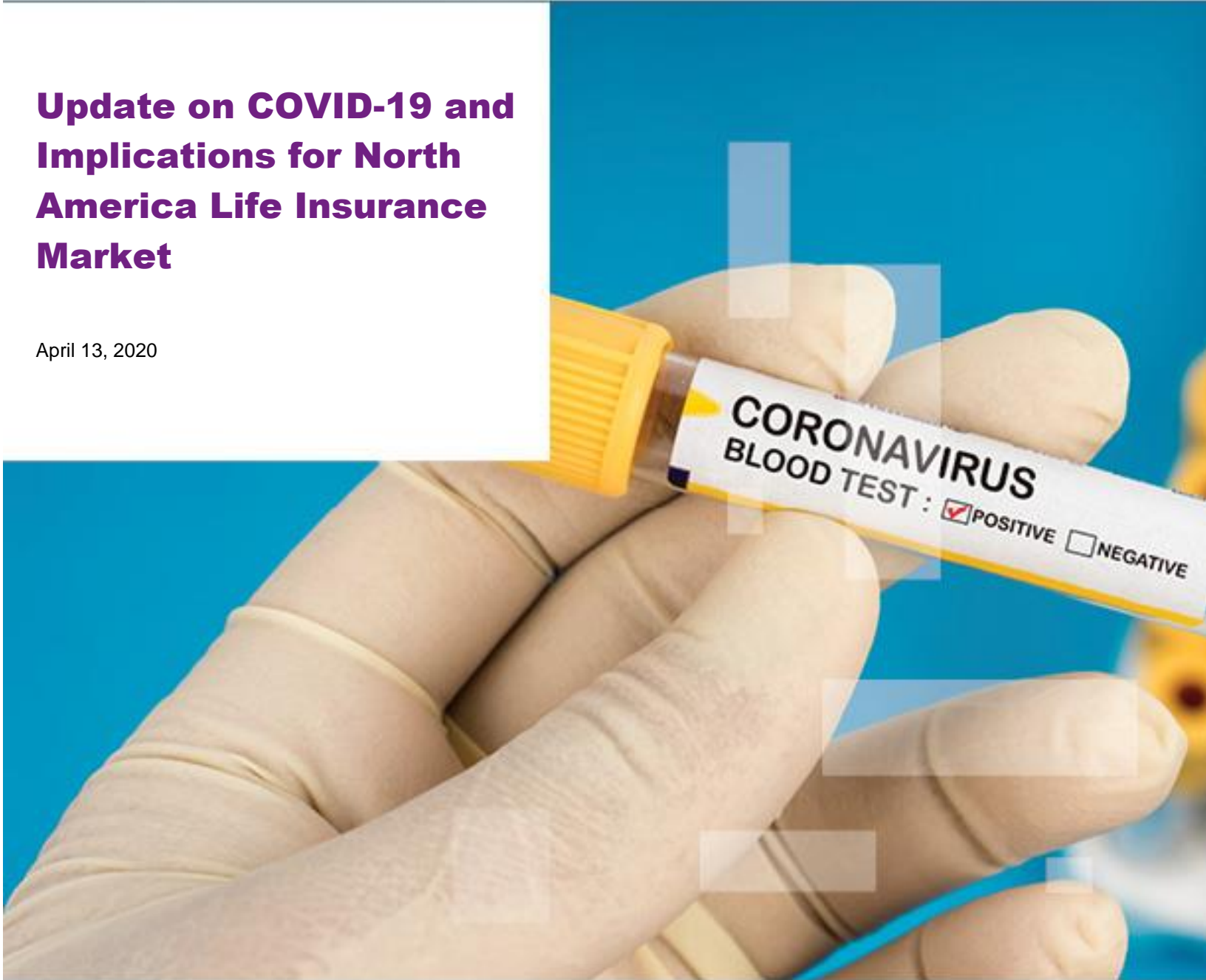


# Update on COVID-19 and Implications for North America Life Insurance Market

April 13, 2020





# Table of Contents

<b>Section 1 : Introduction and overview .....</b>	<b>1</b>
<b>Section 2 : Snapshot of infection and death figures .....</b>	<b>3</b>
<b>Section 3 : Economic statistics .....</b>	<b>8</b>
<b>Section 4 : Assets/Investments .....</b>	<b>10</b>
<b>Section 5 : Regulatory and rating agency developments .....</b>	<b>11</b>
<b>Section 6 : Operational and other risks for insurers .....</b>	<b>12</b>
<b>Section 7 : Impact on insurers' finances .....</b>	<b>13</b>
<b>Section 8 : Other issues.....</b>	<b>15</b>

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# Section 1: Introduction and overview

The COVID-19 outbreak continues to spread globally and represents a major crisis for the world. The numbers of infections and deaths continue to increase daily. As of April 13, worldwide there were over 1.8 million infections and over 113,000 deaths; in the U.S., there were over 557,000 infections and over 22,000 deaths. Although the spike in deaths is of significant concern for life insurers on their mortality — and possibly morbidity — exposure, arguably the greater risk to them is the impact on the economy. The outbreak has led to a widespread economic downturn as a wide variety of businesses have been forced to shut down and people have lost their jobs. Through April 4, almost 17 million people had filed for unemployment, more than the total jobs lost in the Great Recession of 2008 – 2009. Equity markets are extremely volatile; as of March 23, they were down approximately 30% from the beginning of the year, with most of the losses coming as COVID-19 spread across the globe (they have since rebounded somewhat). Interest rates are also drastically down from year-end 2019 with short-term U.S. Treasury rates close to zero. Yields on other investments have spiked up given the flight to quality, and there have been some reports of limited liquidity in the bond markets. It is generally accepted that these events will lead to a recession in the U.S., defined as two successive quarters of economic downturn. Goldman Sachs is projecting that the U.S. unemployment rate could reach 15%. In order to help address the economic concerns, the U.S. has passed the largest stimulus bill in U.S. history — the Coronavirus Aid, Relief, and Economic Security (CARES) Act (H.R. 748) — representing a total of \$2.2 trillion of aid. Discussions have already begun on the next round of stimulus that likely will be needed in the future.

As of April 13, more than 300 million Americans are under a stay-at-home requirement, although there are some exceptions, and some critics say that social distancing practices are not being adhered to in many places. The crisis is arguably being felt most severely in New York City right now; doctors there describe the situation in some hospitals as apocalyptic and similar to a war zone, as they are overwhelmed and facing limited supplies. There also is a limited number of tests available, which are needed to get a better handle on the number of cases. Other critical U.S. hot spots include New Jersey and Connecticut, which are likely related to commuters into New York City, Louisiana, Michigan and Massachusetts. New hot spots will almost certainly pop up in other areas soon if stay-at-home orders are not followed. Some information suggests that isolated events have led to super-spreading events where a large number of people become infected — including religious gatherings, funerals, Mardi Gras and large dinner parties. The widespread stay-at-home orders have forced many Americans to work from home, if that is an option. If remote work is not possible, businesses must shut down. This has added a new dynamic to the American workplace, where all business is now done remotely. This has led to operational challenges for companies running their businesses, and workers face the additional challenge of needing to homeschool or watch children during the workday as schools and day cares across the nation have shut down. This added dynamic has created the need for flexible work schedules as employees fit in working hours when they can, which creates additional challenges for scheduling calls during business hours.

It seems clear that in the U.S. waves of infections are happening on a regional basis, with greater infections currently occurring in the cities. The overall outlook for the impact of COVID-19 is unclear. It will depend to a large extent on how fast the outbreak spreads, whether steps to “flatten the curve”

(i.e., spread out the rate of infection so that hospitals will not be overwhelmed) will be adhered to, and whether widespread testing can be quickly implemented. Some argue we should effectively shut the country down for another six to eight weeks to limit the number of infections. This would likely include a nationwide shelter-at-home requirement, with fewer exceptions and widespread testing to understand where hot spots are. Others feel that such a shutdown would have such a draconian impact on our economy that existing restrictions should be allowed to ease, perhaps allowing younger people, who are less likely to suffer adverse effects from COVID-19, or those who are proven to have antibodies through testing to return to work first. The Institution for Health Metrics and Evaluation (IHME) COVID-19 forecasting model, known as “the Chris Murray Model,” on April 10 estimates that between 26,000 and 155,000 will die in the U.S. from COVID-19, and some other earlier modeling projections have shown deaths in the U.S. exceeding 1 million. These projections likely led the federal government on March 30 to extend the social distancing guidelines to April 30.

This note is intended to be updated on a periodic and frequent basis, including key figures and statistics. Considerations for life insurers are also included. Since this is an extremely fluid situation, we will note the date associated with the figures that we provide, as counts associated with COVID-19 become outdated very quickly.

## Section 2: Snapshot of infection and death figures

Through the figures below, we illustrate the current spread and death toll associated with the disease. As noted, these figures are continuously updating; data used is as of April 13. The daily data was compiled from the European Center for Disease Control and Prevention.

As shown in Figure 1, the number of confirmed cases in the U.S. has been increasing at an exponential rate; however, the case fatality rate has decreased — but increased since the end of March.

Figure 1. U.S. cumulative cases

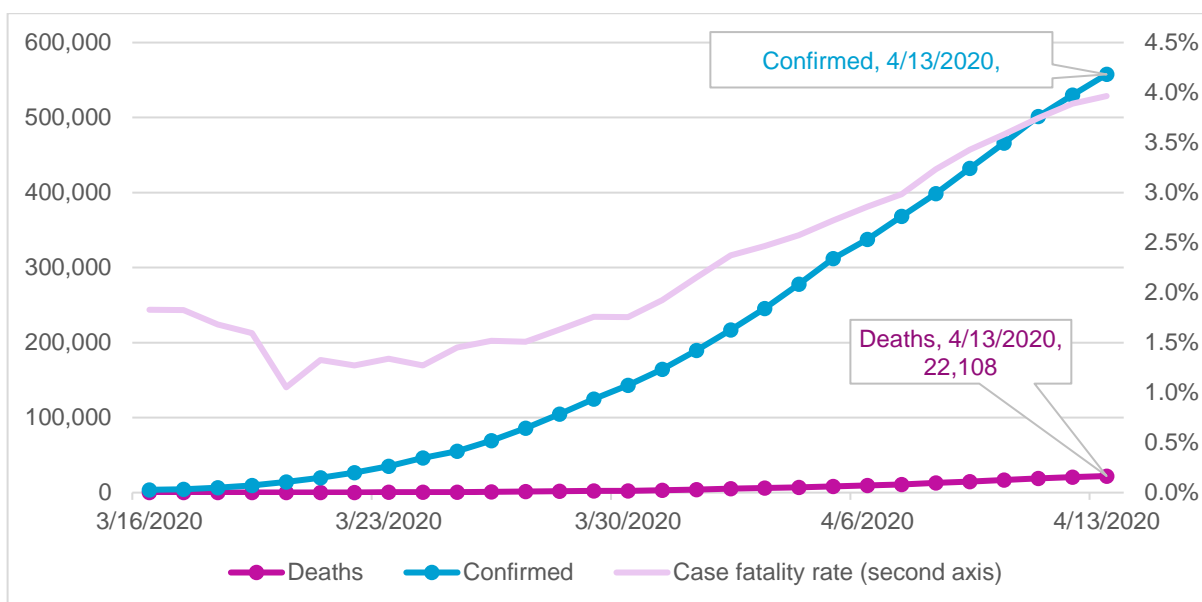


Figure 2 shows the daily reported confirmed cases and deaths in the U.S. Both have been materially increasing since mid-March, although confirmed cases have been increasing more rapidly than deaths. This may be due to increased testing or because the deaths will lag the increase in cases.

Figure 2. U.S. daily cases

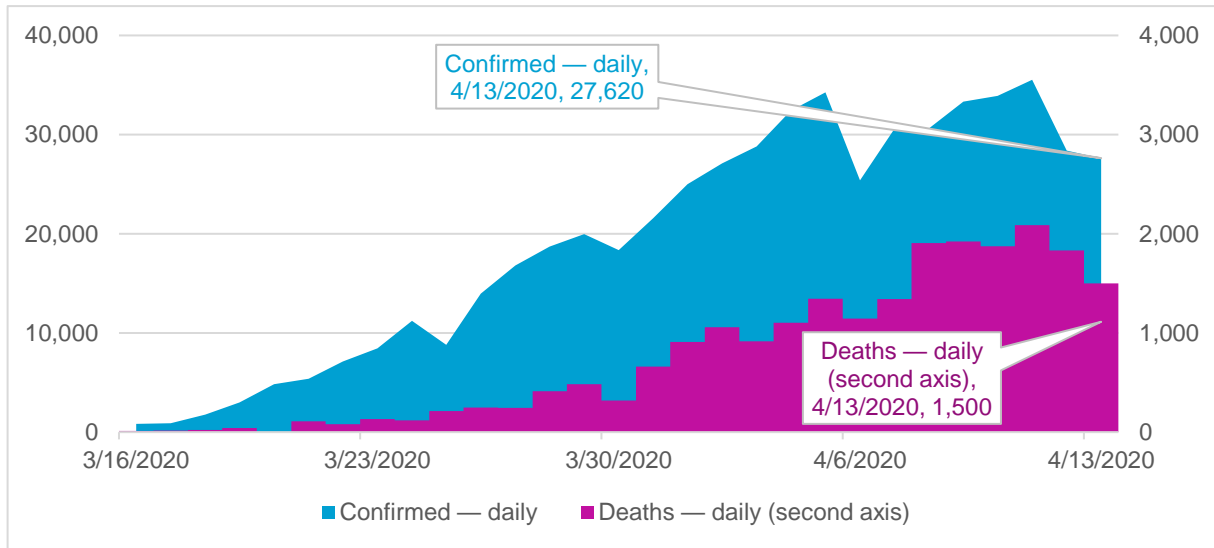


Figure 3 details the amount of testing done in the U.S. since the beginning of March. The prevalence of testing has been increasing rapidly since early March. The positive rate has increased from approximately 10% in early March to above 20% in early April.

Figure 3. U.S. COVID-19 test and positive cases

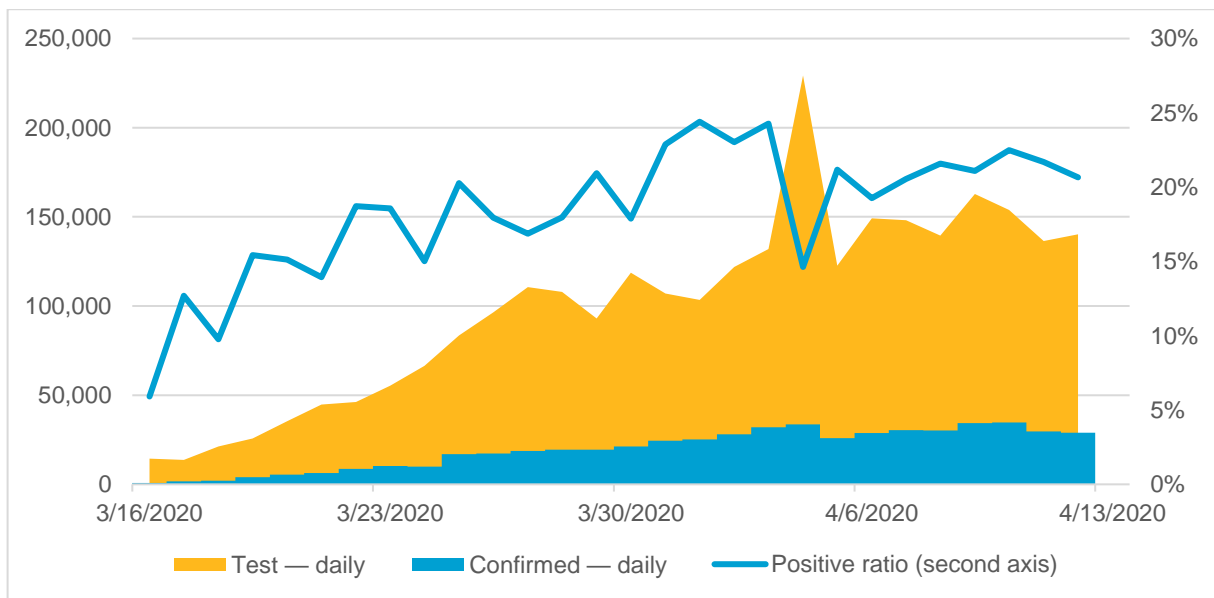


Figure 4 shows the number of daily cases and deaths reported globally, which have been increasing since early March but may be starting to flatten in early April.



Figure 4. Global daily cases

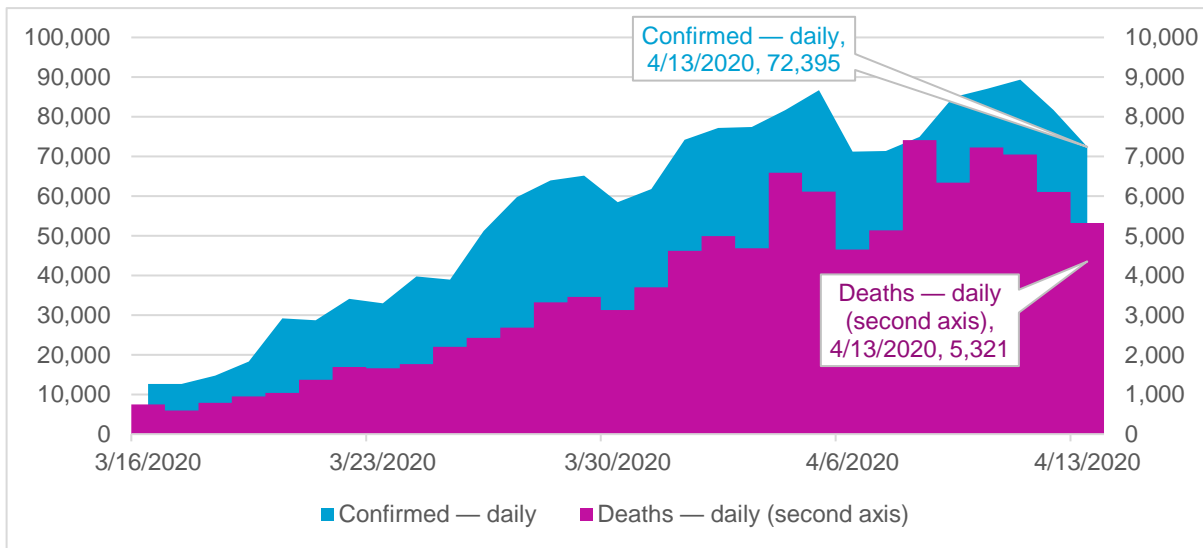


Figure 5 shows the confirmed cases per 1,000 for various countries since each first contracted 100 confirmed cases. The slope varies considerably by country, with South Korea being relatively flat and Spain increasing very sharply. The U.S. has a steeper slope than that of Iran but flatter than those of Italy and Spain.

Figure 5. COVID-19 confirmed cases per 1,000 population (days since 100 cases)

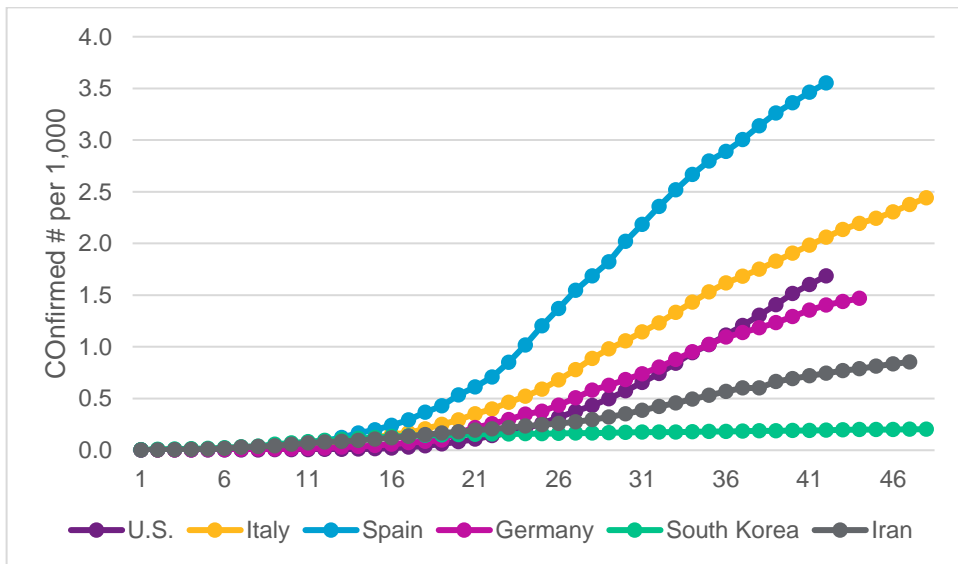
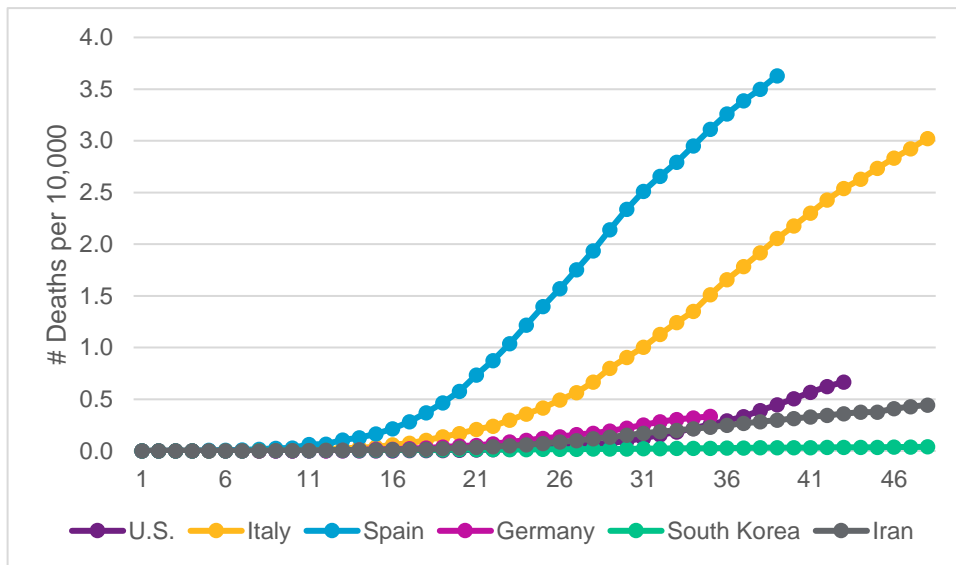


Figure 6 shows the slope of deaths per thousand since the first death. Italy and Spain have very steep slopes while South Korea again is quite flat. Others shown, including the U.S., are increasing but at a much slower rate than Italy and Germany.

Figure 6. COVID-19 deaths per 10,000 population (days since first death)



The impact of the disease varies significantly by age, as shown in Figures 7 and 8 using data from the Centers of Disease Control and Prevention and the World Health Organization. Precise estimates of mortality by age vary depending on the source, but directional conclusions are the same: The severe cases and death rate are materially higher for the older ages.

Figure 7. Hospitalization, ICU admission and case fatality by age group, U.S., February 12 – March 16, 2020

Age group	% Hospitalized	% ICU admission	Case/Fatality
0 – 19	1.6 – 2.5	0	0
20 – 44	14.3 – 20.8	2.0 – 4.2	0.1/0.2
45 – 54	21.2 – 28.3	5.4 – 10.4	0.5/0.8
55 – 64	20.5 – 30.1	4.7 – 11.2	1.4/2.6
65 – 74	28.6 – 43.5	8.1 – 18.8	2.7/4.9
75 – 84	30.5 – 58.7	10.5 – 31.0	4.3/10.5
≥85	31.3 – 70.3	6.3 – 29.0	10.4/27.3
Total	20.7 – 31.4	4.9 – 11.5	1.8/3.4

Source: [https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm?s\\_cid=mm6912e2\\_w#T1\\_down](https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm?s_cid=mm6912e2_w#T1_down)

Figure 8. COVID-19 fatality rate by age based on research from Chinese cases

Age group	Death rate confirmed cases*	Death rate all cases**
0 – 9		No fatalities
10 – 19		0.20%
20 – 29		0.20%
30 – 39		0.20%
40 – 49		0.40%
50 – 59		1.30%
60 – 69		3.60%
70 – 79		8.00%
80+	21.90%	14.80%

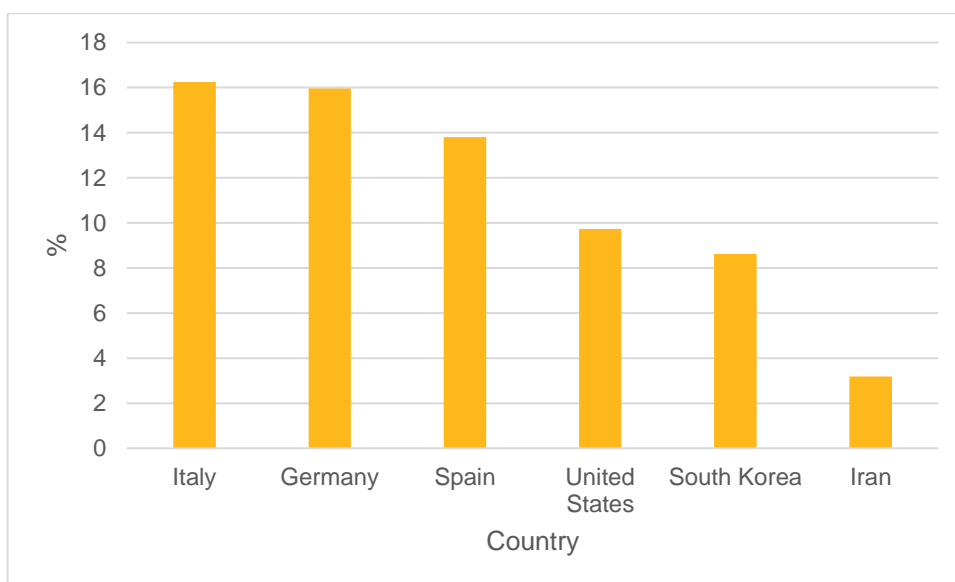
\*Based on laboratory confirmed cases

\*\*Based on confirmed, suspected and asymptomatic cases in China as of February 11

Source: <https://www.worldometers.info/coronavirus/coronavirus-age-sex-demographics/>

There are significant differences by country in the demographics by age, which lead us to suspect that the aggregate death rate will vary materially by country. Figure 9 shows the percentage of the population over age 70 for the countries included in the figures of COVID-19 cases and deaths above.

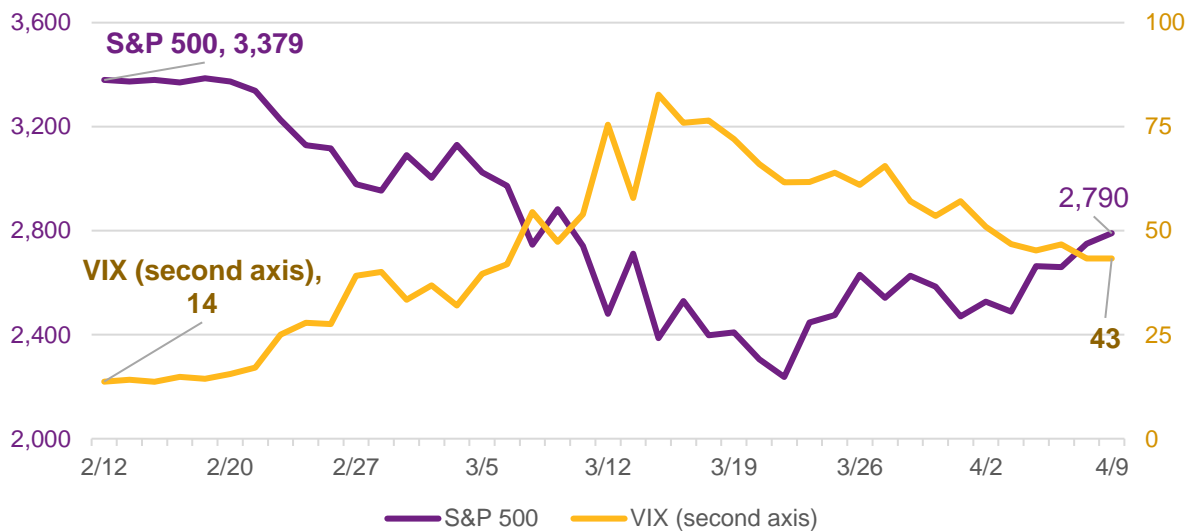
Figure 9. Percentage of population over age 70



## Section 3: Economic statistics

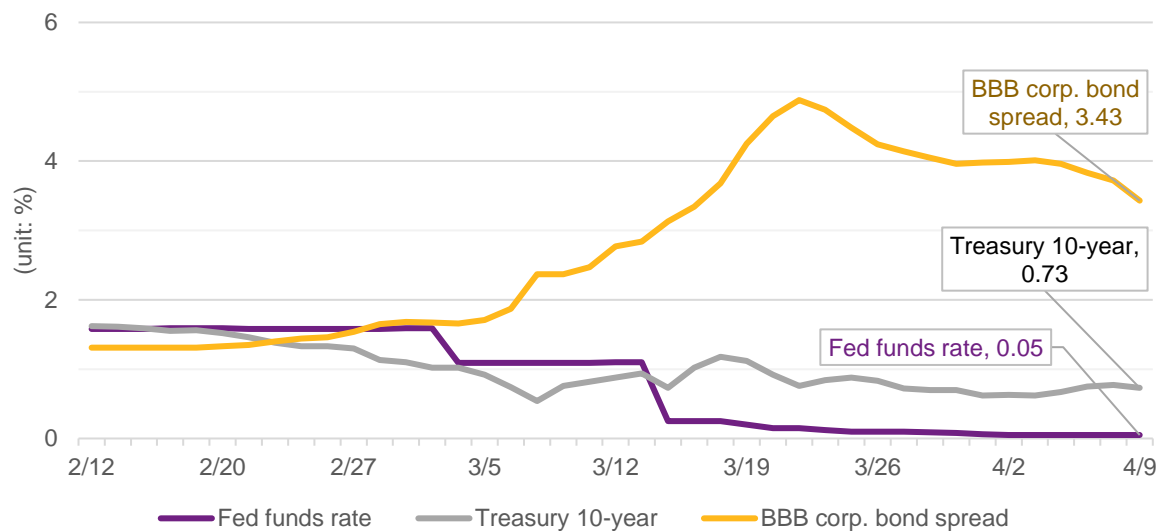
We have included some figures below that look at key economic statistics. Starting in late February the U.S. economy began to show considerable volatility. As of April 9, equity markets have dropped approximately 20% since their high on February 20. At the same time, volatility has increased significantly.

Figure 10. Equity market



Interest rates have moved in different directions — there has been the typical flight to perceived safety generally associated with economic crises — although in this case it was a flight to short-term quality. The Federal Reserve dropped the fed funds rate to zero on March 15, and associated short-term rates are either close to, or in some cases below, zero (i.e., negative interest rates). Longer-term U.S. Treasury rates dropped initially to very low levels (around 0.5%) but then increased sharply over ensuing days, to just above 1%. They have continued to drop to 0.73% as of April 9. Spreads on BBB corporate bonds spiked up, moving from 150 basis points in February to around 340 basis points on April 9.

Figure 11. Interest rate and spreads



There is some indication that liquidity was diminished in several parts of the fixed-income market, as dealers were having trouble getting quotes on certain instruments. This appears to have abated somewhat, and several companies have been able to issue public debt recently, to increase the amount of working funds to get through potential tough times. These have been primarily high-rated companies, but even cruise ship operator companies have been able to issue debts — at double-digit yields.

## Section 4: Assets/Investments

### Impact on key asset classes

Life insurers typically back their general account portfolios with a variety of asset classes, mostly fixed income. As noted, spreads on commonly used corporate bonds have spiked up. This depresses market values, leading to possible concerns if insurers need to sell assets to meet liquidity needs. At this time, however, there have not been any reported pressures to sell assets due to liability demands. This is an item that will need to be continually monitored.

As noted in the prior section, risk-free rates (i.e., U.S. Treasury rates) have declined and are currently near the lowest levels in recent times. Spreads over Treasuries have increased for many asset classes, and overall yields on certain asset classes may have actually increased since the first part of February. Theoretically this would offer some pricing advantages to insurers; however, caution needs to be taken as at least a portion of the higher yields are due to higher probability of defaults, which are much more likely to be realized now than in most years where insurers achieve gains on the spread.

Due to the economic downturn, we will likely see an increase in defaults down the road; however, the extent will depend on the severity of the downturn. Without significant intervention from the federal government, it is hard to see how companies in some industries (e.g., airline, cruise ship) will be able to avoid defaults on certain assets. With many retail businesses in strip malls being forced to close as they are deemed nonessential, commercial mortgage-backed securities are also at risk for default. Additionally, residential mortgages will likely be under pressure as individuals face challenges paying their mortgages.

In the near term, we expect life insurers to move to a higher-quality asset portfolio, to help mitigate any lessening of the asset quality of their current portfolio. There are also likely to be some buying opportunities for depressed asset classes, if companies are willing to stomach the risk. It will also be interesting to see how certain relatively new asset classes (e.g., structured assets, mezzanine debt, private equity) will weather the economic storm.

## Section 5: Regulatory and rating agency developments

The rating agencies are paying close attention to the situation. AM Best and Fitch have changed their outlook for the U.S. life insurance industry from stable to negative. Some of the rating agencies are also asking life insurers to provide information commenting on their exposure to deaths and the expected impact on their financial condition and solvency.

The CARES Act has many provisions, but the most significant for the U.S. life insurance industry affect life insurers' taxes and more specifically net operating losses. The changes include:

- A five-year carryback period for losses in 2018, 2019 and 2020. This means that a 2018 loss can be carried back to as early as 2013 income for a refund at 35%.
- Elimination of the 80% net operating loss limitation for 2018, 2019 and 2020.

State regulators are watching matters closely. Some have asked for high-level estimates for the potential impact of COVID-19 on each insurance company's block of business. We expect to continue to see requests for information from insurers, to enable state regulators to monitor the situation.

## Section 6: Operational and other risks for insurers

### Business continuity

Most organizations, including insurance companies, have contingency plans in place to continue operating their business in the event that they are unable to operate in their primary location. The events of 9/11 reinforced the need for businesses to create such a plan as many were unable to use their primary location at that time. However, it is unlikely that businesses planned for the vast majority of their operations to be shut down worldwide. This pandemic, which is essentially causing the globe to shut down, will challenge the veracity of these plans.

### Staff working remotely

With current stay-at-home orders, many employees at insurance companies are working from home. This comes with many challenges:

- The capacity of IT systems allowing employees to access the work environment remotely is challenged as more users than contemplated are accessing the technology.
- The lack of face-to-face team meetings creates inefficiencies.
- Employees have more personal matters that require attention — kids at home, sick leave, care of elderly relatives/friends, preventive measures for COVID-19 — all of which reduce productivity.

Overall, insurance companies will struggle as workers are less productive while working remotely.

### Customer service

Many customer service centers do not have the ability to work remotely and therefore have reduced staff due to social distancing restrictions. This, combined with more incoming calls, will generally lead to a lower level of customer service and frustration from customers. Insurance companies will likely be looking to increase the ability to provide customer service remotely.

We have seen some evidence of insurers trying creative actions to improve customer service and accommodate their policyholders and applicants during the crisis. One example is reminding policyholders of the ability to take advantage of the grace period, which allows the policyholder to defer payment of premium without the risk of losing benefits. Another example is modifying the underwriting process to avoid requiring a paramedical to come to the home to conduct a physical exam.



## Section 7: Impact on insurers' finances

As noted, there are multiple aspects of the impact to life insurers. This can generally split into two categories: 1) mortality/morbidity impacts and 2) investment impacts.

### Mortality/Morbidity impacts

There will be, of course, higher mortality and possibly higher morbidity claims in the near term. In 2018, there were 2.8 million deaths in the U.S. At this point, it is very difficult to estimate the number of additional deaths from COVID-19 in the U.S. The Chris Murray Model estimates between 26,000 and 155,000 deaths due to COVID-19 (some have projected higher figures). Using the 2.8 million figure above, this translates to approximately 0.93% to 6.20% of total deaths. We note that if the U.S. had the same per capita deaths as Italy or Spain have as of April 12, total U.S. reported deaths would be approximately 125,000. Total deaths continue to increase in those countries, but at a slower rate. The ability of the U.S. to stay below these countries in deaths per capita will depend critically on the effectiveness of the stay-at-home orders and the ability to contain coronavirus cases once those orders are lifted.

Of course, these are population figures and do not represent the insured population. Also, these are aggregate figures, meaning the impact for any one company could be higher (or lower) than this as mix of business and size of the block varies by company. It is hard at this point to determine the impact on the insured population. We do know that deaths are more likely to come from ages 70 and over; anecdotally these individuals are probably less likely to have as much life insurance coverage, although a few product lines do have a significant amount of exposure to older ages (e.g., Universal life with secondary guarantees).

At that level of additional deaths, there would be adverse impacts for life insurers; however, this is generally within the level of stresses run to demonstrate that companies' capital is sufficient. So, it should not be expected to be a major challenge on solvency. Of course, we note that the psychological impact of having so many deaths occur in such a short time can be traumatic; in New York state the average number of deaths in the population is roughly 425 per day in normal times, which means that the number of daily deaths due to COVID-19 alone has been roughly 170% of that in recent days.

Higher morbidity due to chronic conditions that may arise from COVID-19 is also a concern, including for long-term care and disability income products; however, the duration of the disease is relatively short, and it is not clear what the impact on ongoing chronic illness may be.

Conversely, higher mortality levels have a positive impact on annuity business that includes lifetime payments (e.g., single premium immediate, pension risk transfer and structured settlement).

## Investment impacts

Beyond mortality and morbidity, insurers will be impacted by the economic factors noted earlier — generally lower interest rates, equity market losses and likely higher asset defaults. Most insurers have limited equity positions in their general account, although of course this is the primary asset in variable insurance products. During the Great Recession, much attention was focused on variable annuity products with guarantees. Virtually all companies operating then reduced the level of guarantees offered and enhanced their hedging programs. A fair number of companies pulled out of the market. For those that remain, we will see how well their hedging programs protected them. Given the large amount of daily volatility and the large number of interest and equity-level changes, it is reasonable to expect there will be some hedging inefficiencies.

As previously discussed, asset defaults will likely be a concern. This will depend on how widespread the problem becomes. U.S. Treasury rates have mostly declined, and corporate bond spreads have widened. The increase in bond spreads is most likely a relatively short-term event. It is unclear what the impact on U.S. Treasury rates will be, particularly now that the U.S. will have more than \$2 trillion of additional debt. As discussed later, insurers will most likely need to have their products repriced to perform at acceptable profit levels under low-interest-rate levels. Given the level of low interest rates, it is plausible that some products dependent on higher returns will no longer be offered. The lower level of earned rates will continue to put pressure on credited rates and lower interest spreads on business with guaranteed credited rates.

The economic environment could create a run on the bank-type scenario where customers lapse their policies to receive the cash value, significantly shortening the duration of the cash flows, which could lead to material disintermediation risk for insurers.

Finally, many insurers have received a relatively high level of asset fees from assets invested in the separate account (variable life, variable annuity and 401(k)/defined contribution) products in recent years due to the elevated performance of the stock market. Given the recent sharp decrease in the stock market, companies reliant on this type of fee income will see dramatic reductions in revenue if the stock market stays at current levels or drops further.

## Section 8: Other issues

Some insurers have indicated they have put a 30-day hold on applications received from individuals who traveled to COVID-19 hot spots (e.g., China). An emerging issue is whether this hold will start to apply to applications received in European and U.S. hot spots (e.g., New York City) and how quickly this list will change as the fluid situation changes. There has been some limited reporting of increased applications for life insurance, likely because of individuals concerned about the future. A fair number of insurers have introduced accelerated underwriting programs in the past few years, relying more on data and less on paramedical visits to draw bodily fluids and attending physician statements. This may have to be pulled back now, given that COVID-19 is quickly becoming widespread, even across the U.S.

With the economic downturn, there likely will be higher lapses in the near term of portions of a company's in-force portfolio as well as lower premium payments on flexible pay life products. It is likely that these lapse rates will be selective (i.e., healthier policyholders determining that they can get coverage elsewhere or do not immediately need the coverage), which will lead to anti-selective, higher mortality.

## Contacts

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