within three months.	
Scenario assumptions	■ Impact on real GDP is in line with the optimistic economic scenario set out in Section 2. **Marine:** ■ The number of vessels in circulation, and hence premiums written, is proportional to the trade volumes and GDP. This affects marine hull, cargo and liability equally. ■ For marine cargo coverage, there is an offsetting impact on premiums from the storage of cargo in warehouses. ■ Pre-COVID-19 premium rate increases of 5% per annum still apply across all covers. **Aviation:** ■ For airlines, premiums are proportional to the number of passengers. ■ Reduction in passengers is driven by social distancing measures and border controls largely subside by the end of 2020. ■ Previous passenger growth expectations of 3.5% per annum are reduced due to the prolonged economic impact on businesses and household disposable income. ■ Pre-COVID-19 premium rate increases of 15% to 25% per annum still apply across the different covers. ■ Many flights in the US are mandated by the government to continue despite low passenger numbers; hence, there is a significantly smaller reduction in flight numbers for the US than for the UK. ■ US passengers return to air travel more quickly than in the UK; hence, the US market sees a smaller reduction in premium volume.	
Impact on premium volumes	**US - marine:** Written premiums are 24% (or approximately US$460M) lower than expected in 2020. **US - aviation:** Written premiums are 12% (or approximately US$260M) lower than expected in 2020.	**UK - marine:** Written premiums are 16% (or approximately $440m) lower than expected in 2020. **UK - aviation:** Written premiums are 18% (or approximately US$170M) lower than expected in 2020.

Scenario 1: Optimistic (continued)

Impact on losses	**US - marine:** Claims reduce by 23% (or approximately US$380M) compared with previous expectations for the 2020 underwriting year. **US - aviation:** Claims reduce by 16% (or approximately US$275M) compared with previous expectations for the 2020 underwriting year.	**UK - marine:** Claims reduce by 17% (or approximately US$420M) compared with previous expectations for the 2020 underwriting year. **UK - aviation:** Claims reduce by 22% (or approximately US$170M) compared with previous expectations for the 2020 underwriting year.

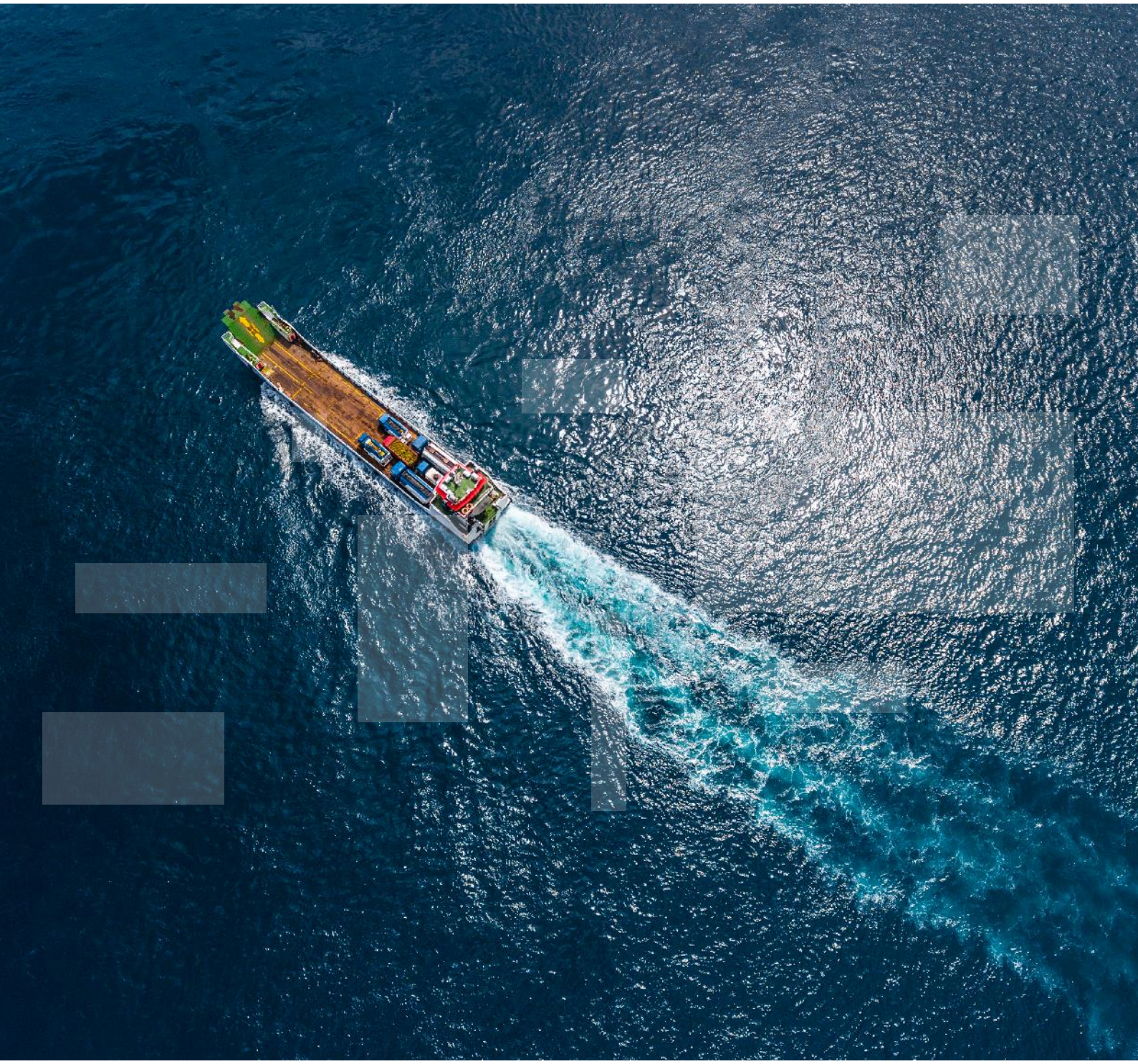


Figure 52. Scenario 2: Moderate

Scenario description	**Moderate –** government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months.	
Scenario assumptions	■ Impact on real GDP is in line with the Moderate economic scenario set out in Section 2. ■ Other assumptions are similar to the Optimistic scenario, but airline passenger numbers take five months longer to recover due to prolonged travel restrictions. ■ The reduction in marine cargo premiums is more strongly correlated to falls in global trade volumes than in the Optimistic scenario.	
Impact on premium volumes	**US - marine:** Written premiums are 33% (or approximately US$620M) lower than expected in 2020. **UK - aviation:** Written premiums are 24% (or approximately US$510M) lower than expected in 2020.	**UK - marine:** Written premiums are 21% (or approximately US$590M) lower than expected in 2020. **UK - aviation:** Written premiums are 44% (or approximately US$420M) lower than expected in 2020.
Impact on losses	**US - marine:** Claims reduce by 31% (or approximately US$530M) compared to previous expectations for the 2020 underwriting year. **UK - aviation:** Claims reduce by 28% (or approximately US$470M) compared with previous expectations for the 2020 underwriting year.	**UK - marine:** Claims reduce by 22% (or approximately US$550M) compared to previous expectations for the 2020 underwriting year. **UK - aviation:** Claims reduce by 47% (or approximately US$350M) compared with previous expectations for the 2020 underwriting year.

Figure 53. Scenario 3: Severe

Scenario	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months.	
Scenario assumptions	■ Impact on real GDP is in line with the Severe economic scenario set out in Section 2. ■ Other assumptions are similar to the Optimistic scenario, but passenger number recoveries pushed by eight months due to prolonged travel restrictions. ■ The reduction in marine cargo premiums is more strongly correlated to falls in global trade volumes than in the Moderate scenario.	
Impact on 2020 premium volumes	**US - marine:** Written premiums are 41% (or approximately US$770M) lower than expected in 2020. **US- aviation:** Written premiums are 32% (or approximately US$680M) lower than expected in 2020.	**UK - marine:** Written premiums are 26% (or approximately US$710M) lower than expected in 2020. **UK - aviation:** Written premiums are 56% (or approximately US$520M) lower than expected in 2020.
Impact on losses	**US - marine:** Claims reduce by 40% (or approximately US$670M) compared with previous expectations for the 2020 underwriting year. **US- aviation:** Claims reduce by 35% (or approximately UD$600M) compared with previous expectations for the 2020 underwriting year.	**UK marine:** Claims reduce by 26% (or approximately US$660M) compared with previous expectations for the 2020 underwriting year. **UK - aviation:** Claims reduce by 58% (or approximately US$440M) compared with previous expectations for the 2020 underwriting year.

Figure 54. Impact on US marine (US$M)

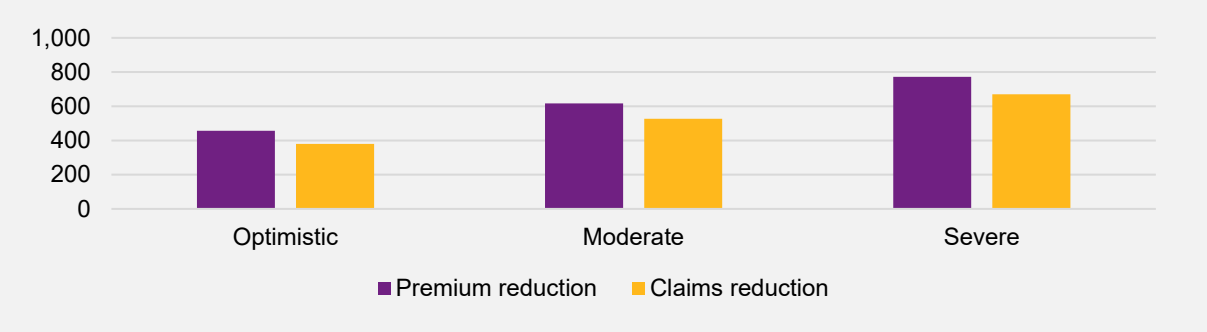


Figure 55. Impact on UK marine (US$M)

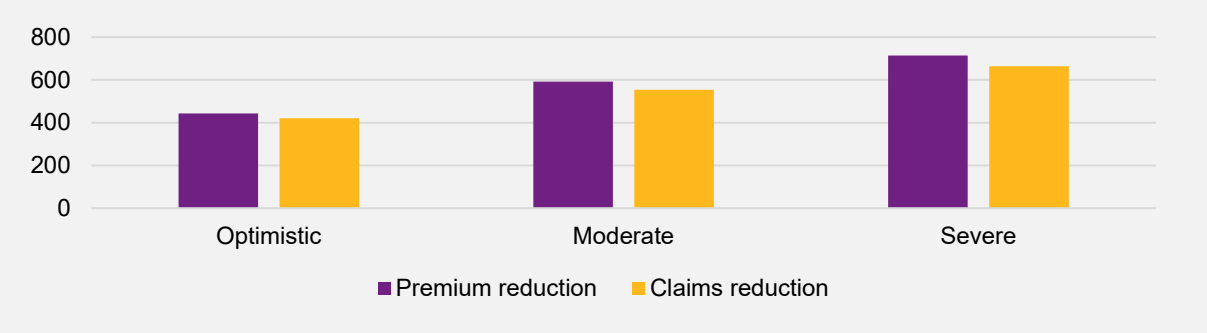


Figure 56. Impact on US aviation (USM$M)

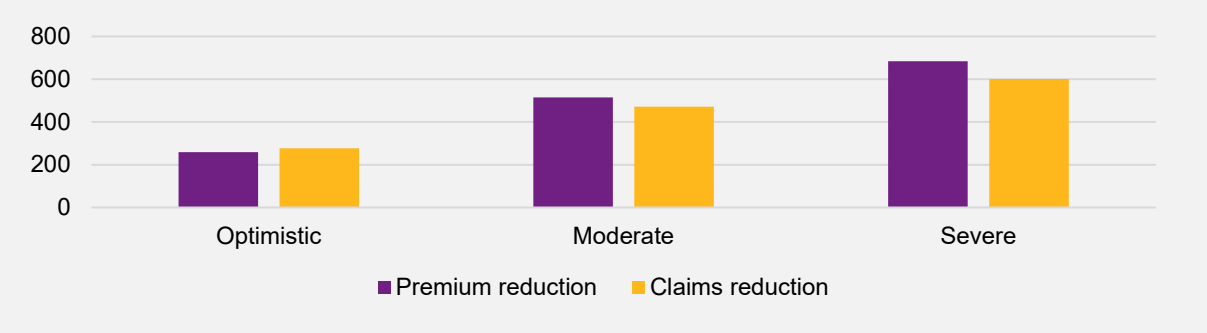
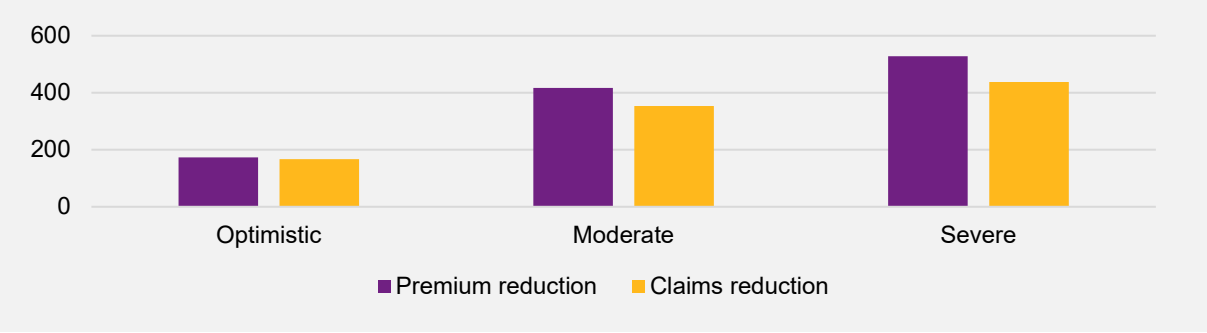


Figure 57. Impact on UK aviation (US$M)



Medical malpractice

Key loss drivers

Figure 58. Impact on medical malpractice losses

COVID-19 outcome	Impact on losses
Direct health impact	Even in more optimistic scenarios, the healthcare system in the US and other countries will be severely challenged with the influx of patients, which could lead to medical malpractice allegations. ■ Significant stress is being placed on health care workers due to lack of access to the needed amounts of protective equipment. Doctors working longer hours and under significant stress are more likely to make errors. ■ The disease is new and can present in a way that is similar to other diseases, which in combination with shortages in testing can lead to mis-diagnoses, which can lead to spread to other family members. ■ In severe scenarios, doctors might need to ration life-saving care.
Mitigative Factors	■ The 12 March declaration under the Public Readiness and Emergency Preparedness (PREP) Act could provide immunity in certain cases, but its extent is uncertain and likely to be subject to litigation. ■ When a declaration is in effect, the act precludes, for example, liability claims alleging negligence by a manufacturer in creating a vaccine, or negligence by a health care provider in prescribing the wrong dose, absent willful misconduct. Likewise, the act precludes a liability claim relating to the management and operation of a countermeasure distribution program or site, such as a slip-and-fall injury or vehicle collision by a recipient receiving a countermeasure at a retail store serving as an administration or dispensing location that alleges, for example, lax security or chaotic crowd control. The applicability of the act to medical malpractice is highly dependent on the interpretation of the term ‘countermeasures’. ■ The Coronavirus Aid, Relief and Economic Security (CARES) Act passed by Congress and signed into law on 27 March 2020 provides temporary immunity regarding COVID-19 emergency treatment from volunteers and manufacturers of N95 respirator masks. Healthcare professional who are volunteering during COVID-19 emergencies are also granted limited immunity. ■ Health insurers are also encouraging expanded telemedicine use and giving providers and patients incentives to use this delivery model. As more U.S. patients are diagnosed with COVID-19, health agencies have urged hospitals to expand their use of telemedicine, both within their facilities and to reach patients at home. ■ One potential byproduct of this is that the use of telemedicine instead of face-to-face office visits has the potential to leave physicians more exposed to future malpractice claims.

While the Health and Human Services (HHS) declaration may provide liability immunity, there are a number of factors that will determine whether a claim can be made or not. In each case, whether immunity is applicable will depend on the particular facts and circumstances.

Figure 59. Factors for triggering a COVID-19-related medical malpractice claim

Factor	WTW commentary
If the activity is not directly related to countermeasure activities	A liability claim alleging an injury occurring at the site that was not directly related to the countermeasure activities is not covered, such as alleged negligence in a hospital related to a birth claim.
Defence costs	There is no immunity from being sued; thus, there is potential to incur costs of defending a lawsuit even where there is immunity from liability.
Non-COVID-19 claims	If medical facilities become inundated with COVID-19-infected patients who need medical attention, strained operations and overworked/exhausted providers could result in an increase of new medical malpractice claims. While the healthcare providers treating COVID-19 patients may be granted professional immunity from civil liability, there still exists the risk of more medical malpractice claims related to patients being treated for non COVID-19 ailments. For example, if a patient suffering from a non-COVID-19 ailment is denied treatment or is not given adequate standard of care due to shortage of resources, he or/she could still potentially sue the health care providers.
Outside of speciality	Providers may be asked to provide care outside of their specialty. Medical malpractice insurance may not provide coverage in these circumstances.
Sympathetic defendants	The public perception of health care workers has been elevated in the wake of the coronavirus outbreak. Regardless of whether the HHS declaration shields doctors from malpractice claims, hospitals and healthcare workers will make extremely sympathetic defendants and based on current perceptions it is unlikely that they will become a target of the plaintiffs' bar. More broadly, the rehabilitated public image of hospital systems may act to stem the social inflation seen in recent years in medical malpractice jury awards. The circumstances are expected to differ in the for-profit nursing home space, where in general providers are unlikely to have gained goodwill with the public. As discussed earlier, potential loss scenarios related to nursing homes are included in the general liability section.

Impact on losses

We may see decreases in exposure to non-COVID-19 claims as hospitals shift treatment to COVID-19 and the volume of other patients decreases. Given the sharp drop in non-emergency care, the potential for business-as-usual claims is reduced.

Our conclusion is that while the overall impact on medical malpractice is highly uncertain, it is very difficult to conclude whether it will be adverse or favourable relative to expected profitability pre-COVID 19, although on balance it is more likely to be favourable; therefore, we are not estimating any impact

on this line from COVID-19 based on the information known at this time. It is important to note that nursing home losses which, in contrast, could be considerable are included in the general liability section of this report and excluded from this commentary.

Mortgage insurance

Key loss drivers

Figure 60 summarises the two key outcomes of the COVID-19 pandemic and our view on their impact on mortgage losses. The focus below is on the US residential mortgage market. The (re)insurance products potentially impacted are private mortgage insurance (PMI), which is mandated as a coverage when a borrower's down payment is less than 20% of the value of the home, and reinsurance of Fannie Mae and Freddie Mac (collectively, government sponsored entities (GSEs). In the wake of the financial crisis, the GSEs began using reinsurance as a source of capital. The GSE deals in the market are structured on an aggregate excess basis and to date have had very favourable loss ratios; however, in high default scenarios the results can be heavily impacted due to the aggregate excess nature of the cover.

Figure 60. Impact on mortgage insurance losses

COVID-19 outcome	Impact on losses
Social distancing and economic impact	■ The key drivers of mortgage defaults are unemployment rates and property values. ■ In times of high unemployment, more borrowers who unable to make their monthly payment; however, if the borrower has equity in the home, the borrower will be incented to sell the property rather than defaulting, such that equity can be preserved. ■ Therefore, the adverse scenarios for the mortgage market include high unemployment coupled with falling home prices, as was seen in the financial crisis. ■ While it is clear that unemployment will rise in the U.S. in the wake of the COVID-19 pandemic, the impact on property values is less clear.
Mitigative factors	The Coronavirus Aid, Relief, and Economic Security (CARES) Act provides substantial relief in the form of up to a year of forbearance to homeowners with mortgages backed by federal loans. While this should reduce defaults in the near term, it presents potentially severe liquidity stress of Fannie Mae and Freddie Mac.

Impact on losses

In order to project mortgage losses related to the economic effects stemming from the social distancing actions being taken in the US, assumptions need to be made about unemployment levels and the impact on home prices. This is further complicated by the CARES Act, the impacts of which are not built into our mortgage default modelling. In the following scenarios, we attempt to estimate the potential mortgage losses. We note that even the most severe scenario results in a significantly lower default rate than observed in the aftermath of the financial crisis, mostly due to the fact that mortgage underwriting standards have strengthened dramatically since the years leading up to the financial crisis.

Figure 61. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months; unemployment increases sharply in the short term but the economy recovers in Q3.
Impact on businesses and events	■ The CARES Act mitigates short-term defaults, which do not raise above the baseline. Fannie Mae and Freddie Mac suffer liquidity crunch but survive without a bailout.
Impact on 2020 underwriting year premiums	■ No material impact.
Estimated potential losses	■ No material impact.
Estimated impact on loss ratios	■ No impact for either PMIs or GSE programs.
Estimated impact on future premium	■ GSEs need to increase capital in the short-term and buy additional reinsurance protection under more favourable terms to reinsurers.

Figure 62. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months; unemployment rate remains 20% until 2021 when economy recovers.
Impact on businesses and events	■ CARES Act prevents defaults initially, but the GSEs' liquidity problems force a government bailout. Despite low interest rates, the GSEs are constrained in supporting new loans, forcing property values down by an average of 5%. As forbearance measures ease, defaults rise.
Impact on 2020 underwriting year premiums	■ Premiums will decrease as the number of new mortgages likely decreases
Estimated potential losses	■ Based on our proprietary mortgage modelling, we would expect defaults for the recent loan origination years to rise by about 35% relative to pre-COVID-19 levels, which would directly impact PMI business. ■ The impact on GSE reinsurance programs would be minor as the rise in defaults would not materially impact the aggregate excess programs. ■ Total increase in losses for origination year 2020 would be US$300M
Estimated impact on loss ratios	■ Loss ratios for the PMIs would rise from 15%-20% to 20%-27%, GSE loss ratios would be largely unaffected.
Estimated impact on future premium	■ Expected to be similar to 'Optimistic' version

Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months; economic contraction lasts through 2021, and unemployment in the U.S. is 25% through 2021.
Impact on businesses and events	■ CARES Act prevents defaults initially, but the GSEs' liquidity problems force a bailout. Forbearance measures are lifted, and property values plummet as wealth is destroyed and Fannie Mae and Freddie Mac lack resources to finance an adequate volume of new loans. Property values drop by 20% and stay at that level through 2021.
Impact on 2020 underwriting year premiums	■ Premium decreases may be more significant than in the moderate scenario.
Estimated potential losses	■ Based on our proprietary mortgage modelling, we would expect defaults for the recent loan origination years to rise by over 260% relative to pre-COVID-19 levels, still at a level considerably lower than in the aftermath of the financial crisis. PMI losses would increase accordingly. Lower layers of GSE aggregate excess programs would be impacted. Total increase in losses for origination year 2020 would be US$1.7B. Other recent origination years would be impacted as well.
Estimated impact on loss ratios	■ PMI loss ratios would increase from 15%-20% to 39%-52%. GSE loss ratios for origination year 2020 would increase by approximately 125 loss ratio points.
Estimated impact on future premium	■ GSEs would buy more reinsurance under terms favourable to the reinsurers. PMI rates may increase somewhat to reflect the potential for pandemic risk.

We expect the 'Limited Success' scenario results to be close to the' Moderate' scenario.

Future of line of business

Under the scenarios above, mortgage insurers profitability is impacted, but the capital is not significantly eroded. While there are potential changes in the structure of the market in the future, we do not believe that the COVID-19 impact will be a driver of fundamental change.

Personal and commercial motor – UK market

Class overview

The UK personal and commercial motor annual earned premiums are approximately US$24B.

Loss impact

Figure 64 summarises the two key outcomes of COVID-19 and our view on their impact on UK personal motor losses.

Figure 64. Impact on personal motor losses (UK)

COVID-19 outcome	Impact on UK personal motor losses
Mitigative actions - mileage	The UK government introduced a 'lockdown' on 23 March to reduce the spread of COVID-19. Transport use including motor vehicles reduced significantly following this. The government presented figures showing that motor vehicle use was down by 66% on average over the week of 30 March to 5 April compared with normal volumes. We would expect that the reductions seen in use for personal motor vehicles will be bigger than that for commercial motor vehicles. Reductions in mileage of this magnitude will lead to significant reduction in claims volumes with some UK motor insurers already commenting that claims frequency is down by 50%. However, there are a number of factors to consider when determining how the reduction in mileage will translate to claims: ■ Impact by road type is likely to be affected, with accident per mile on motorways lower than for other road types. ■ The profile of driver miles is likely to be affected by the lockdown, particularly with older people more likely to be self-isolating than young people. ■ Congestion will be reduced, which may lead to an additional reduction in claims or increased speeds and a smaller reduction in claims. It is also likely that once the lockdown restrictions are lifted there will be a surge in mileage above normal levels, which could negate some of the mileage reductions during lockdown.
Mitigative actions – settlement delays	The UK lock-down and COVID-19 is likely to see a significant delay in claim settlement rates as a result of: ■ Staffing levels at insurers and repairers. ■ Challenges resulting from sourcing parts, particularly from abroad. ■ The availability of claimant solicitors to bring and progress injury claims. ■ The availability of courts to hear disputes. We anticipate that delays in settlement will result in higher claims severity. In some cases this will directly occur, for example, providing a hire car for a longer duration, but more generally longer settlement times tend to result in higher claims cost. There may also be a severity implication if the strain on the National Health Service results in claimants seriously injured from motor accidents receiving worse care than normally.

Impact on losses and premiums

We expect COVID-19 to result in significantly lower UK motor personal losses in 2020 as a result of the reduction in mileage with the level of reduction determined by the length of time that restrictions are in place in the UK.

Premium volumes are also likely to fall in 2020 as some customers cancel or do not renew vehicles that they are not using during a lock-down. However, the reduction in premium will be less than in claims. A significant uncertainty comes from what pricing action insurance companies may take in the next few months. In the scenarios outlined below, we have assumed:

- No reduction in premium rates.
- No return of premiums due to lower losses being realised by the insurers, although we would expect insurers to return premiums to a degree if large savings do emerge. We note that this is different to our assumption in the US market and partly reflects the underlying differences in the nature of the US and UK markets (eg the US market operates at a lower loss ratio and generally has a greater emphasis on risk-based rating).
- A slight decrease in premiums written due to cancellations and non-renewals.

It is worth noting that for the 2020 accident year over 70% of premium that will be earned will have been written by the end of March, therefore, reductions in premium rates will have a limited impact on the 2020 accident year loss ratio.

The following scenarios concentrate on the 2020 accident year but the delay to settlements will also impact the cost of claims occurring before 2020 and so could result in a deterioration in the booked reserves as at year end 2019. This could add around 1% to 5% to the 2020 financial year results.

Figure 64. Impact on personal motor losses (UK)

The potential impact of COVID-19 is highly uncertain. Notwithstanding this uncertainty, we have attempted to quantify the possible impact of COVID-19 under each of the four scenarios outlined earlier. While these estimates should not be considered as specific predictions, they provide some insight on the potential order of magnitude on losses and loss ratios that could eventuate. Further detail on each scenario is provided below.

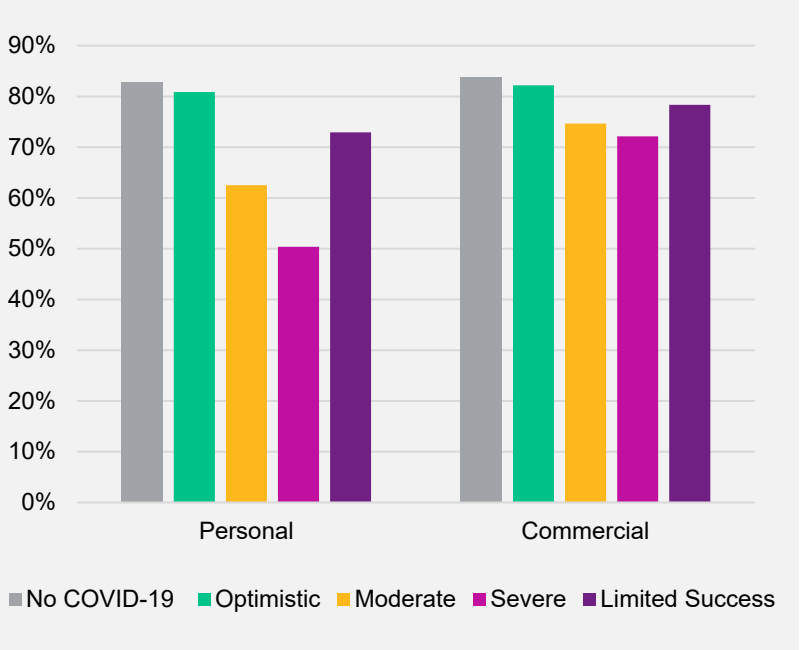


Figure 66. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months	
Impact on mileage and claims	Personal: ■ Mileage is down by 75% during lockdown but in the three months after lockdown driving levels are 20% above normal. In total the mileage for 2020 is only 4% lower than without COVID-19. ■ Claim settlement delays result in higher severities during lockdown, which means total claims cost in 2020 is 3% lower than without COVID-19. ■ There will be a number of policy cancellations during lock-down but these policies will re-incept once the lockdown is lifted. Total premium for 2020 is only 1% less than without COVID-19. Commercial: ■ Mileage is down by 40% during lockdown but in the three months after lockdown driving levels are 10% above normal. In total the mileage for the 2020 is only 3% lower than without COVID-19. ■ Higher claim severities are due to claim settlement delays and there is an increase in some risk factors (eg hiring of inexperienced drivers or lowering of risk management standards). ■ Combined impact is a 2% reduction in total claims cost for 2020. ■ For commercial motor, we expect the premiums to fall more than for personal with premium for fleet policies in particular being adjusted for vehicle exposure and a higher cancellation rate where a business cannot operate under lockdown. Total premium for 2020 will be almost unchanged.	
Estimated potential losses	Personal: US750M to US0M	Commercial: US$225M to US$0M
Estimated impact on loss ratios	Personal: 78% to 83% for 2020 (compared with 83% without COVID-19)	Commercial: 81% to 84% for 2020 (compared with 84% without COVID-19)

Figure 67. Personal and commercial motor loss ratios (Optimistic scenario)

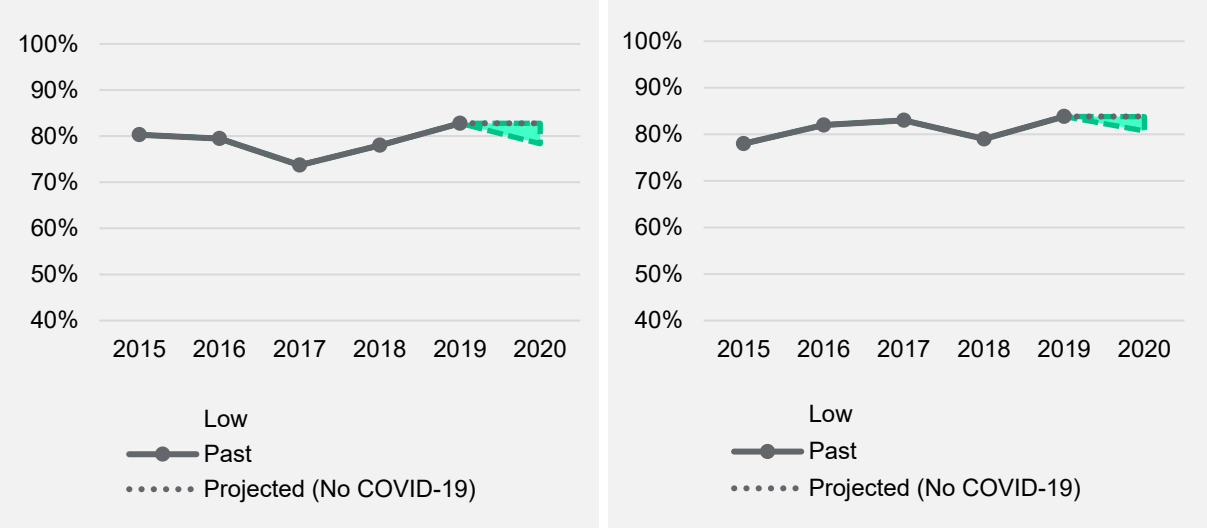


Figure 68. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months.	
Impact on mileage and claims	Personal: ■ Mileage is down by 75% during the first three months of the lockdown but incrementally increases each month after that. As with the 'Optimistic' scenario, in the three months after lockdown driving levels are 20% above normal. In total the mileage for 2020 is 33% lower than without COVID-19. ■ Claim settlement delays result in higher severities during lockdown, which means total claims cost in 2020 is 29% lower than without COVID-19. ■ Total premium for 2020 is 6% less than without COVID-19 due to cancellations and non-renewals, Commercial: ■ Mileage is down by 40% during the first three months of the lockdown but incrementally increases each month after that. In the three months after lockdown driving levels are 10% above normal. In total the mileage for 2020 is 20% lower than without COVID-19. ■ Higher claim severities are due to claim settlement delays, and there is an increase in some risk factors (eg hiring of inexperienced drivers or lowering of risk management standards). ■ Combined impact is a 16% reduction in total claims cost for 2020. ■ Total premium for 2020 is down 6%.	
Estimated potential losses	Personal: US$3.9B to US$3.0B	Commercial: US$800M to US$400M
Estimated impact on loss ratios	Personal: 60% to 65% for 2020 (compared with 83% without COVID-19)	Commercial: 73% to 78% for 2020 (compared with 84% without COVID-19)

Figure 69. Personal and commercial motor loss ratios (Moderate scenario)

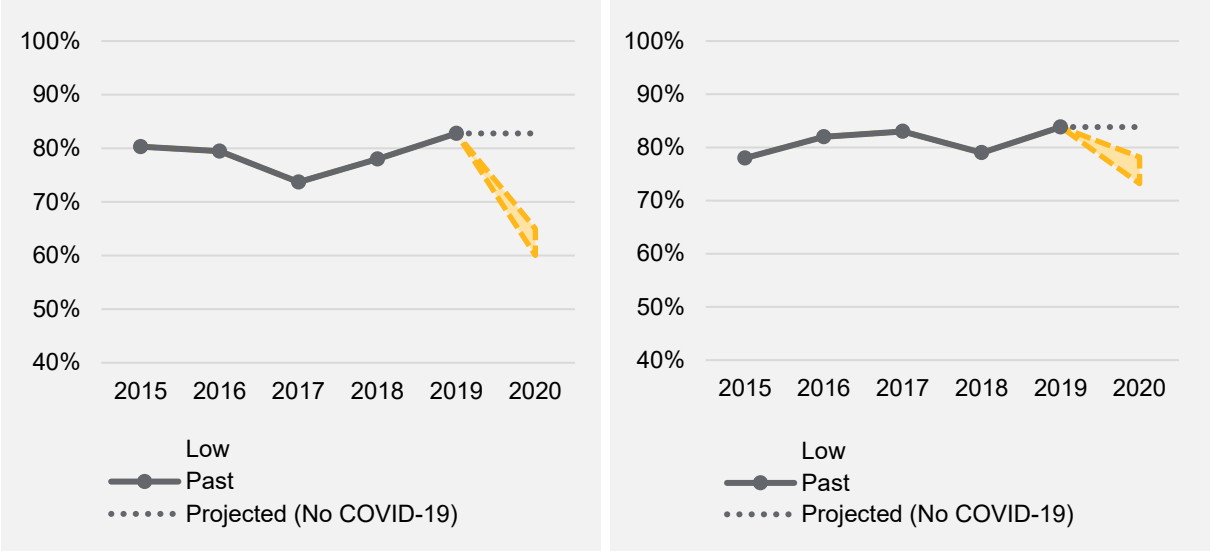


Figure 70. Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months.	
Impact on mileage and claims	Personal: ■ Impact on mileage during lockdown is as for 'Moderate' scenario but for a longer duration. In total, the mileage for 2020 is 50% lower than without COVID-19. ■ Claim settlement delays result in higher severities during lockdown which means total claims cost in 2020 is 45% lower than without COVID-19. ■ Total premium for 2020 is 10% less than without COVID-19 due to cancellations and non-renewals. Commercial: ■ Impact on mileage during lockdown is as for 'Moderate' scenario but for a longer duration. In total the mileage for 2020 is 30% lower than without COVID-19. ■ Higher claim severities due to claim settlement delays, and there is an increase in some risk factors (e.g. hiring of inexperienced drivers or lowering of risk management standards). ■ Combined impact is a 25% reduction in total claims cost for 2020. ■ Total premium for 2020 is down 12%.	
Estimated potential losses	Personal: US$6.0B to US$5.1B	Commercial: US$1.0BM to US$600M
Estimated impact on loss ratios	Personal: 48% to 53% for 2020 (compared with 83% without COVID-19)	Commercial: 71% to 76% for 2020 (compared with 84% without COVID-19)

Figure 71. Personal and commercial motor loss ratios (Severe scenario)

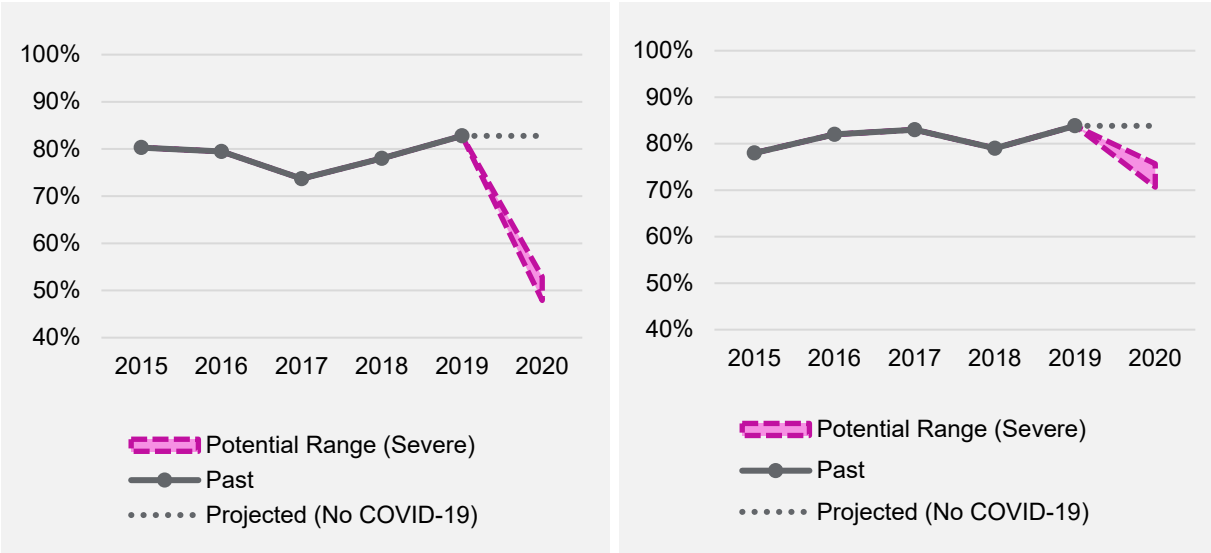
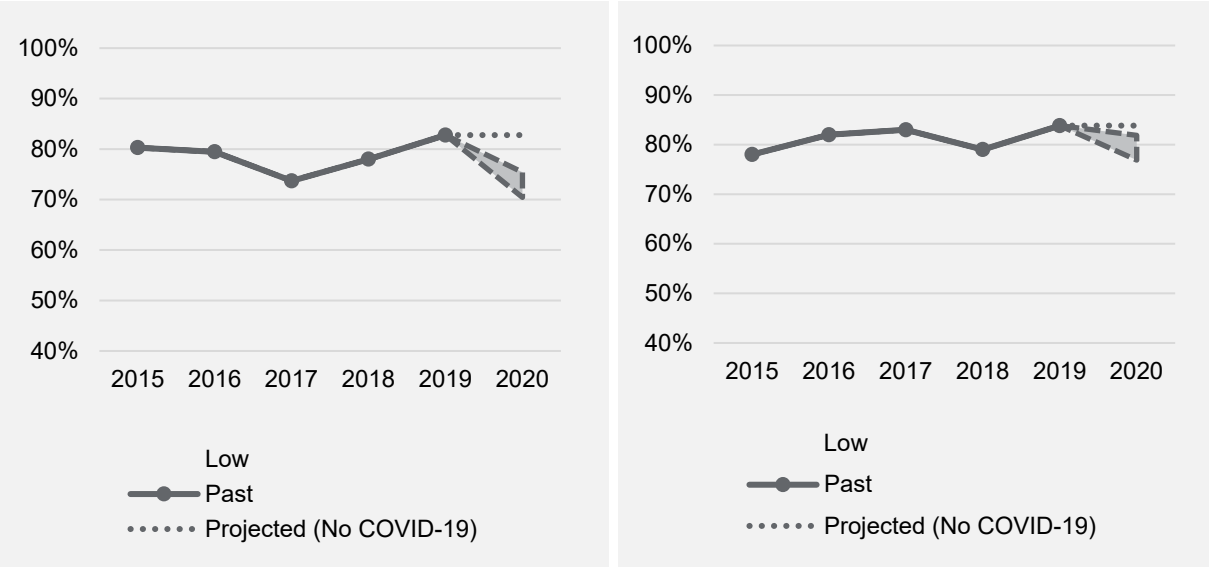


Figure 72. Scenario 4: Limited Success

Scenario description	**Limited Success** – strong mitigative actions by governments for three months with some success, but controls are lifted afterwards due to their catastrophic economic impact and the virus continues to spread uncontrollably.	
Impact on mileage and claims	Personal: ■ Impact on mileage during lockdown is as for Moderate scenario. In total the mileage for 2020 is 17% lower than without COVID-19. ■ Claim settlement delays result in higher severities during lockdown which means total claims cost in 2020 is 14% lower than without COVID-19. ■ Total premium for 2020 is 2% less than without COVID-19 due to cancellations and non-renewals. Commercial: ■ Impact on mileage during lockdown is as for Moderate scenario. In total the mileage for 2020 is 10% lower than without COVID-19. ■ Higher claim severities due to claim settlement delays and an increase in some risk factors (eg hiring of inexperienced drivers or lowering of risk management standards). ■ Combined impact is an 8% reduction in total claims cost for 2020. ■ Total premium for 2020 is down 2%.	
Estimated potential losses	Personal: US$2,100M to US$1,300M	Commercial: US$400M to US$100M
Estimated impact on loss ratios	Personal: 70% to 75% for 2020 (compared with 83% without COVID-19)	Commercial: 77% to 82% for 2020 (compared with 84% without COVID-19)

Figure 73. Personal and commercial motor loss ratios (Limited Success scenario)



Future of the line of business

In 2020 UK motor insurers will be undertaking a delicate balancing act attempting to assess the impact of COVID-19 on prior and future claims while also maintaining their market positions within a highly competitive pricing environment. They will be trying to do this in a time of great uncertainty where behaviours that they thought they understood are rapidly changing.

As a compulsory insurance product there is always a significant political scrutiny of the UK motor market. The scenario analysis suggests that there is a possibility that 2020 will see loss ratios markedly below the past few years. If this is the case, there may be calls to return some of these profits to policyholders directly or via a windfall tax.

Other impacts on UK motor are:

- Whiplash reforms due in 2020, which are anticipated to reduce the cost of small injury claims, have been delayed as a result of COVID-19.
- There may be an increase in uninsured driving as people cannot afford the premiums, especially if they are not able to drive a car much. This may include business use of private vehicles (eg increase in delivery services during COVID-19).
- An economic recession following COVID-19 could increase fraudulent claims and theft of, and from, vehicles. It might also lead to an increase in the claiming culture within the UK as witnessed after the financial crisis in 2008.
- Longer-term changes in behaviour could result from COVID-19 that impact the insured risks, for example, a reduction in commuting mileage as people get used to working from home or a speeding up of the transition to online shopping.

Personal and commercial auto – US market

Class overview

The US personal and commercial motor market earned annual premium is around US$300 billion annually.

Key loss drivers

The implementation of contagion mitigation efforts by governments and the general economic slowdown is expected to affect insured auto exposures as well as claims outcomes, as detailed in Figure 74.

As of late April, a number of states are expected to have partially lifted those restrictions. Consequently, while the impact of these directives is expected to be significant, it may vary across jurisdictions.

Figure 74. Impact on personal and commercial auto losses (US)

COVID-19 outcome	Impact on losses
Mitigative factors	Many (but not all) states and municipalities initiated stay-at-home efforts of different stringency in late March. Typically, guidance allowed residents to leave their homes for essential reasons only, while maintaining social distancing. Businesses and public services deemed non-essential either closed temporarily, or their employees worked from home. Most individuals have reduced their mobility drastically, leaving their homes only to perform essential tasks such as obtain healthcare services, procure groceries or exercise. As of late April, a number of states are expected to have partially lifted those restrictions. Consequently, while the impact of these directives is expected to be significant, it may vary across jurisdictions. The impact on frequency will be known quickly, while severity effects may be lagged. ■ Stay-at-home directives have had an immediate impact on mileage, which dropped dramatically and quickly. Early data reports are showing a reduction of 40% to 60% of driving activity by end of March. ■ This drop has already brought upon a significant reduction in frequency, consistent with fewer miles driven per vehicle and fewer vehicles on the road. ■ We expect personal auto frequency to drop more than commercial frequency, consistent with relative reduction in mileage: long-haul trucking and short-trip deliveries activity is expected to stay stable or increase. ■ The mix of drivers under lockdown is likely different with a smaller proportion of older drivers on the road. ■ Slowdown of judicial processes may increase duration of claims but also encourage settlements, bucking the “social inflation” trend to some extent. ■ Reduced availability or delays in procurement of auto parts, and delays in performing repairs with shops closed, are likely to increase the duration and severity of physical damage claims. ■ With fewer vehicles on the road, the industry could see more high-speed (severe) accidents. ■ With bars and restaurants closed and social gatherings heavily discouraged, the number of alcohol and drug-related accidents (often severe) will be lower. ■ Care for injured claimants may be delayed leading to potentially costlier claims ■ Minor traffic accidents may not lead to claims as claimants may wish to avoid ambulance rides, emergency room visits or other medical services ■ On the other hand, claimants may seek treatment at a later date (eg alleging whiplash from an earlier accident) and file a claim then
Economic impact	Unemployment and in general reduction in incomes may increase propensity to file claims (perhaps also increasing fraud) but could also encourage faster, less costly settlements as both plaintiffs and their attorneys seek cash. No-fault (eg personal injury protection), third-party and uninsured motorists’ coverages may suffer that effect. Unemployment is also highly correlated with mileage driven and therefore we expect frequency to continue to be lower than normal to the extent that employment rates remain low.

Impact on losses

We expect COVID-19 to result in significant reduction in losses in 2020, and we present estimates under the four scenarios outlined below. For personal auto, we are estimating impact of insurance losses at US$26.2B for the 'Optimistic' scenario, US$40.3B for the 'Moderate' scenario, US$70.7B for the 'Severe' scenario, and US$33.4B for the 'Limited Success' scenario; for commercial auto, we are estimate impact of insurance losses at US$4.2B for the 'Optimistic' scenario, US$6.6B for the 'Moderate' scenario, US$12.4B for the 'Severe' scenario, and US$5.2B for the 'Limited Success' scenario.

Premium volumes are also likely to fall in 2020 as customers reduce, cancel or do not renew coverage, either as cars are sold or to otherwise accommodate changes in household or business finances. Those factors are assumed to reduce exposure commensurately. Customers may, however, become more price-elastic and more willing to shop around. Many carriers have announced credits or rebates to reflect reduced exposure during periods of restrictions in mobility; those credits may lag the reduction in claims and therefore may lead to lower loss ratios than normal. Early indications are that the industry is reporting up to US$10B in premium refunds for personal auto until the end of May. We assume that if social distancing is extended, rebates will likely be extended as well. We also assume the potential for rebates, albeit at a lower percentage of premiums, for commercial auto.

The scenarios below concentrate on the 2020 accident year but effects in claims resolutions mentioned above may also impact the cost of claims occurring before 2020.

COVID-19 has had a significant impact on the auto lines of business. We modelled a number of economic scenarios depending on the drop in frequency and severity and the duration of the shelter-in-place order with the gradual recovery of the economy. We considered a frequency decrease of 40% to 60% and a severity increase of 0% to 20%. Then, we modelled the impact of these changes according to a number of economic scenarios. We also assumed that given unemployment will not immediately return to February 2020 rates, there will be a gradual return to the norm even after shelter-in-place orders are lifted. Finally, we assume that, throughout these scenarios, 40% of the reduction in personal auto losses will be refunded to policyholders via rebates, while 10% of the reduction in commercial auto losses will be refunded. Many other scenarios are possible regarding the extent of eventual rebates; at this point we are simply extrapolating based on early indications, and we are not trying to predict how companies will react to emerging experience in their data. Below is the modelled impact of COVID-19 compared with a 'normal' year for personal and commercial auto:

Figure 75. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months; unemployment rate reaches 15% then declines fairly quickly after three months but does not reach the previous level for several years.
impact on 2020 Underwriting year premiums	■ Issued premium credits last as long as government measures are in place. For personal auto, estimated premium refunds of US$10B; for commercial auto, estimated premium refunds of US$0.5B. ■ For personal auto, reduction in premiums as policyholders shop around, and specifically to commercial auto, uncollected premiums due to companies going out of business
Estimated potential losses	■ For personal auto, a decrease of US$26B, with 40% decrease in frequency, an unaffected severity, and their levels gradually returning to normal mid-2021. ■ For commercial auto, a decrease of US$4.B, with 30% decrease in frequency, an unaffected severity, and their levels gradually returning to normal mid-2021.

Figure 76. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months; unemployment rate reaches 20% and then declines rapidly after six months but does not reach the previous level for many years
Impact on 2020 underwriting year premiums	■ Issued premium credits last as long government measures are in place. For personal auto, estimated premium refunds of US$16B; for commercial auto, estimated premium refunds of US$0.7B. ■ For personal auto, reduction in premiums as policyholders shop around, and specifically to commercial auto, uncollected premiums due to companies going out of business
Estimated potential losses	■ For personal auto, a decrease of US$40.3B, with 50% decrease in frequency, a 10% increase in severity, and their levels gradually returning to normal mid-2022. ■ For commercial auto, a decrease of US$6.6B, with 40% decrease in frequency, a 10% increase in severity, and their levels gradually returning to normal mid-2022.

Figure 77. Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months; unemployment rate reaches 25% and then gradually declines
Impact on 2020 underwriting year premiums	■ Issued premium credits last as long government measures are in place. For personal auto, estimated premium refunds of US$23B; for commercial auto, estimated premium refunds of US$1B. ■ For personal auto, reduction in premiums as policyholders shop around, and specifically to commercial auto, uncollected premiums due to companies going out of business.
Estimated potential losses	■ For personal auto, a decrease of US$56B, with 60% decrease in frequency, a 20% increase in severity, and their levels gradually returning to normal end-2023. ■ For commercial auto, a decrease of US$9.4B, with 50% decrease in frequency, a 20% increase in severity, and their levels gradually returning to normal end-2023.

Figure 78. Scenario 4: Limited Success

Scenario description	**Limited Success** – strong mitigative actions by governments for three months with some success, but controls are lifted afterwards due to their catastrophic economic impact and the virus continues to spread uncontrollably; unemployment rate reaches 20% and then declines rapidly after six months but does not reach the previous level for many years.
Impact on 2020 underwriting year premiums	■ Issued premium credits last as long government measures are in place. For personal auto, estimated premium refunds of US$13B; for commercial auto, estimated premium refunds of US$0.5B. ■ For personal auto, reduction in premiums as policyholders shop around, and specifically to commercial auto, uncollected premiums due to companies going out of business.
Estimated potential Losses	■ For personal auto, a decrease of US$33.4B, with 50% decrease in frequency, a 15% increase in severity, and their levels gradually returning to normal mid-2022. ■ For commercial auto, a decrease of US$5.2B, with 40% decrease in frequency, a 15% increase in severity, and their levels gradually returning to normal mid-2022.

Figure 79. Personal auto frequency

	Projected annual change in AY 2020 caused by COVID-19	
Scenario	Frequency	Severity
Optimistic	-16.3%	0.0%
Moderate	-29.0%	5.4%
Severe	-43.0%	13.6%
Limited Success	-26.2%	7.1%

	Projected frequency change by AQ in 2020 caused by COVID-19			
Scenario	2020 Q1	2020 Q2	2020 Q3	2020 Q4
Optimistic	-6.7%	-38.2%	-16.2%	-4.3%
Moderate	-8.3%	-50.0%	-37.7%	-20.0%
Severe	-10.0%	-60.0%	-56.5%	-45.6%
Limited Success	-8.3%	-48.9%	-31.5%	-15.9%

Figure 80. Commercial auto frequency

Scenario	Projected annual Change in AY 2020 caused by COVID-19	
	Frequency	Severity
Optimistic	-12.1%	0.0%
Moderate	-22.8%	5.4%
Severe	-35.5%	13.6%
Limited Success	-20.5%	7.1%

Scenario	Projected frequency change by AQ in 2020 caused by COVID-19			
	2020 Q1	2020 Q2	2020 Q3	2020 Q4
Optimistic	-5.0%	-28.6%	-11.6%	-3.0%
Moderate	-6.7%	-40.0%	-29.5%	-15.2%
Severe	-8.3%	-50.0%	-46.8%	-37.0%
Limited Success	-6.7%	-39.0%	-24.4%	-12.0%

Figure 81. Auto Loss Ratios

Scenario	Projected AY 2020 loss ratios	
	Personal auto	Commercial auto
Pre-COVID-19	61.9%	74.9%
Optimistic	53.9%	66.5%
Moderate	49.4%	61.8%
Severe	43.9%	56.0%
Limited Success	51.6%	64.5%

Future of the line of business

The future of personal and commercial auto should be interesting to watch. The economic downturn is going to negatively impact the sales of cars. The age of vehicles on the road will rise. If social distancing has a lasting impression on the society, people will be less prone to carpool for commuting, to take taxis and rideshares, and to utilize public transportation. Likewise, successful remote working during the lockdown may carry on, significantly reducing use of personal vehicles. The new economic and social landscape of travel will bring a need for carriers to improve, update and innovate their modeling on pricing and reserving.

Personal travel – UK market

Class overview

Travel insurance policies indemnify the policyholder against claims arising from travelling abroad, for example medical expenses while abroad, cancellation, lost baggage or items, and personal liability. Policies are typically sold to cover a specific trip or as annual policies that cover all trips taken during the coverage period by the insured.

Both personal and business travel can be covered, although commercial contracts are typically included as part of an accident and health coverage. We have therefore not included commercial contracts in the following discussion, instead we focus on the personal travel insurance market.

Key loss drivers

Figure 82 summarises the two key outcomes (the health impact and the impact of social distancing measures) of the coronavirus outbreak and their impact on the loss experience and premium volumes for travel insurance.

Figure 82. Impact on travel insurance losses and

COVID-19 outcome	Impact on losses and premiums
Direct health impact	■ Cancellation of trips occurs because insured contracts COVID-19; ■ Medical expenses will increase for insureds who contract and start showing symptoms of COVID-19 whilst abroad. Given that most, if not all, policyholders are now back in their resident countries, it is likely that most medical expense claims have now been incurred and reported to the insurer; therefore, it is likely that there will be little change to the total value of these claims between the different scenarios. ■ Even when government lockdown and border control measures are lifted, the most vulnerable groups in society such as those over age 60 or those with underlying health conditions may limit their travel plans for the foreseeable future out of fear of contracting COVID-19 and hence have no need for travel insurance.
Social distancing and economic impact	■ Cancellation of holidays occurs as a result of government actions, including lockdowns closing hotels and other accommodation providers and the closing of international borders. ■ Social distancing and travel restriction measures may cause an increase in travel disruption claims from policyholders stranded abroad. ■ People are less likely to book holidays with the current government restrictions in place leading to lower demand for travel insurance policies. ■ The economic downturn associated with the coronavirus outbreak may mean that people have less disposable income and therefore are less likely to be able to afford as many holidays as previously. ■ For trips that have not yet been started and where policyholders have manged to obtain refunds from their travel providers, policyholders may cancel single trip insurance policies as they no longer have need of them. ■ With travel restrictions in place and uncertainty around when they will be lifted policyholders may be unwilling to renew annual travel policies.

The size of the losses arising from cancellation claims will be determined by the actions of individual travel companies and how willing they are to refund customers. There have been many examples of companies such as Airbnb[1]relaxing their cancellation clauses to allow customers to receive a full refund and therefore negate the requirement for policyholders to claim on their insurance.

Given the uncertainty around when international border restrictions will be eased, many insurers have stopped offering new travel insurance quotes; those that continue to offer quotes explicitly exclude claims relating to the COVID-19 pandemic.

Responsiveness of insurance contracts

Most travel insurance claims from the current coronavirus outbreak have most likely already been reported to insurers; therefore, the responsiveness of those policies has already been tested. The discussion below may be useful in the event there are multiple waves of the coronavirus outbreak.

Claims arising from the insolvency of airlines or other travel providers may not be covered as it is assumed that travel bond schemes such as Air Travel Organisers' License (ATOL) in the UK would pick up these claims.

A key factor in determining the responsiveness of insurance contracts is whether there is an explicit pandemic exclusion in place. From our experience, it is not uncommon for travel policies to exclude pandemics; however, even if contracts have pandemic exclusions, it may still be unclear what this means in practice, and how enforceable the clause is if a policyholder was already abroad when COVID-19 was declared a pandemic; for example, if the policyholder incurs medical or repatriation costs as a direct result of coronavirus. In addition, a policyholder may have travelled after COVID-19 was declared a pandemic but to a country that didn't, at the time, have a high number of cases and was deemed safe to travel to by the policyholder's government.

The official travel advice of governments is another key factor that influences the responsiveness of travel insurance contracts, as contracts typically do not pay claims if the insured travelled against the government's official advice. While governments now generally advise against travel to most destinations, this was not necessarily the case earlier when the coronavirus outbreak was still developing, and the timing and severity of travel advice varies significantly across different jurisdictions. This may also be an important factor in the future if there are multiple outbreaks of the virus.

It is likely that for personal travel contracts insurer responses will in part be dictated by financial conduct regulators as wording around the exclusion of pandemic claims may not clearly state what claims are covered and what claims are excluded.

Impact on losses and premiums

As discussed above, we do not think that there will be significant levels of volatility in claims experience between the different scenarios set out in Section 2. It has been quoted by the Association of British Insurers that the British travel insurance industry is expecting to pay out at least £275M[2] in

1 https://www.airbnb.co.uk/help/article/2701/extenuating-circumstances-policy-and-the-coronavirus-covid19
2 https://www.abi.org.uk/news/news-articles/2020/03/covid19-travel-insurers-expect-to-make-record-payouts-to-customers/

COVID-19-related claims. However, it is likely that most of this estimate is in respect of claims that have already been reported or incurred.

We expect future claims during the periods of restricted travel to be significantly lower than average, if not zero, until government travel restrictions are lifted and demand for international travel returns. We have therefore not provided estimates of the impact of the COVID-19 pandemic on travel insurance losses.

We have provided a range of estimates of premium volumes compared with what they would have been during the 2020 underwriting year if it had not been for the coronavirus outbreak. These estimates are shown in Figure 83, and have relied on subjective assumptions and are hence subject to a high degree of uncertainty.

Figure 83. 2020 Premium volumes reduction

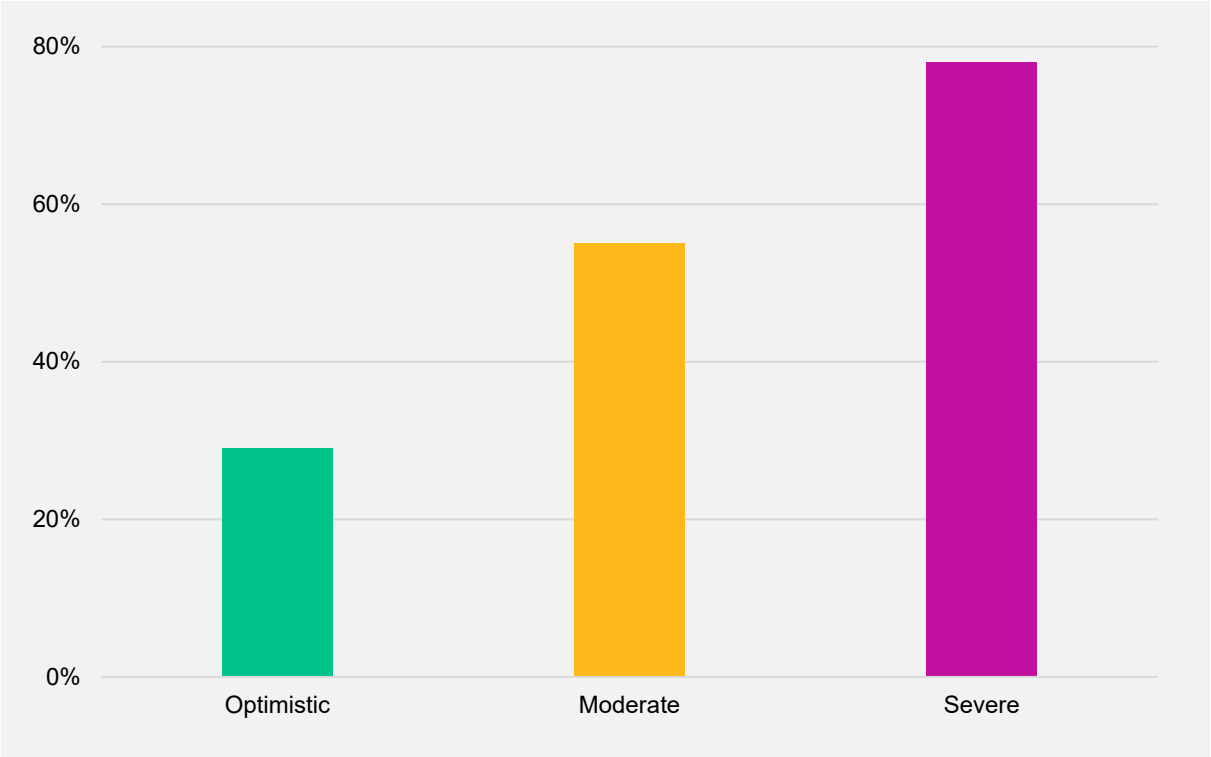


Figure 84. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months; consumer demand for holidays returns within four months.
Premium volume assumptions	■ No single trip polices are sold during the period of international travel restrictions. ■ No new annual policies are sold during the period of international travel restrictions, but some policyholders renew their coverage during the period.
Impact on 2020 premium volumes	**UK market** ■ Premium volumes are reduced by 29% compared with if the coronavirus outbreak had not happened.

Figure 85. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months; consumer demand for holidays returns within eight months.
Premium volume assumptions	■ Similar to the 'Optimistic' scenario but fewer policyholders renew their annual policies given the additional uncertainty.
Impact on 2020 premium volumes	**UK market** ■ Premium volumes are reduced by 63% compared with if the coronavirus outbreak had not happened.

Figure 86. Scenario 3: Severe

Scenario	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months; consumer demand for holidays returns within 16 months.
Premium volume assumptions	■ Similar to the 'Moderate' scenario but fewer policyholders renew their annual policies given the additional uncertainty.
Impact on 2020 premium volumes	**UK market** ■ Premium volumes are reduced by 78% compared with if the coronavirus outbreak had not happened.

Political risk, trade credit and surety

Class Overview

Political risk insurance provides coverage to businesses for **financial losses sustained as a result of political upheaval** in territories where the insured conducts business. This may include political acts of violence, the seizure of company assets by a foreign government, the inability to convert a foreign currency, or a foreign government frustrating contractual obligations.

Credit insurance provides coverage to businesses for **financial losses sustained as a result of the default of creditors**, for example losses due to bad debt from a creditor going insolvent. Credit insurance includes two key types, namely **portfolio trade credit insurance**, which would be bought by a business to cover a number of creditors, and **single situation credit risk insurance**, which would usually be bought by banks or other financial institutions to insure against non-payment on a single transaction, like a loan. Where there are assets securing the loan, this is referred to as **structured trade credit insurance**. Credit insurance is also often categorised by the entity being insured against, with credit risk used for private entities and contract frustration used for public entities.

A surety bond is a three-party contract whereby an **insurer guarantees that the insured will meet an obligation to a customer**. If the obligation is not met, then the customer recovers his or her losses from the bond. The product therefore provides protection for a customer against a breach of contract by the insured.

The impact of the coronavirus on these classes is expected to be large:

- **Political risk:** There are likely to be claims from companies where governments have conscripted companies to manufacture something to help with the pandemic and they have not received (adequate) compensation. Political risk insurance will also cover any loss due to inability to import / export goods due to government embargos. There may also be some losses due to additional political violence or interference as a result of the crisis, for example following on from protests in the US.
- **Credit and surety:** The economic downturn and severe reduction in demand caused by the severe disruption of businesses from social distancing policies is likely to significantly increase the likelihood of insolvencies and contract failure, and therefore result in significantly higher losses for these classes.

Key loss drivers

Figure 87 summarises the two key outcomes (the health impact and the impact of social distancing measures) of the coronavirus outbreak and their impact on the loss experience and premium volumes for the political risk, credit and surety classes.

Figure 87. Impact on political risk, trade credit and surety losses

COVID-19 outcome	Impact on losses
Direct health impact	The direct health impact of COVID-19 may result in: ■ Political risk claims by companies being forced by governments to change their operations, for example manufacturers could be asked to produce health items such as hand sanitisers, hospital scrubs and face masks. ■ Some disruption of businesses due to specific cases of COVID-19 on their premises, or key people becoming sick and therefore unable to work. A small number of these cases may result in the insolvency of a business or contract failure, which could potentially lead to trade credit or surety claims.
Social distancing and economic impact	The key driver of losses due to social distancing is the severe interruption of businesses. This results in: ■ The potential for political risk claims to be made due to government embargos on imports and exports. ■ A higher number of insolvencies which result in higher trade credit losses. ■ A higher number of businesses being unable to meet their contractual obligations, leading to higher surety bond losses. ■ A higher risk of political violence if the public disapproves of the way that the foreign government is handling the crisis, (eg if extremely strong lockdown measures are imposed). ■ A significant decrease in construction activity in the US leading to significant decreases in contract surety premiums. The losses are expected to be particularly high in certain industries that are highly impacted by social distancing measures and travel restrictions, (eg aviation, leisure, hospitality and retail). Some industries may be able to adjust their operations, for example restaurants providing take-away service. The extent of losses to the insurance industry is highly sensitive to the amount of assistance provided by governments to industries and businesses impacted by the coronavirus outbreak, and whether this assistance is sufficient to prevent businesses from becoming insolvent.

Responsiveness of insurance contracts

Political risk contracts are generally expected to be responsive where there has been political violence due to the coronavirus outbreak or an explicit government directive to operate in a different manner. However, Political risk contracts generally contain “Common Good Exclusions” whereby claims arising from governments seizing assets such as medical supplies for the common good may not be covered if the requisition was not discriminatory in nature and taken for public health reasons.

Credit and surety contracts are generally responsive to losses sustained as a result of the coronavirus outbreak. Most contract triggers depend only on the insured or third party defaulting, regardless of the cause. Some trade credit insurance will exclude coverage due to the order of any government, public or local authority, and it is unclear if these exclusions would apply given that these “orders” are often not well defined. However, to date the Credit market seems to be responding well to claims.

Impact on losses

We expect the coronavirus outbreak to result in significant losses over the next year due to a **significant increase in insolvencies and contract failure.**

There is a high degree of uncertainty in the insurance losses. This is due to the uncertainty in the economic downturn, which is impacted by the extent of government actions to control the spread of the disease (which come at the cost of significant economic damage) as well as actions to support businesses (which help to dampen the economic downturn). The extent of these actions will also vary significantly across different jurisdictions and industries.

Notwithstanding this uncertainty, we have attempted to quantify the possible impact of the coronavirus outbreak on the London credit insurance market as well as the US insurance surety market under the ‘Optimistic’, ‘Moderate’ and ‘Severe’ scenarios outlined in Section 2. While these estimates should not be considered as specific predictions, they provide some insight on the potential order of magnitude on loss ratios that could eventuate. Note that **we have not attempted to quantify the potential loss for political risk contracts** – this is due to the high degree of uncertainty and limited data available at this time.

In the US surety market, we expect mounting pressure on the frequency of loss and a potential for increased severity. We anticipate this will affect both contract surety and commercial surety bonds. For contract surety, force majeure clauses should provide protection at least during government shut downs. It remains to be seen if such clauses will provide protection to contractors after government restrictions are lifted in situations where skilled labour shortages or supply chain shortages occur. Similarly, a swift sequence of liquidity and solvency challenges across many industries are expected to increase the risk of loss to the commercial surety market. In the US, roughly two-thirds of the US$6.5B surety market relates to contract surety, which we expect to be less impacted than commercial surety because of force majeure clauses and subrogation rights. In the scenarios below, we expect increases in surety frequency and decreases in premium. We have assumed that severity is not impacted, but it is possible that severities could increase as well.

Figure 88. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months.
Impact on businesses and events	▪ The economic disruption results in a 5% to 7% reduction in GDP for 2020 relative to 2019. ▪ The recession results in a higher number of insolvencies and contract failure, which subsequently impact insurance losses, around twice the impact of the 2007 – 2008 global financial crisis.
Impact on 2020 underwriting year premiums	U.S. surety market premiums are expected to decline by roughly 12% under this scenario.
Estimated potential impact on loss ratios	2020 London market loss ratios a factor of three to six times higher than the 2019 equivalent. Assuming Trade Credit market premiums of approximately US$600-US$700M, this implies market losses of around US$1.1B to US$2.9B based on our internal benchmarks. US surety market loss ratio is expected to be impacted by a 2% increase in frequency, producing a modest US$33M increase in losses. The loss ratio for accident year 2020 would increase by two points relative to pre-COVID-19 expectations.

Figure 89. Credit Loss Index — London market (Optimistic scenario)

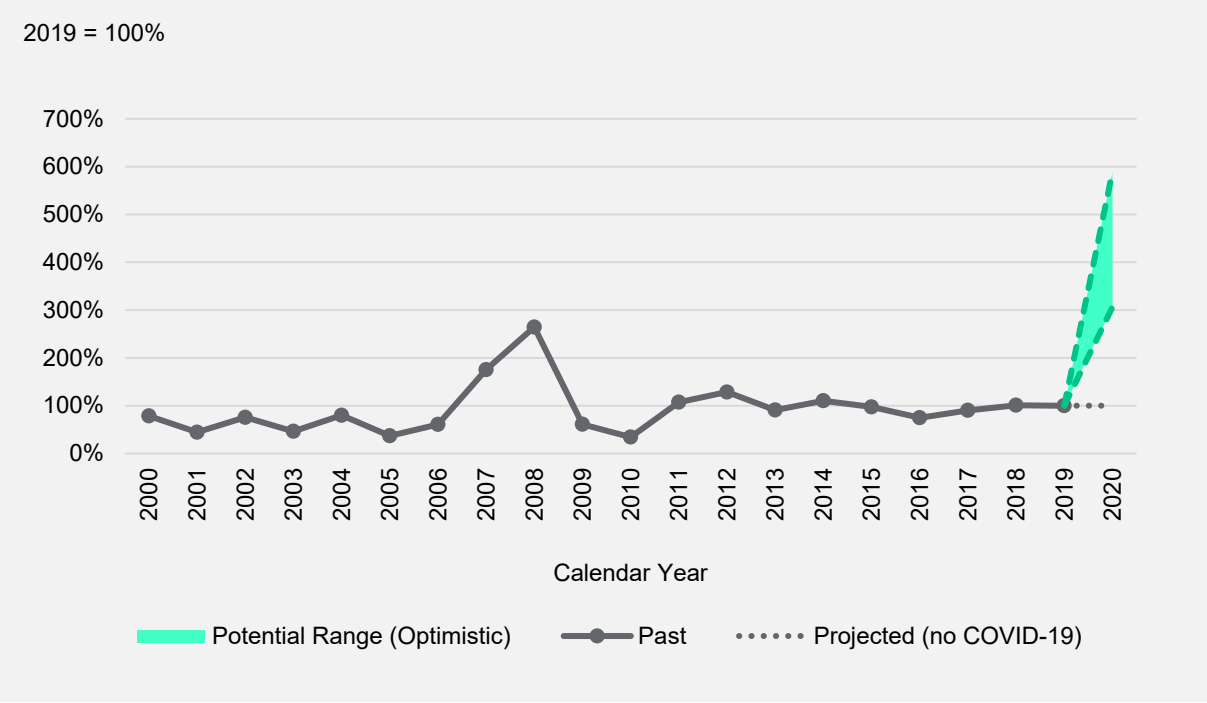


Figure 90. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months.
Impact on businesses and events	▪ The economic disruption results in an 8% to 10% reduction in GDP for 2020 relative to 2019. ▪ The recession results in a higher number of insolvencies and contract failure which subsequently impact insurance losses, around three times the impact of the 2007-2008 Global Financial Crisis.
Impact on 2020 underwriting year premiums	U.S. surety market premiums are expected to decline by roughly 20% under this scenario.
Estimated potential impact on loss ratios	2020 market loss ratios are a factor of 4.5 to 8 times higher than the 2019 equivalent. Assuming Trade Credit market premiums of approximately US$600M-US$700M, this implies market losses of around US$1.6B to US$4.0B based on our internal benchmarks. US surety market loss ratio is expected to be impacted by a 12% increase in frequency, producing an additional US$0.2B increase in losses. The loss ratio for accident year 2020 would increase by five points relative to pre-COVID-19 expectations.

Figure 91. Credit Los Index — London market (Moderate scenario)

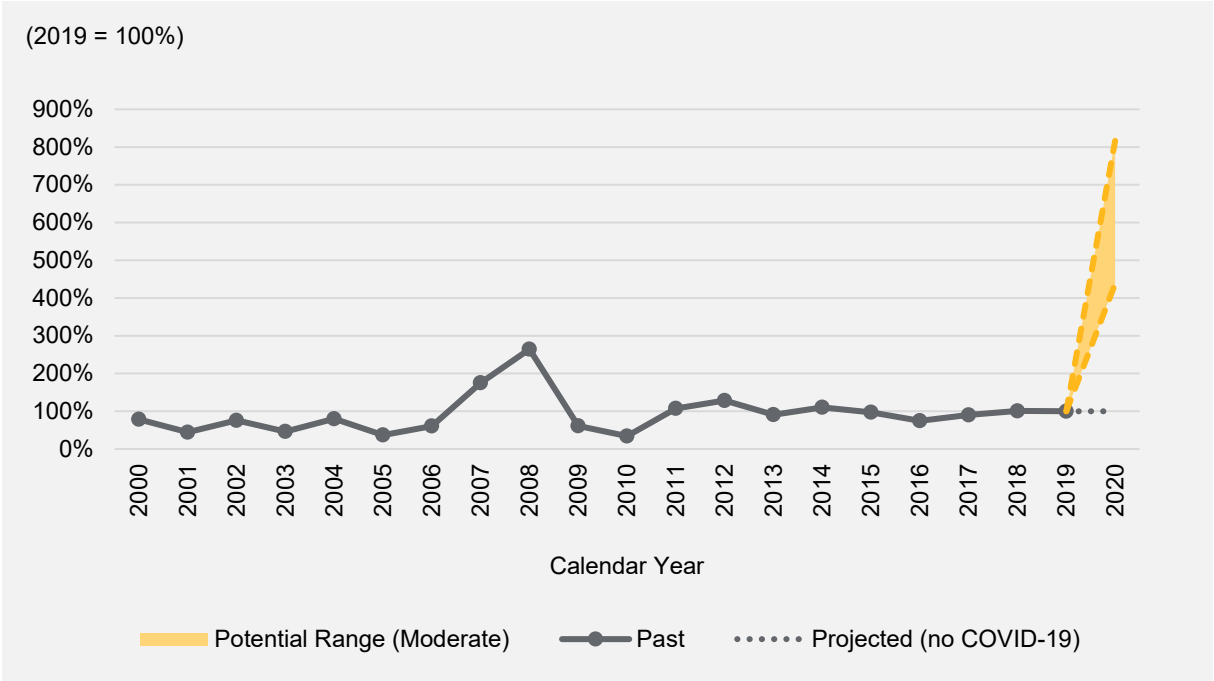
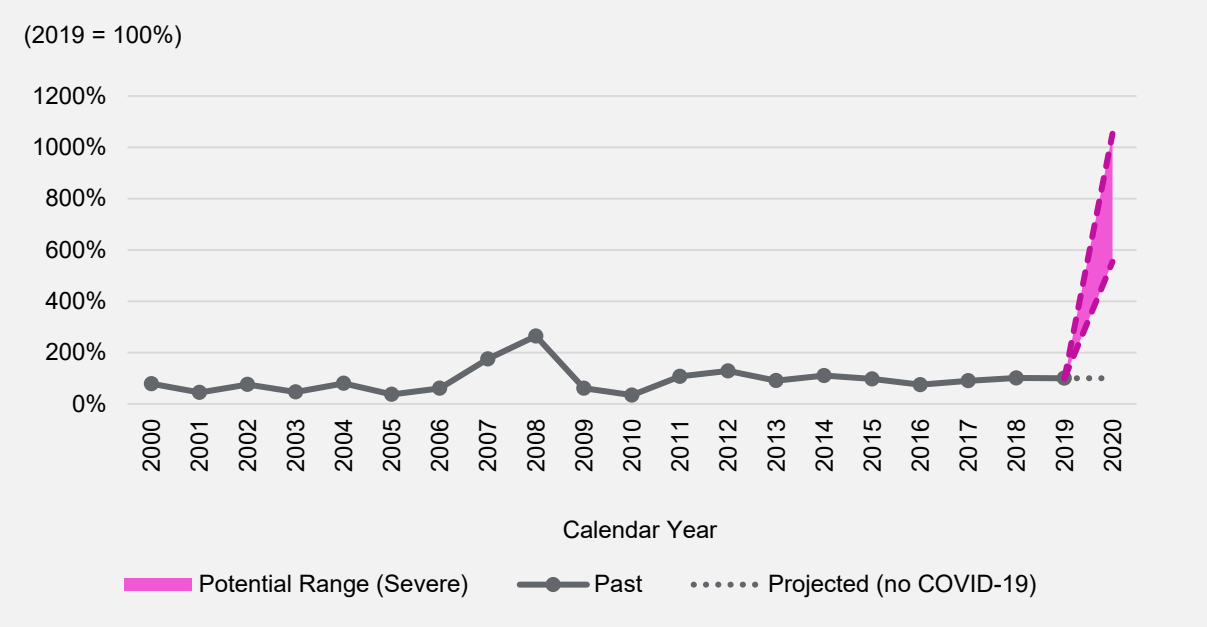


Figure 92. Scenario 3: Severe

Scenario	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months.
Impact on businesses and events	▪ The economic disruption results in a 10% to 12% reduction in GDP for 2020 relative to 2019. ▪ The recession results in a higher number of insolvencies and contract failure which subsequently impact insurance losses, around 4.5 times the impact of the 2007-2008 Global Financial Crisis.
Impact on 2020 underwriting year premiums	US surety market premiums expected to decline by roughly 34% under this scenario.
Estimated potential impact on loss ratios	2020 market loss ratios a factor of 5.5 to 10.5 times higher than the 2019 equivalent. Assuming Trade Credit market premiums of approximately US$600M-US$700M, this implies market losses of around US$2.0B to US$5.2B based on our internal benchmarks. US surety market loss ratio is expected to be impacted by a 50% increase in frequency, producing an additional US$$0.8B increase in losses. The loss ratio for accident year 2020 would increase by 16 points relative to pre-COVID-19 expectations.

Figure 93. Credit Loss Index — London market (Severe scenario)



Future of the line of business

For non-payment risks in general, insurers are being more selective when accepting new risks, and more due diligence is being done and higher levels of approvals are needed on renewals. This is causing some delays. Some insurers are looking for increased pricing, but not all are.

There may be some sort of back-stop put in place by the UK government to enable insurers to keep writing credit business going forward, similar to what has been agreed in Germany.

Property/material damage (MD) including theft

We do not expect widespread impacts on homeowners insurance. People being home more may result in fewer water damage claims as accidental leaks are more likely to be spotted early when people are home; however, frequency could increase due to more wear and tear on the homes, as families spend more time at home that would otherwise have been spent at work and school. Also, use of contractors for repairs and maintenance may be put off because of financial concerns and/or social distancing. This could lead to higher severity outcomes in the future.

The largest impacts will be seen on the commercial property side. This line is exposed to potential business interruption and contingent business interruption losses, as discussed above.

The second impact will be the change in the risk profile of many insured properties, which will essentially change from occupied to vacant properties on a temporary basis. In extreme pandemic and social distancing scenarios, there may be increases in looting and vandalism, especially if law enforcement resources are partially diverted to the health care system.

Workers compensation

Key loss drivers

We expect the COVID-19 pandemic to impact the US workers' compensation industry on the accident year 2020 claim activity, calendar year 2020 premium volume as well as prior accident years claim development.

Figure 94. Impact on workers compensation losses

COVID-19 outcome	Impact on losses
Healthcare workers	■ The direct impacts on workers compensation claims activity are expected to be concentrated in the healthcare industry. Doctors, nurses, and other healthcare workers who contract the disease will likely be covered under workers compensation. In all our pandemic scenarios, healthcare workers will be more exposed to the disease than any other workers, so the incidence rates are expected to be higher than for the general population. ■ Offsetting the cost to the commercial insurance industry are self-insured retentions held by hospitals and facilities. For this exercise, we assume SIRs of around US$500,000, a typical level for the sector. ■ Our estimates of losses for the healthcare industry are based on assumptions about the number of claims and their average cost. The projected number of claims is based on the size of the workforce and infection and outcome rates; average cost assumptions are based on medical expenses for workers who are hospitalised, and spousal/dependent benefits for those who die. ■ The total health-care workforce is 6 million in hospitals and 11 million in other healthcare including ambulatory, nursing and residential care facilities (source: US Bureau of Labor Statistics). The total number of physicians in the US is about 1 million, and the number of registered nurses is about 3 million. Roughly half of the physicians and 60% of the registered nurses and nursing assistants are employed by hospital. We assumed 50% of infected physicians and 60% of infected nurses are subject to hospital's self-insured programs and the remaining are covered by commercial carrier first-dollar workers compensation policies. In addition, we assumed 50% of workers in the health-care industries excluding physicians and nurses have a job responsibility that could contact COVID-19 at workspace such as nursing assistants and medical assistants, while others, such as those in IT and HR, marketing and sales, are unlikely to contact COVID-19. This is based on the number of employment by occupation from US Bureau of Labor Statistics for hospitals, ambulatory health care services, and nursing and residential care facilities. For these workers, we assume 50% subject to hospital self-insured programs. ■ Temporary indemnity and medical treatment costs are unlikely to exceed hospital's retentions for those covered by hospital's self-insured programs. We assumed an average of US$3,000 temporary indemnity and US$35,000 medical treatment costs per claim. Although severe cases could potentially face permanent disability, we expect permanent injuries to be rare. We believe that costlier death claims will be the major cost factor for the insurance industry. Using payroll and workforce age distribution statistics for the sector, our scenarios assume US$1M and US$750,000 death benefits for affected physicians/nurses and other health-care workers, respectively. ■ In addition, workers in hospitals and nursing home facilities could have potential post-traumatic stress disorder (PTSD) due to unreasonable workloads, long hours and poor work/life balances especially in the most pandemic scenario. PTSD cases can be costly workers compensation claims. Our estimates below do not have explicit provision for PTSD claims.

COVID-19 outcome	Impact on losses
Non-healthcare workers	■ For non-health-care workers who become sick, it will be harder to maintain that illnesses arose from the course of employment; however, workers at essential business such as supermarkets and delivery services may have a reasonable basis to make such claims, especially after social distancing takes hold and most of their interactions with other people are in the workplace. In addition, several states have adopted presumption of cause for certain essential workers, in particular first responders, although much of the potential loss for first responders would likely be self-insured. We expect that especially under the most severe pandemic scenario, there will be an increase in workers compensation claims outside of the healthcare industry related to infection from COVID-19.

Indirect effects	COVID-19 may have other (in-direct) effects on workers compensation claims experience.
	■ In some sectors, re-allocation of resources may shift the exposure to injury for the same workers. For example, manufacturing lines being repurposed to the production of hospital equipment, or restaurant workers making deliveries. In addition, workers unfamiliar with the safety protocols related to the new tasks could be more exposed to injuries.
	■ Conversely, the massive increase in the number of people working from home could lead to a reduction in claims for certain classes.
	■ However, as normality returns after a prolonged period of working from home, a spike in claims is possible for workers who are both deconditioned and may have forgotten procedures and loss prevention policies.
	■ Based on history, the economic fallout of COVID-19 is likely to be reflected in workers compensation claims experience. We observe that during the 2008-2009 recession, frequency trend dropped from -2% in 2007 to -4.3% in 2008 and -4.9% in 2009; as recovery started we saw frequency increase of +3.6% in 2010. We attribute these movements in large part to unemployment level trends, with frequency trends decreasing by over 1 point for every 2.5 points increase in unemployment.
	■ Under the ‘Optimistic’ scenario, less significant decreases in frequency due to unemployment (and work-from-home) are expected; we have assumed those to be partially offset by infection claims from non-health-care workers and other increasing frequency drivers such as the reallocation of resources.
	■ For the ‘Moderate’ and ‘Severe’ scenarios, higher unemployment levels would drive larger decreases in frequency. We estimated frequency trend assumptions of -6% and -9% under the ‘Moderate’ and ‘Severe’ scenarios, respectively.
	■ Average costs per claim are expected to increase, at least in the short term, due to the increase in duration of claims caused by factors such as the following:
	  ■ Delays in treatment is expected as the healthcare industry focuses on fighting COVID-19. Non-critical procedures have been generally put on hold until the pandemic crisis passes or at least slows down.
	  ■ Return to work in any capacity could be a challenge for sectors where employment levels collapsed such as hotels, airlines, hospitality, restaurants

COVID-19 outcome	Impact on losses
	and so on. Average indemnity benefits are expected to increase for those states where indemnity benefits cannot be stopped without a return to work. ■ Modified work may not be available for many employers as industries mentioned above are looking to significantly downsize their workforces. ■ The workers compensation adjudication process delayed due to the closure of courts in many jurisdictions. ■ Looking back at the 2008-2009 recession, workers compensation industry indemnity severity trend increased by four points net of wage trend and medical severity trend increased by one point from pre-recession rates, consistent with longer duration of claims. ■ In our projections we have assumed that severity trends would be four to nine points higher than initially expected for 2020 under the three scenarios. ■ Under the four scenarios, indirect effects of COVID-19 would reduce industry losses by US$3B to US$7B from 'business as usual' levels. ■ Our expectation is that open claims will also suffer indirect effects of COVID-19, affecting their outcomes and associated costs, and influencing reserve development: ■ Deterioration in the medical condition of claimants, due to exposure to COVID-19 and/or potential difficulty in access to ongoing care. ■ Increases in mortality in lifetime claims. ■ Increase in duration of claims, as noted above for 2020 claims.

Impact on losses

The potential impact of COVID-19 is highly uncertain. Notwithstanding this uncertainty, we have attempted to quantify the possible impact of COVID-19 on the US market under each of the three scenarios outlined earlier. While these estimates should not be considered as specific predictions, they provide some insight on the potential order of magnitude on losses and loss ratios that could eventuate.

Total commercially insured workers compensation losses for the healthcare industry could fall in the range of US$3B to US$96B under the four scenarios analysed. Partially offsetting these direct COVID-19 losses in healthcare industries are the economic impact on workers compensation frequency. We have broadly assumed that increases arising from potential compensability of non-health-care workers will be offset by a tempered reduction in frequency under our various scenarios. These are summarised below (see Figure 95).

Figure 95. Estimated potential losses (US$B)

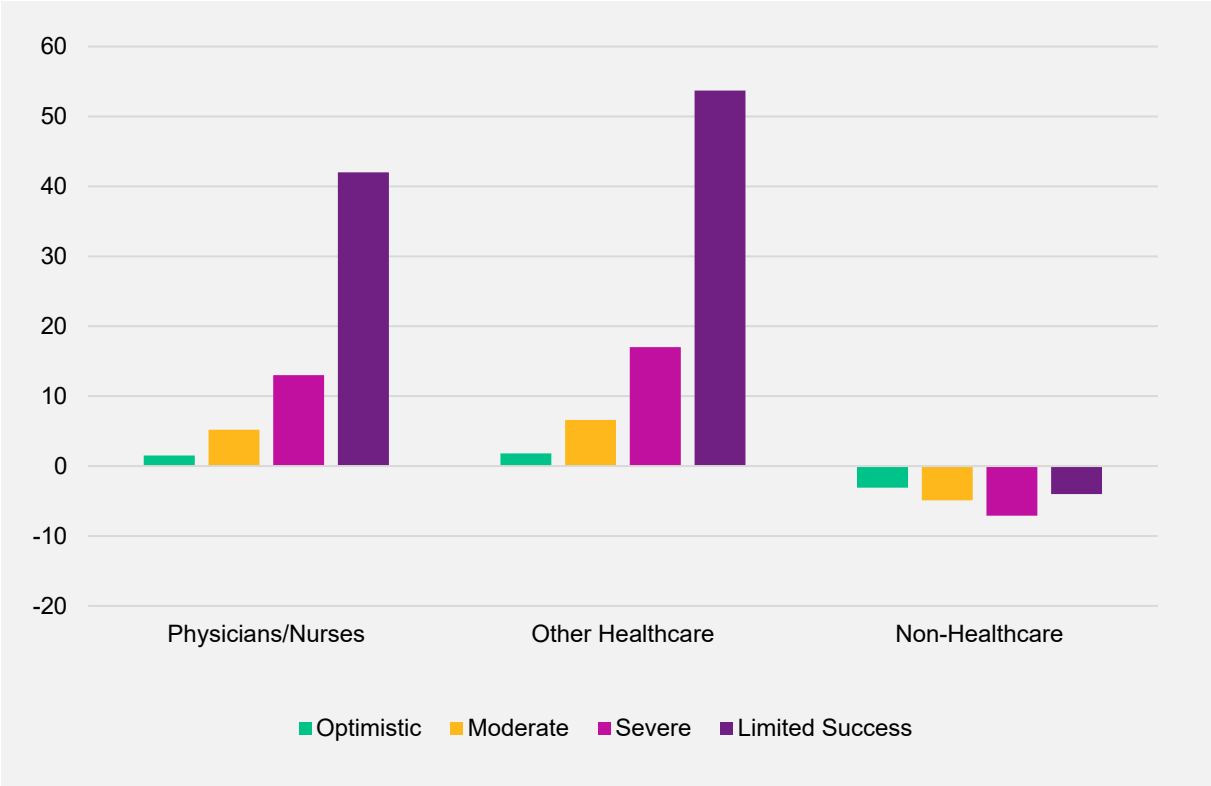


Figure 96. Scenario 1: Optimistic

Scenario description	**Optimistic** – government mitigative actions are highly effective and are able to control COVID-19 within three months; we assume a slow rebound in unemployment starting October 2020.		
Impact on physicians/nurses	■ Infection rate: 7.5% for hospital employed physicians/nurses and 3% for other. ■ Infected workers: 0.2 million. ■ Hospitalisation: 9.5%. ■ Case fatility ratio (CFR): 0.88%. ■ Deaths: 2,000 deaths.		
Impact on other health-care	■ Infection rate: 7.5% for hospital employed other health-care workers and 3% for other. ■ Infected workers: 0.3 million. ■ Hospitalisation: 9.5%. ■ CFR: 0.88%. ■ Deaths: 3,000 deaths.		
Estimated potential losses	Physicians/Nurses: US$1,500M	Other health-care: US$1,800M	Non-health-care: -US$3,100M
Estimated impact on industry trends	Frequency trend: -4%	Severity trend: 7%	Loss cost trend: 3%
Impact on 2020 underwriting year premiums	■ We expect a deep reduction in written premiums in 2020, roughly 12.5%, closely mirroring unemployment assumptions of 15% for 2020, with entertainment, recreation, accommodation and food services most heavily affected.		
Projected payroll change	Health-care: +2.5%	Entertainment, Recreation, Accommodation and Food Services: -60%	All other: -10% to -15%

Figure 97. Scenario 2: Moderate

Scenario description	**Moderate** – government mitigative actions are moderately effective and are able to gradually control COVID-19 within six months; we assume a slower rebound in unemployment is assumed to start in November 2020.		
Impact on physicians/nurses	■ Infection rate: 20% for hospital employed physicians/nurses and 12.5% for other; ■ Infected workers:0.7 million ■ Hospitalisation: 9.5%. ■ CFR: 0.88%. ■ Deaths: 6,000.		
Impact on other healthcare	■ Infection rate: 20% for hospital employed other healthcare workers and 12.5% for other. ■ Infected workers:1.1 million. ■ Hospitalisation 9.5%. ■ CFR 0.88%. ■ Death: 9,300.		
Estimated potential losses	Physicians/Nurses: US$5,200M	Other health-care: US$6,600M	Non-health-care: -US$4,900M
Estimated impact on industry trends	Frequency trend: -6%	Severity trend: 9%	Lost cost trend: 2%
Impact on 2020 underwriting year premiums	■ We expect a deep reduction in written premiums in 2020, roughly 18%, closely mirroring unemployment assumptions of 20% for 2020, with entertainment, recreation, accommodation and food services most heavily affected.		
Projected payroll change	Health-care: 0%	Entertainment, Recreation, Accommodation and Food Services: -60% to -65%	All other: -15% to -20%

Figure 98. Scenario 3: Severe

Scenario description	**Severe** – government mitigative actions are able to slowly control COVID-19 over the next 12 months, unemployment rate of 25% in 2020 with the economic slowdown expected to continue through 2021.		
Impact on physicians/nurses	■ Infection rate: 45% for hospital employed physicians/nurses and 30% for other. ■ Infected workers: 1.6 million. ■ Hospitalisation: 9.5%. ■ CFR: 0.88%. ■ Deaths: 14,000.		
Impact on other healthcare	■ Infection rate: 45% for hospital employed other healthcare workers and 35% for other. ■ Infected workers: 1.1 million. ■ Hospitalisation: 9.5%. ■ CFR: 0.88%. ■ Deaths: 23,000.		
Estimated potential losses	Physicians/Nurses: US$13,000M	Other health-care: US$17,000M	Non-health-care: -US$7,100M
Estimated impact on industry trends	Frequency trend: -9%	Severity trend: 11%	Lost cost trend: 1%
Impact on 2020 underwriting year premiums	■ We expect a deep reduction in written premiums in 2020, roughly 25%, closely mirroring unemployment assumptions of 25% for 2020, with entertainment, recreation, accommodation and food services most heavily affected.		
Projected payroll change	Health-care: -1.5%	Entertainment, Recreation, Accommodation and Food Services: -70%	All other: -17.5% to -22.5%

Figure 99. Scenario 4: Limited Success

Scenario description	**Limited Success** – strong mitigative actions by governments for three months with some success, but controls are lifted afterwards due to their catastrophic economic impact and the virus continues to spread uncontrollably; unemployment rate reaches 20% and then declines rapidly after 6 months but does not reach the previous level for many years.		
Impact on physicians/nurses	■ Infection rate: 75%. ■ Infected workers: 3.0 million. ■ Hospitalisation: 9.5%. ■ CFR: 1.64%. ■ Deaths: 49,000.		
Impact on other healthcare	■ Infection rate: 75%. ■ Infected workers: 4.9 million. ■ Hospitalisation: 9.5%. ■ CFR: 1.64%. ■ Deaths: 80,000.		
Estimated potential losses	Physicians/Nurses: US$42,200M	Other health-care: US$53,700M	Non-health-care: -US$4,000M
Estimated impact on industry trends	Frequency trend: -5%	Severity trend: 8%	Loss cost trend: 2%
Impact on 2020 underwriting year premiums	■ We expect a deep reduction in written premiums in 2020, roughly 15%, between the Optimistic and Moderate scenarios.		
Projected payroll change	Between the ‘Optimistic’ and ‘Moderate’ scenarios for: healthcare; entertainment, recreation, accommodation and food services; and all other.		

Future of the line of business

Under the scenarios above, hospitals with self-insured workers compensation programs could face significant aggregation risk which may change how hospitals structure their excess insurance programs (eg purchasing workers compensation pandemic catastrophe coverage) to transfer the risk. Primary carriers may seek similar changes to their reinsurance structure as well, depending on how losses aggregate under workers compensation catastrophe reinsurance treaties.

Section 4: Insights from UK life insurance

Introduction

Life insurers have been hit particularly hard by the pandemic, given both their obvious exposure to mortality risk and the savings nature of much life business. This asset-side balance sheet vulnerability to market risk has so far hurt many life insurers more than the liability-side impact from increased claims, even more so where insurers have had well-thought-out reinsurance programs.

Life insurers have also experienced largely identical operational challenges to those faced by P&C insurers, with the problems of moving large workforces to home-working in a 'cyber-secure' way, particularly for customer-facing staff, and dealing with new requests by Boards and regulators for (at least) weekly solvency updates.

Other aspects of the pandemic are peculiar to the life sector: for instance, the demographic effect of the pandemic having a non-adverse effect for annuity portfolios. Insurers have also had to consider changes to their underwriting procedures, to guard against anti-selection, or to ensure (via clarity around policy exclusions) they do not fall foul of conduct rules.

Having noted some of those wider aspects, this section focuses on the biometric risk aspect only of the pandemic for life insurers. Given the international scope of this paper, we have also striven to avoid comments that may not apply in some territories (for instance, regarding selective lapsation).

Impacts by type of business

We consider the broad impacts of the pandemic on life insurance business, subdividing into the categories of:

- Protection business
- Annuity business

For each of these, we consider the direct demographic impacts and the likely impacts on mortality assumptions (both base and improvements). Where we use the term 'end-year assumptions', this is more a convenient short hand for 'assumptions after the crisis is largely over', but some of the points should also be considered for assumption setting for 30 June 2020 financial reporting.

We have also assumed that we do not see annual (or other frequent) repeat waves of similar, coronavirus-related pandemics.

Given the biometric focus of this section, we do not provide any detailed comments on savings business impacts. Given the common age range generally shared with protection business in most markets, the effect on numbers of claims will be similar but obviously the 'sums at risk' will be an order of magnitude (or more) lower.

Overview of the COVID-19 mortality impact by risk factor

One of the earliest insights from the initial Chinese experience, which has since been found in every other country with sufficient data in respect of COVID-19 deaths, is that the case fatality ratio (CFR) increases steeply with age, and is also much higher for men than for women.

Figure 100 shows taking recent Italian COVID-19 mortality statistics (as at 23 April 2020) express relative to a 'reference group' of females aged 60 to 69.

Figure 100. COVID-19 mortality statistics, Italy (as at 23 April 2020)

	Male	Female
0-49	0.2	0.04
50-59	0.7	0.2
60-69	2.1	*1.0 (reference group)*
70-79	5.1	2.9
80-89	7.1	3.7
90-99	7.1	3.6

Although the effect of age and gender is clearly strong, it is interesting to note that, if we were to offset the normal 'all-cause' mortality effects of age and gender, the above relationships not only change materially but to some extent reverse.

There is also an association between COVID-19 mortality and particular medical conditions and risk factors, in particular:

- Diabetes
- Obesity
- Respiratory disease history

In general, anything that weakens the immune system is a risk factor in this context. It should be noted that, owing to lack of sufficient data volumes and the short 'history' of the pandemic so far, little analysis has been done that allows for disaggregation of the disease (or risk factor) prevalence of COVID-19 patients or deaths from the age and gender effects.

COVID-19 is largely a killer of the older age bands, as seen in Figure 100, and in these age bands we would normally expect people to have several existing medical conditions, especially hypertension (where the one multivariate study on COVID-19 morbidity and mortality published so far, using New York data, shows no significant effect from hypertension separate from the age effect).

Smoking, although we would intuitively expect it to be a materially high-risk behaviour in this context, does not show an adverse effect from data available so far.

The fact that COVID-19 has a disproportionate impact on diabetics and the obese (allowing for the age-confounding point noted above) means that, given the greater preponderance of such conditions in the ‘blue collar’ end of the socio-economic spectrum, there is a degree of socio-economic differentiation in mortality from COVID-19. This is in addition to a likely socio-economic bias relating to infection prevalence in the ‘pre-pensioner’ age bands, whereby many white-collar workers have been able to work from home since March, while this has not been possible for many blue-collar workers. Overall, this means that the mortality impact of COVID-19 on life insurers’ portfolios will be lower than the overall population impact.

Socio-economic profile is only just starting to be considered in reported statistics. For instance, in the UK, the primary source of detailed data on COVID-19 morbidity and mortality is the Intensive Care National Audit and Research Centre, and its reporting now splits data into five groups according to the ‘Index of Multiple Deprivation’. This shows some bias in hospitalisation towards the more deprived end of the groups, although that bias does not appear inconsistent with the existing ‘obesity bias’ in hospitalisation numbers for COVID-19.

Protection business

Figure 101. Impact on the protection business

COVID-19 outcome	Impact
Direct impact	■ There will be a material increase in claims, likely to be of the order of +0.1% (absolute, not relative) for our mild/severe scenarios to +1.0% (extreme scenarios) for term protection books, and of the order of 5-10x greater for whole of life business. ■ The product class most affected is likely to be 'whole of life' business, which in some markets involves large numbers of policyholders in the 50-70 age range. ■ The impact of the extra claims on insurers will depend, of course, on their reinsurance arrangements.
End year assumptions	■ To the extent that the policyholders who die from COVID-19 are of below-average health (eg diabetics, the obese), the 'base mortality' of the surviving group will be lower. We would expect this effect to be borderline material. ■ To the extent that any extra lapses caused by economic hardship are in respect of less affluent, and so higher-mortality, policyholders, the base mortality of the surviving group will be lower. We would expect this effect to be material in many markets. ■ The impact on mortality improvement assumptions is hard to gauge, but some of the main effects (economic shock leading to reduced healthcare spending, reallocation of healthcare spending away from non-infectious causes of death, mental health problems and associated suicides) all look likely to reduce improvements; however, we would expect many insurers to make little change to their assumptions given the difficulty of quantifying these impacts.

Annuity business

Figure 102. Impact on annuity business

COVID-19 outcome	Impact
Direct impact	■ There will be a material increase in the number of deaths, leading to a direct release of reserves. This release is likely to be of the order of -0.5% to -1.0% for our mild/severe scenarios to -5% for the extreme scenarios.
End year assumptions	■ To the extent that the policyholders who die from COVID-19 are of below-average health (eg diabetics, the obese), the 'base mortality' of the surviving group will be lower. We would expect this effect to be borderline material for normal annuity portfolios, more material for impaired life annuity portfolios. ■ Regarding mortality improvement assumptions, there are a number of competing 'positive' and 'negative' rationales for whether improvements will be higher or lower. Overall, the economic impact of the current crisis (leading to reduced healthcare expenditure), the reallocation of medical care and attention away from normal causes of death, and the slight lightening of base mortality (reducing the scope for future improvements) will probably outweigh the positive arguments, and the outlook for improvements is a slight decrease; however, we expect many firms will leave their assumptions unchanged, given the difficulty of quantifying many of these aspects, and the lack of linkage in their existing assumptions to factors such as health expenditure.

Finally, we should note that the comments above regarding likely 'base mortality' impacts for survivors are based on objective, 'knowable' data only (albeit even that is subject to revision, as more and more becomes known about COVID-19 and more data are published); however, there is a possible (and completely plausible) impact analogous to that found in the aftermath of the Spanish flu, whereby the physiology of 'severe symptoms' survivors had been adversely affected by the virus. To the extent that COVID-19 results in a similar effect, mortality of the hospitalised survivors would be expected to be higher, although this may be a very long-term effect (and perhaps better represented by way of an adverse adjustment to improvements).

Section 5: Industry impacts

The cumulative impact by class translates into a substantial aggregate impact across the industry, which is already looking like it could substantially exceed the World Trade Centre losses. A good portion of these losses will most probably be considered to have been unintended, arising from broad wordings in smaller commercial policies. It will also beg a question however as to the full extent this should be transferred into the industry, which after all exists to provide continuity for just this type of event.

This section seeks to set out a number of key questions:

- Should the industry be expanding its models and coverages to accept a greater transfer of risk in the future?
- Can the industry rely on its current contracts to protect itself as governments assert the role of society to draw on (what is perceived as) a legitimate expectation to draw on those contracts? (Which are more often silent on coverage rather than specifically excluding or including, and then in a limited fashion).
- What will be the likely impact of the pandemic on insurers' solvency and profitability in the medium term?
- Will any particular insurers, unintentionally or otherwise, take on additional reputational risk based on their conduct in this pandemic, and to what extent will the industry as a whole take on reputational risk, either in not adequately returning premiums to reflect reduced exposure or being seen as avoiding paying claims unfairly?
- How will behaviours change, both as they impact on risk as well as buying behaviours?

In the rest of this section, we provide some initial thoughts on the questions posed to promote future discussions; however, the views expressed are based on an initial thought process at a time when the full extent of the impact of the coronavirus outbreak is not well understood. Our views, along with those of the industry, will change over time as different participants in the insurance market start to grapple with and understand the issues caused by such an event. These are big and challenging issues of fundamental importance to the insurance industry and are only likely to be debated fully once the immediate crisis is over.

Reputational risk and contract wording

This pandemic has opened insurers up to higher levels of reputational risk than they would normally be subject to. Businesses around the world have been asking whether their insurance policies provide cover for coronavirus related losses and both businesses and individuals have looked to their insurers to adjust policy terms and conditions given the sudden change in exposure since the start of the pandemic. Both open insurers up to significant reputational risk.

When deciding whether to accept claims or adjustments to terms and conditions insurers need (and indeed are doing so in large numbers) to assess the reputational damage to their brand that may be caused by strictly enforcing policy terms and conditions and aggressively refuting liability.

Insurers will need to develop a short-term policy for dealing with highly distressed businesses. This could involve allowing companies operating in particularly badly affected industries, such as hospitality and leisure, longer premium payment terms or allowing customers to pause parts of their coverage and receive a proportion of their premium back, or even expediting a proportion of claims payments.

The industry may start to adopt standard policy wording in respect of pandemics clearly stating what is included and excluded from coverage. As the effects of a global pandemic slowly become more understood policy wordings can evolve, for example distinguishing between losses sustained as a direct result of the health implications of the pandemic versus government mitigative actions.

This also gives the industry a chance to think about how policy terms and conditions would react in other unforeseen black swan events that may pose as much, if not more of a risk to the industry than the current COVID-19 pandemic. One such event could be a severe geomagnetic storm caused by a solar storm on the sun's surface. A 2013 paper produced by Lloyd's of London in collaboration with the Atmospheric and Environmental Research suggested that the total economic cost of such a similar magnitude to the Carrington Event of 1859 could be between US$0.6T and US$2T to the US economy alone[1]. Whilst we aren't suggesting that this risk in particular should be explicitly stated in policy wordings it highlights the potential magnitude of other such events.

Claims liability

What claims are accepted will depend on both parties' interpretation of the wording of an insurance contract. This has however uncovered the vast range of wording that is in place, and some of it may be open to interpretation. While insurers generally did not intend to provide coverage for such events when writing the policies, they may find themselves liable for some losses due to imprecise policy wordings, or a court's interpretation of the wording. The Financial Conduct Authority (FCA) guidance to UK insurers has been clear that whilst there is no expectation to pay out where pandemics are clearly excluded, insurers should settle quickly and efficiently.

In the short term, disputes over contract wording are likely to result in increased legal activity between insureds and insurers as liability decisions are challenged. There have already been a number of articles in the media discussing the stance of insurers on COVID-19 payouts for business interruption, and of some legal cases that have arisen in both the US and UK; however, in contrast to the World Trade Centre loss, there are signed contractual terms and conditions in place.

Adjustments to policy terms and conditions

Adjustments to contract terms and conditions will usually be enacted at the discretion of the insurer and in this respect potentially open up an insurer to more reputational risk than refuting claims. Whilst an insured may reluctantly accept that its policy does not cover the current situation, it may be expecting some leniency from its insurer with respect to terms and conditions governing future exposures in these times of economic distress. There are a growing number of stories of insurers waiving terms and conditions on insurance contracts, such as vacant property clauses on commercial property contracts. Once one insurer waives part of its policies, others in the market may feel compelled to follow suit.

1 https://www.lloyds.com/news-and-risk-insight/risk-reports/library/natural-environment/solar-storm

It is also important for insurers to quantify how much discretionary changes in terms and conditions, or even in some examples, premium amounts, will impact short-term profitability and compare this to the intangible long-term value derived from customer goodwill and increased loyalty.

This may be more important for personal lines insurers as public opinion can be dictated strongly by press stories and in more mature markets it is very easy for a policyholder to move to a different insurer at the end of their contract.

Changes to future policy wordings

It is always a challenge to write contracts that are unambiguous in 'black swan' events; these are by definition unexpected and impossible to predict (although whilst a pandemic is not such an event, the social distancing imposed by governments perhaps arguably could be).; however, each significant event provides an opportunity for contract wording to be tightened, for example, we saw the tightening of wording around infectious diseases after the previous SARS outbreak in 2003.

Insurers have already started to improve the clarity of contract wordings for a number of classes in the most recent renewals to ensure that pandemics and coronavirus related losses are explicitly included or excluded. We expect this to continue in the future as insurers seek to ensure contracts only cover losses that they have considered when pricing the policy.

For those insurers that tighten their policy wording to more explicitly exclude pandemic losses, will this create negative customer feelings, given that the largest challenging facing almost every industry is currently the coronavirus?

What losses should the insurance industry cover?

This pandemic will force the insurance industry to consider what risks it should be accepting and providing coverage for. Whilst this is not necessarily an immediate concern it will nonetheless become an important consideration.

Insurance involves the pooling of fortuitous risks such that a large loss to an individual (person or business) can be shared amongst a larger group; this fundamental principle underpins all insurance products.

The coronavirus outbreak has resulted in significant and systemic losses across the world. Many businesses have been closed and major events cancelled as governments implement social distancing approaches to control the spread of the disease. This raises questions on what the specific role of the insurance industry should be in such events:

- Widespread systemic losses cannot be pooled and shared; therefore, it is questionable whether they are insurable.
- Should coverage for systemic risks of this magnitude be the responsibility of governments? An example of this is when the Terrorism Risk Insurance Act was established in the US after the September 11 attacks in 2001.

- If the insurance industry is to provide coverage, then it must charge a reasonable price. This may not be affordable for many, which may lead to underinsurance, which does not solve the need for coverage, and many insureds may be unwilling to pay for pandemic coverage given governmental responses across the globe. Governments have effectively acted as an 'insurer of last resort' negating the need for many to have purchased insurance.

- The insurance industry has a wealth of expertise in understanding, mitigating and managing risk. This expertise is valuable regardless of the extent to which the insurance industry provides the financial coverage.

Governmental response

Governments have taken on the role of 'insurer of last resort'. For example, the US has already announced a stimulus package to counter the economic impacts of coronavirus valued at over US$2T, which far exceeds the expected impact to the insurance industry. It is therefore natural that policymakers will take on a key role in fashioning the debate into the future of the insurance industry.

Therefore, it is essential that the industry takes on a clear and unified position on the future of the insurance market. The industry is far more likely to be able to influence this if it is from a position on how this risk can be transferred in the future as governments look to mitigate their own risk.

Whilst it is still too early to speculate with any certainty about future courses of action, one potential avenue that governments may explore is setting up some kind of risk pool. The debate on an equivalent to the Terrorism Risk Insurance Act (TRIA) in the US is an interesting idea that uncovers some of the issues faced by regulators, governments and insurers in any future actions. If the TRIA model was copied exactly, it would essentially create a central, government-backed reinsurer for pandemic risk. There are potentially a number of benefits to this approach:

- It encourages insurers to include pandemic risk coverage, either as part of standard insurance contracts such as BI and contingency or as a new standalone class type with similar terms and conditions as other non-pandemic contracts.

- No upfront contributions are required by insurers; rather, they would levy a charge on commercial insurance contracts written after the next pandemic.

However, there are also uncertainties involved with this approach:

- TRIA caps payments by the insurance industry at a US$100B market loss, which is small in comparison with the financial assistance programmes enacted by the US government in response to the coronavirus outbreak. What appetite is there in the industry to increase this cap, and what should it be increased to?

- TRIA is subject to political wrangling every time it has to be renegotiated and therefore does not provide long-term certainty for insurers.

- It is not compulsory for insurers to participate in the TRIA programme; hence if the proposed pandemic equivalent did not meet with the insurance industry's approval insurers would not partake.

In the UK the insurance industry has already started discussions with Pool Re, the UK government-backed terrorism reinsurance pooling arrangement to provide pandemic cover. Similarly, the French government has setup a working group to investigate how insurance for black swan events can be provided in the future. This highlights how governments are looking to the insurance industry to help provide both expertise in this difficult circumstance as well as future risk transfer mechanisms.

There is an emerging trend of how governments are intervening, either by working collaboratively with the industry or by imposing new orders, to ensure that the policies respond in a manner not envisaged/modelled by insurers (such as whether government advice to close business is sufficient to qualify as a trigger event for BI policies with a pandemic cover in the UK), or to limit how certain terms can be imposed (such as the suspension of cancellation clauses in the US). This means that insurers can now quantify and model governmental intervention into their exposures, which will no doubt lead them to consider how to manage exposures and reserving in the future, with a downstream impact for insureds in exposure/pricing and an upstream impact for reinsurers as they seek to offload the risk.

This pandemic also points to a societal shift that can be quantified - that as a society we are willing to accept economic sacrifices in order to preserve lives. As this current crisis develops the reaction of society as well as the businesses that operate within it will evolve, and the sentiment may develop as the costs are absorbed and paid back. In the meantime (re)insurers should look at their businesses and exposures with this new information, and start to reassess their underlying risk and risk mitigation activities.

Given the large amounts of money governments have spent on combatting both the health and economic impacts of the coronavirus outbreak, they may look to transfer some of that risk to companies themselves and by consequence the insurance industry, or alternatively directly transfer the risk to the insurance industry.

This could take on the form of compulsory insurance provisions such as business interruption, and it may be implemented in conjunction with state-backed reinsurance or pooling arrangements for insurers.

An opportunity for parametric insurance?

The insurance coverage of financial losses from the coronavirus outbreak have highlighted that there can often be misalignment between:

- The coverage that individuals and businesses would like
- The coverage provided in insurance policies as per the contract wording
- The coverage that insurers were/are willing to provide.

There are a range of reasons for this misalignment, for example difficulty in distinguishing the impact of the virus itself versus the impact of the government mitigative actions and which of these is covered by an insurance policy or business not fully understanding the impact of such a situation and its likelihood of occurrence. Regardless of the reason, these misalignments are undesirable and result in financial hardship for individuals or insurers, or reputational damage to the industry.

Parametric insurance is insurance where the claim payout (both the trigger itself and the amount paid) is based on a clearly defined objective measure. For example, a parametric crop insurance product to protect farmers from a poor season of harvest could have the payout dependent on rainfall over the year in a particular geographical region. The coronavirus outbreak has highlighted several advantages of parametric insurance products:

- This outbreak has highlighted that pandemics can cause worldwide losses. Parametric solutions allow insurers to split this risk up into smaller amounts as even in seemingly well-diversified books of business accumulations can still occur.
- The objectivity of the claim payout should significantly reduce the need for investigations and disputes to determine liability correctly. This will therefore help reduce legal and administrative costs.
- Both insured and insurer will have a clear understanding of exactly what coverage is provided, removing the risk that the insured thought it had coverage for an event that was excluded in its contract.
- Insureds can purchase as much protection as they require in a transparent manner, rather than the risk being completely uninsurable.

We therefore think there is an opportunity for appropriate parametric insurance products to be developed and meet these needs of individuals and businesses. However, there are also challenges that need to be overcome, including:

- Parametric insurance products need to be well defined so that the metric is sufficiently aligned with the underlying loss that the insured is seeking coverage for, so as to ensure that risk is genuinely transferred to the insurer.
- The premium charged for pandemic parametric insurance needs to reflect the risk transferred to the insurer however, there are few historical data points on which to price these contracts, and probabilistic pandemic modelling for insurance is not yet well established in the market.

Broader risk coverage in the future

The impact of the coronavirus outbreak and the associated government mitigative actions was a black swan event that society did not expect, and insurance products were not designed for; however, the increased awareness of the risks and losses associated with a global pandemic provide an opportunity for insurers to design new products so that in future, these risks are managed and coverage is provided. The challenge is that the outbreak is a worldwide event; there is no geographic diversification of risk possible. A workable solution will have to be thoughtfully conceived and could foreseeably include insurance market and capital market components with a government backstop. An example of this is the growth of terrorism insurance after the September 11 attacks in 2001, whereby people became more aware of the risk of a terrorism act and therefore sought to purchase adequate cover.

We expect that these issues will be contemplated in more detail in the aftermath of the coronavirus outbreak, when the more pressing issues have been dealt with.

Medium term profitability and solvency

Whilst the industry's capital base has been impacted by loses to insurers' investments, we are not expecting the pandemic to provide any immediate solvency issues for most P&C insurers; however, there are a number of concerns that we think insurers need to consider.

This pandemic has affected almost every risk type to an insurers' balance sheet including insurance, market, operational, credit, currency and liquidity risk. These impacts have been felt almost concurrently and have affected almost all lines of business to varying extents. Assets that have typically provided diversification such as equities and fixed income have seen a fall in value alongside the insurance risk impact.

One of the key principles of the insurance industry is being able to take on a wide range of diversified risks. Historically insurers have been able to gain diversification from major loss events by writing business globally; however, the coronavirus outbreak has affected almost every country across the globe. Additionally, there is expected to be loss activity on a number of classes that wouldn't ordinarily be expected to be strongly correlated, for example, property (including business interruption) and directors & officers.

The likely premium reduction linked to an economic downturn and the social distancing measures implemented by governments may lead to an increase in volatility in insurance results. These reduced premiums may also cause an increase in expense ratios with pressure from fixed/semi-fixed expenses.

However, this pandemic may speed up the introduction of technology into the market, which has historically been slow to implement new technology and struggled to reduce expenses. For example, Lloyd's of London has closed its Underwriting Room during the pandemic, instead moving risk placement online. It remains to be seen though, how many of the interim measures taken during the pandemic remain in place when working patterns return to normal.

Balance sheet and capital considerations

The coronavirus outbreak will undoubtedly impact (re)insurers' capital and solvency positions. In Europe, the European Insurance and Occupational Pensions Authority has declared the current situation to be a "Major Development" as defined in the Solvency II directive, which requires firms to take action to assess the impact of the pandemic on their solvency position.

There are certain actions that we think insurers would want to take immediately, including:

- Understand the current balance sheet position and solvency coverage ratio and their likely direction of travel in the near to medium term,
- Estimate the impact of the pandemic on best estimate insurance profits, including allowing for potentially reduced premium volumes compared with plan and losses from the pandemic itself,
- Revisit the business plan, with the help of scenario testing. The scenarios set out in Sections 2 and 3 of this report could be used to aid the thought process on how the pandemic will impact different parts of an insurer's business (for example future premium volumes, claims, reinsurance

purchases, reserving, fixed expenses, investment returns and so on). Different best-estimate scenarios can be run through the capital model to help identify risk management strategies.

Then we suggest that other actions such as a full recalibration of the model, updated correlations and model parameters should wait until the situation becomes clearer.

As the situation becomes clearer it will be important to perform a best-estimate reserve review. Given the materiality of policy wordings to an insurer's liability, it will be key for the underwriting and actuarial teams to work closely to assess the likely impact of the coronavirus on claim amounts.

For a more in-depth discussion of the capital considerations that a (re)insurer should consider, we refer the reader to the Willis Towers Watson article 'COVID-19 puts onus on insurers to re-evaluate capital and business plans' published on 30 March 2020 available here: https://www.willistowerswatson.com/en-GB/Insights/2020/03/covid-19-puts-onus-on-insurers-to-re-evaluate-capital-and-business-plans

Reserve impacts

It will be important for insurers to continue to perform robust best estimate reserve reviews for their whole business. In addition to the losses arising directly from the health impacts of the coronavirus outbreak – and the measures put in place to control the spread of the virus – there will be a number of impacts on the usual process used to estimate an insurer's overall reserves. Significant additional considerations are therefore required when assessing the total reserves on an insurer's balance sheet – including for those classes not directly impacted by losses arising from the COVID-19 pandemic.

The data used to support the reserving process is likely to be distorted compared with the 'usual' data for a number of different reasons, and adjustments will therefore need to be made to reflect these changes in the data. Without investigating and adjusting for these changes, any reserve assessment is likely to be flawed and misleading.

Such distortions in the data may have arisen due to delays in the claim notification process as a result of the measures put in place to slow down the spread of the virus. Some of the delays will be outside the control of the insurer while others may depend on how quickly the insurer has been able to successfully adapt to working remotely. There may be delays in the settlement of claims due to slowdowns in the tort system; however, the desire of plaintiffs to accept settlements may increase given changes in the economic environment. In addition, there may more complexity in the claims resolution process due to legal challenges to liability and policy wordings. Claimants and claimant lawyers may also lack sufficient resources and bandwidth to settle claims, even those not related to the COVID-19 pandemic in normal timeframes. The net effect of these impacts will be very difficult to quantify. Detailed analysis at a granular level is likely to be required to quantify the overall impact of delays in the claim notification process. Benchmarks are likely to be useful for some insurers where detailed analysis is not feasible.

The impact of social distancing on the claims adjusting process is an evolving topic with uncertain consequences. More claims are being adjusted remotely based on mobile phone photographs rather than in-person inspections.

For the existing pool of workers compensation and bodily injury claimants (those who were injured before the coronavirus update), there is the potential for deterioration due to more difficulty in accessing ongoing care.

In addition to distorted claims data, the premium data and expected loss ratios are also likely to be impacted indirectly by the effects of the COVID-19 pandemic. Premium income may be lower due to reduced exposures, cancellations or premium rebates being made (or required to be made) to policyholders. The pattern of premium writing during the year is also likely to be affected.

Aside from the direct impact on loss ratios due to changes in premium, there may also be a number of secondary impacts on expected loss ratios — both positive and negative. For example, supply chain issues and/or an excess of demand once the pandemic is largely over could result in increasing claim costs in some classes. The anticipated recessionary impacts are also likely to impact loss ratios — as has been seen in previous recessions. In the shorter term, discretionary changes to policy terms and conditions as a result of the pandemic — such as the removal of vacant property exclusions on commercial property insurance policies — may impact loss ratios.

The overall reserving process is likely to be heavily impacted by the pandemic and will result in significant additional uncertainty in the balance sheet of insurers — beyond the uncertainty purely driven by the losses arising directly from COVID-19. Reserves under alternative scenarios — for example, if different assumptions are made around the distortions to the data or the impact of certain aspects on loss ratios — should therefore be produced and socialised with the management team early. This is likely to include alternative scenarios on reinsurance recoveries where these may be subject to some interpretation.

Considering the impacts on the reserving process early should enable insurers to fully understand all of the possible implications and undertake the analysis needed to support reserving in these unprecedented times.

The role of portfolio management

Portfolio management is an area of increasing focus, where top quartile organisations manage their portfolios by engaging in forward-looking management, not just backwards as is often typical. The benefits are reduced churn, faster and more agile reaction on rate, as well as a smoother trend line on lapsed business. It brings together all the various functions of an insurance business and harnesses the wider availability of good-quality data.

Events such as this reinforce the need for effective portfolio management, which has been the subject of a recent item of thought leadership between Willis Towers Watson and Lloyd's of London. We have identified that outperforming organisations excel in three areas:

a They quickly create dynamic views of their portfolios where the book can be sub-divided into groupings of risk and where the same risk may be present in several different portfolios. The ability to quickly isolate which parts of the portfolio is impacted by an event will mark out who is then able to communicate confidently to their clients, distributors, reinsurers and investors.

b They have operational processes in place that mean they can detect issues quickly and can then convene the right people across the business to put in place a plan of action.

c They can stress test their book via impact analysis and scenario modelling, which can be used to iterate the response plan. Part of this is being able to incorporate probabilistic modelling, such as the WTW pandemic model described in Section 2.

If you would like more information on portfolio management, please visit our website:
https://www.willistowerswatson.com/en-GB/Solutions/services/insurance-portfolio-management

Suggested immediate focus areas for insurer management

In response to the COVID-19 crisis, we recommend that insurers focus their attention initially on three particular areas, all of which are component parts of an effective portfolio management approach.

Amend Q3 and Q4 trading plans

The first area is how to prioritise and differentiate the renewal strategy for the rest of the year as we suggest that, for most if not all insurers, the '"pre-COVID-19'" plan may no longer be sufficient. This requires detailed segmentation of the portfolio, which has the following aspects:

- For risks that were already the subject of remediation, insurers should require rate changes or amendments to coverage, limits or other terms, defining the appropriate next steps given that the underlying reasons for the remediation will remain.
- Insurers should identify those risks where there is a post-COVID-19, and possible short-term, change in the exposure or risk — with assessments of the extent and duration of those exposure/risk changes, with proposed action that may require new terms, rates, limits and future adjustments to premium.
- Insurers should identify policyholders who need additional help and support, perhaps as a result of a liquidity crunch, which may include factoring in loyalty, attitude to risk improvements and how receptive they have been to rate changes previously.

- aying this with what we would expect to be a very different operational process — both because the normal assumption where two-thirds of a book require limited renewal review as well as the fact that, with social distancing, we can expect continued physical dislocation of the individuals involved in any renewal (insurer, broker and policyholder) with operational processes much harder to prosecute.

- As the additional segmental perspectives described above are calculated, then performing the necessary portfolio calculations and scenario testing with consequent impact onto mix indices, net retention, accumulation management and all the usual steps undertaken in the management of a portfolio will be required.

- Those insurers with a portfolio management application, or at least data that are of a sufficient quality that the data could be readily uploaded into such a tool, should be able to execute these steps quickly (measured in hours and days, not weeks). For example, the WTW Portfolio Management tools in our Radar suite will provide the insights quickly.

- However, many portfolio plans fail to execute as there is insufficient attention paid to the operational processes required to implement, culturally, how an insurer brings all internal functions around the plan and how effectively it is communicated. We would therefore recommend at least at much attention is paid to these areas as to the analysis of the portfolio.

- The balance between lead and follow, and the level of delegated authority, often pre-determines the degree of responsiveness and the ability to influence the outcomes. A high follow and/or delegated proportion using the same approaches can mitigate risks and achieve a higher degree of control.

- We expect that those insurers that put in place a revised renewals plan along these lines quickly will achieve outperformance advantage.

Readiness for business planning post-COVID

The second area is assessing the exposure post-COVID-19, both in terms of expected losses as well as re-assessing the risk held on the books. We expect that many insurers will be seeking to communicate this confidently and to a granular level ahead of the imminent start of the planning and reinsurance seasons. We would recommend the following approach:

- Portfolio models, if in place, can be quickly and easily enhanced to incorporate additional parameters to analyse the exposures.

    - For example, the WTW pandemic model (described in Section 2) can assess a range of epidemiological and economic scenarios to create a set of parameters to allow the exposures, premium, risk and losses to be analysed, including the impact of social distancing and lockdown.

    - Additionally — given the emerging picture on the strength of wordings — profiling the different clauses in use with an associated risk score, which can then be applied to the portfolio model, is a fast and effective piece of analysis.

    - In Section 5 we recommend next steps on reserving — including understanding the distortions in the data, the effect of notification delays and a review of underwriting assumptions. To some extent this work can be informed by the steps recommended above. The outputs of the reserving impact analysis should then be folded into the portfolio analytics.

- As these additional data inputs are incorporated, along with any Q3 trading plan as described earlier, we would expect thorough scenario testing to be undertaken. The outcome of this process will then inform the 2021 business planning process as well as various other key stakeholder processes such as reinsurance renewals.

- Additionally, there should be the usual iterative process between the portfolio model and the capital model, recalibrating the capital model with further scenario testing. In Section 5 we also recommend amended best-estimate parameters in the capital model as a more immediate step.

- Again, those insurers that can demonstrate a 'post-COVID' grip on their portfolios quickly, as well as reflect the amended trading environment, may well achieve advantage in business plan approval as well as potentially more favourable (or less unfavourable) reinsurance renewal terms.

Strategic portfolio review

The final area we would recommend is building up the longer-term strategy as we emerge from this crisis. In developing the 2021 portfolio strategy, naturally we would recommend it would first rest on our first two recommendations. Furthermore, we would suggest a continuing review of coverages and wordings, often correcting the traditional mistakes of a soft market where coverage is extended.

If nothing else, this situation has reminded us of the importance of policing inner limits, extensions and exclusions — and part of our recommendations would be a return to a higher degree of underwriting discipline.

Actions by participant

Different participants in the insurance market will need to take a number of actions to mitigate and manage the risk of the coronavirus to their business. Below is a selection of possible actions that could be considered.

Insureds

Comply with government directives on the coronavirus. Not only should this help to stop the spread of the virus, it will potentially reduce an insured's potential liability.

Identify the potential risks the coronavirus outbreak poses to business activities, both in terms of sales and marketing and operational risks, such as risks posed from most of the workforce working from home. This will give a better understanding of current exposures to risk.

Understand what insurance policies are currently in force and commission an expert review. This should highlight any exclusions in respect of pandemics, whether there are any communicable disease exclusions or extensions and what types of claims may be valid.

Review insurance policy conditions such as cancellation clauses or minimum premium clauses.

Ensure compliance with all policy conditions to prevent contract breaches in the event of making a claim. Discuss with your insurer or broker whether any of these policy conditions have been waived or relaxed in light of the coronavirus outbreak.

Ensure suitable HR and IT policies are in place given the current circumstances.

Have an understanding of how the risk profile has changed since the coronavirus outbreak and how it will evolve during the recovery; make sure sufficient time is allowed in the renewal process. Whilst the global insurance industry is still functioning, there is a lot of distraction and uncertainty; therefore, policies may take longer to place.

During the policy renewal process, it will be important to understand current reductions in exposure measures such as payroll or revenue and how this might change over the lifetime of the new policy.

Insurers

We have discussed in detail what actions individual insurers should take. In summary, we think the most important actions in the short term are:

- Conduct a reserve impact analysis, depending on the exposure of a given insurer.
- Look at the current balance sheet and solvency positions and understand the likely direction of travel.
- Perform a light touch analysis of the book, for example, by performing a portfolio analysis by class and a reserve review.
- Understand the impact of the current coronavirus outbreak and any future outbreaks on future business plans and profitability.
- Over the medium term, look to undertake a diagnostic on the effectiveness of their portfolio management, which should look at the aspects summarised in Section 5 (Portfolio management). In particular we recommend assessing how a probabilistic pandemic model could be used in P&C insurance to help increase control of exposures, which will be key in managing future crises effectively.
- Review policy wordings in light of future pandemics and further outbreaks of SARS-CoV-2.

Reinsurance considerations

This section would not be complete without some general guidance notes for companies with a reinsurance placement incepting over the course of the next few quarters. Our recommendations are summarised below and more detail can be found in the Willis Re report “Moving on from the initial assessment phase of COVID0-19”. In the event of any questions, please reach out to your Willis Re representative.

- **Accelerate the reinsurance calendar**. If possible, advance the placement cycle by one month; specifically accelerate data capture, the modelling and analysis phase, and the compilation of reinsurance submission and its distribution to reinsurers each by four weeks. This will cater for operational delays in the working from home environment that prevails and ensure adequate time to address any emerging market externalities.

- **Engage early.** The point of the accelerated time frame is not only to compensate for delays in operational aspects but also to ensure that the engagement, presentation, price discovery and placement phases are all accelerated.

- **Adapt but don’t abandon communication strategy.** Replace any customary market meetings with your global panel of reinsurers with virtual meetings; conveying the necessary message is even more important in prevailing market conditions and where reinsurers are likely to continue to differentiate by clients.

- **Prepare to debate COVID-19.** Clients cannot overprepare for reinsurer discussion on COVID-19, so come to these virtual meetings prepared to articulate views (by class) on perceived exposure, relevant loss activity, underwriting strategy by risk segment type of class as well as coverage, if any, and the impact on pricing. Many reinsurers will be interested in levels of premium, but more will be interested in rate adequacy, so shed light on any analysis that demonstrates exposure-adjusted rate movement that considers entire segments of the developed world lying fallow in terms of commercial/economic output with concomitant reduction in exposure.

- **Prepare to debate exclusions.** Some classes will require COVID-19 and/or pandemic exclusions, with the determination of on what basis evolving over time; however, buyers should approach discussions well prepared. From a treaty perspective, it is realistic to know that some classes will require COVID-19 and/or pandemic exclusions with reinsurers mostly aligned on this change. Buyers should consequently approach discussions well prepared around the exclusions being implemented on original business to ensure that treaty reinsurance best matches this.

Section 6: Reliances and limitations

Throughout the report, we have presented a range of scenarios and possible impacts on premium volumes and future losses as a result of the COVID-19 pandemic and governments' mitigative actions in response to the pandemic to slow the transmission of coronavirus transmission. None of these scenarios are intended to represent a best estimate of what will happen; rather they are for illustrative purposes only. We have not assessed the probabilities of the scenarios presented in this report, and they should not be considered a definitive list of all possible outcomes.

The assumptions, parameters and qualitative discussions presented throughout the report are subject to a high degree of uncertainty and subjectivity, in particular:

- The ultimate number of people who are infected or die from the COVID-19 disease
- The duration, severity and effectiveness of government mitigative actions
- The impact of these actions on the economy and how that impacts different industries
- How the accumulation of the proceeding three items impacts the insurance industry
- How different insurance policies react to COVID-19-related claims (we have not assessed any individual policy wordings as part of this report)
- Uncertainty around the extent of governmental immunity provided to certain people and businesses from liability lawsuits associated with COVID-19
- The longer-term health impacts on survivors and the impact on future claims, which we have not yet explored
- The longer-term economic effects of government stimulus, which we have also not yet explored
- The unfolding effects of the COVID-19 outbreak as a black swan event with no precedent in the era of modern insurance markets and therefore no experience to draw upon to inform analysis
- A rapidly changing situation

The work presented in this report is the independent view of Insurance Consulting and Technology, a business within Willis Towers Watson, and may not be fully reflective of the view of other Willis Towers Watson businesses.

This report is not intended to constitute advice, and Willis Towers Watson does not owe any party using this report a duty of care.

COVID-19

How can Insurance Consulting and Technology can help?

Willis Towers Watson provides a powerful combination of advisory services for insurance companies, integrated with leading-edge technology solutions, all underpinned by unparalleled analytical capability.

Our Insurance Consulting and Technology business is well placed to help you navigate the challenges of a post COVID-19 world. We have a team of market leading consultants across the spectrum of insurance capabilities including pricing, products, claims and underwriting ("PPCU"), reserving, capital and portfolio management.

Some of the ways in which we can help are listed below:

Reserving

- Analysis of the direct impact of COVID-19 on reserves and the associated uncertainty via the specification of scenarios and stress tests.
- Review and challenge of internal COVID-19 impact assessments.
- Provision of external viewpoint via independent reserve reviews covering the whole business or for specific classes.
- Assistance with adapting regular reserving processes to adjust for the secondary impacts of COVID-19.
- Advice on reserving and monitoring processes to ensure rapidly emerging information is incorporated quickly and efficiently

ResQ

Capital

- Reassess and monitor your capital position through scenario modelling and testing mitigation strategies
- To help protect capital or alleviate capital strain we can advise on and transact relevant additional reinsurance in conjunction with Willis Re
- Help firms undertake or validate parameterisation exercises to recalibrate models
- Help firms understand and communicate their risks (including to regulators)

Igloo

Pricing, Products, Claims and Underwriting ("PPCU")

- Analyse impact of COVID-19 on premiums, pricing and exposure
- Help you respond with agility to the current rapidly changing environment:
  - Real-time, granular insights using portfolio and claims analytics
  - Price optimisation and deployment using our specialist software Radar

Radar Optimiser Radar Live

Portfolio Management

- Interactive portfolio dashboards to monitor performance at a granular level and perform scenario testing
- Portfolio management capability assessment and training
- Advice on developing portfolio strategy in a post COVID-19 world

Emblem Radar Base Radar Dashboard

Section 7: Conclusion

This report has been prepared in order to provide a framework for (re)insurers to be able to assess relative impacts by line and geography. Whilst we have focused on selected high impact lines in the US and the UK, this framework can be extended to other classes and geographies as required.

We consider that it is likely that different scenarios will be applicable to any given country, dependent on how exposed it has been to COVID-19, as well as how well it has been contained. Furthermore, the number and duration of the waves will clearly be a factor, and our scenario approach will be modified as the response strategies taken by governments mature.

Similarly, each insurer will be differently impacted depending on the portfolio mix, and therefore how the balance of claims movement, exposure change and premium volume flows through for that particular business.

Taking a strategic portfolio management is a critically valuable exercise as insurers first assess the impact on their own business, and then determine how best they can return to adequate returns.

We trust that this has been a helpful and informative document as the industry takes its first steps towards longer-term recovery.

Section 8: Contacts

To discuss anything in the report further, please contact one of our contributors below.

Lead authors	
Richard Clarkson, Director, Head of London Market, Insurance Consulting and Technology	richard.clarkson@willistowerswatson.com +44 (0)207 170 2352, +44 7876 006 028
Christopher Bozman, Senior Director, Insurance Consulting and Technology	christopher.bozman@willistowerswatson.com +1 215 246 7405
Will Shuter, Senior Consultant, Insurance Consulting and Technology	will.shuter@willistowerswatson.com +44 (0)788 045 8066
Editorial Board	
Sam Bright, Associate Director, Insurance Consulting and Technology	sam.bright@willistowerswatson.com +44 (0)207 170 3466
Andrew Ngai, Associate Director, Insurance Consulting and Technology	andrew.ngai@willistowerswatson.com +44 (0)207 170 3033
Ashley Wohler, Manager, Insurance Consulting and Technology	ashley.wohler@willistowerswatson.com +1 215 246 7342
Contributors	
Stephen Jones, Managing Director, Insurance Consulting and Technology	stephen.jones@willistowerswatson.com +44 (0)782 517 1657
Steve Mathews, Managing Director, Insurance Consulting and Technology	steve.mathews@willistowerswatson.com +44 (0)792 027 2597
Alejandra Nolibos, Senior Director Insurance Consulting and Technology	alejandra.nolibos@willistowerswatson.com +1 786 552 1130
Andy Smith, Director, Insurance Consulting and Technology	andy.smith@willistowerswatson.com +44 (0)798 465 0145
Andy Staudt, Senior Director, Insurance Consulting and Technology	andy.staudt@willistowerswatson.com +44 (0)743 269 4149

.

About Willis Towers Watson

Willis Towers Watson (NASDAQ: WLTW) is a leading global advisory, broking and solutions company that helps clients around the world turn risk into a path for growth. With roots dating to 1828, Willis Towers Watson has 45,000 employees serving more than 140 countries and markets. We design and deliver solutions that manage risk, optimise benefits, cultivate talent, and expand the power of capital to protect and strengthen institutions and individuals. Our unique perspective allows us to see the critical intersections between talent, assets and ideas — the dynamic formula that drives business performance. Together, we unlock potential. Learn more at willistowerswatson.com.

WTW435373/04/2020