American Academy of Actuaries

Issue Brief

Impact of COVID-19 on Long-Term Care Insurance

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Key Points

- The COVID-19 pandemic has had significant increases in mortality rates on the elderly population and those with underlying medical conditions, including high levels of infection rates at long-term care (LTC) facilities.
- This brief focuses on key actuarial assumptions and the ways in which the emerging experience can be assessed and measured, as the pandemic may have potential short-term and long-term impacts on the long-term care insurance (LTCI) market.
- Other considerations include capital market conditions, public policy considerations, and impacts on combo/hybrid LTCI products.

Introduction

The year 2020 will be remembered as the year the COVID-19 (SARS-CoV-2[1]) pandemic swept the globe, with widespread contagion and significant increases in mortality rates, predominantly among the elderly population and those with underlying medical conditions. In the U.S., the effects of the COVID-19 pandemic are expected to have pervasive impacts on the health care system, including long-term care services and supports.

In fact, early data point to nursing homes and other long-term care (LTC) facilities ("facilities") exhibiting especially high levels of COVID-19 infection rates and case mortality rates. In June 2020, it was reported that "more than 38,000 nursing home residents and staff have died from COVID-19, representing over a third of the nation's known coronavirus deaths," while acknowledging that underreporting by states may mean a higher actual count.[2] In August 2020, data collected by both the U.S. Centers for Disease Control and Prevention (CDC) and Johns Hopkins University showed continuing rise in infections and deaths, while the medical profession and pharmaceutical industry worked to identify effective treatments and develop a preventive vaccine.

American Academy of Actuaries
Objective. Independent. Effective.™

1850 M Street NW, Suite 300
Washington, DC 20036
202-223-8196 | www.actuary.org

Craig Hanna, Director of Public Policy
Cori Uccelo, Senior Health Fellow

1 Severe acute respiratory syndrome coronavirus 2, shortened to SARS-CoV-2, is actually the virus that causes COVID-19 (the disease). As the name indicates, this virus is genetically related to the SARS-associated coronavirus (SARS-CoV) that caused an outbreak of severe acute respiratory syndrome (SARS) in 2002-2003; however, it is not the same virus. Source: https://www.cleanlink.com/news/article/SARS-CoV-2-and-COVID-19-Whats-The-Difference--25264.

2 "How to Track COVID-19 Nursing Home Cases and Deaths in Your State"; AARP; June 11, 2020.

This issue brief examines the potential short-term and long-term impacts of COVID-19 on the long-term care insurance (LTCI) market, focusing on key actuarial and economic assumptions impacting standalone LTCI policies (but also briefly exploring the impact on the hybrid/combo LTCI market). In the context of this issue brief, "short-term" refers to the period of time prior to the widespread availability of a vaccine or materially effective therapeutic treatments for COVID-19. Based on information available in August 2020, the authors expected that "short-term," therefore, refers primarily to the period beginning March 2020 and continuing through early 2021. "Long-term" refers to the period beyond the short term.

The brief discusses the following key issues:

- Morbidity, including but not limited to whether claims incidence rates and/or claim durations will increase or decrease as a result of the pandemic, and how those impacts differ in the short term vs. long term;
- Persistency, again including differences between short-term and long-term experience;
- Capital market conditions, including the financial strain that historically low interest rates and the potential for a spike in default rates cause for LTCI insurers;
- Techniques for measuring pandemic-related experience, along with considerations related to data credibility and relevance;
- Public policy considerations; and
- Impacts on combo/hybrid LTCI products.

The brief considers LTCI from the perspective of various stakeholders, including insurers, regulators, public policymakers, and insureds.

Sources of Data

Most of the reported data relate to infections and deaths obtained from the public record, generally covering the total U.S. population with state and local variations and/or other granular data available in limited instances. The data set may be appropriate in cases where the data analysis focuses on the overall Long-Term Services and Supports

Members of the LTC Reform Subcommittee, which authored this issue brief, include Andrew Dalton, MAAA, FSA; Bruce Stahl, MAAA, ASA; Aaron S. Wright, MAAA, FSA; Alan Turkiewicz, MAAA, ASA; Mark Billingsley, MAAA,FSA; Nicholas Sheahon, MAAA, ASA; Zenaida Samaniego, MAAA, FSA; Rachel Erne, MAAA, FSA; and Al Schmitz, MAAA, FSA.

(LTSS) system. However, one may wish to consider and assess important differences when comparing total population data to an LTCI (privately) insured population. Such differences include: 1) eligibility requirements and medical underwriting standards for insurance coverage may lead to a generally healthier insured population relative to the general population, 2) the insured population may exhibit different socioeconomic and/or demographic characteristics than the broader population.

Even after accounting for differences between insured and population data, there remain challenges associated with analyzing data from the COVID-19 pandemic. For instance, it may be difficult to accurately identify or obtain which deaths were directly associated with COVID-19. Additionally, the time period for which data is available is another important consideration. While there is a certain appeal to analyzing short-term experience with confidence, data reporting lags and/or inaccurate reporting of COVID-19 deaths may complicate that analysis. Further, assumptions for LTCI are generally based on experience trends observed over a period of years ("long-term"). Assessing long-term trends in LTCI experience and disentangling those trends from short-term variations based on early data on COVID-19 requires thoughtful consideration. Both the sources of data and short-term versus long-term trends are discussed in greater depth throughout this issue brief.

Morbidity

Claim Incidence Rates

It is possible that LTCI claims incidence rates could either increase or decrease in the short term as a result of COVID-19. Some factors may reduce incidence rates, including:

Mortality due to COVID-19 among those that would otherwise begin receiving formal care.

- Concern about entering a nursing facility where COVID-19 infection and mortality rates have been higher than observed across the general population.
- Fear of having an infected home health worker entering the home.
- Hesitancy to visit doctors to seek medical clearance for LTCI claim eligibility.
- As more Americans work from home, a shift toward informal care with more sources available for such informal care.
- Fewer injuries as people are reducing activity, shifting away from driving, reduced vacations, and other physical activities in favor of isolation-type activities.

Data through the second quarter of 2020 suggest that some carriers are, in fact, experiencing reduced incidence rates in the short term.

At the same time, there will be factors that may increase incidence rates, such as complications or health impairments affecting COVID-19 survivors. Though there remains significant uncertainty concerning the long-term health impacts of COVID-19, certain complications may lead to higher incidence rates if survivors have decreased ability to perform activities of daily living (ADLs). While more speculative than empirical at this stage, it is hypothesized that, during the pandemic, more people will gain weight and be less fit due to increased stress partially driven by less social interaction, gyms being less accessible, and factors relating to other local restrictions.

With respect to long-term impacts, early indications show an increased impact related to nursing homes and facilities that seems to have created a reduction/deferral of new entrants into those facilities. Deferral could be in the form of not claiming or extending home care services. Non-claims may also be a result of inability or reluctance to see a doctor due to quarantines and general COVID-19 fears.

It is unclear how long such a trend would continue. As actuaries think about setting long-term assumptions, items they would consider include:

- Does the potential reduction in the short term lead to an increase in the long term?
- Will the deferrals persist? As the pandemic subsides, will there be a reversion to pre-COVID-19 pandemic patterns?
- Have there been improvements or adjustments made to facility services in 2020 for future viability and sustainability?
- What is the general impact for those who survived COVID-19? Are there any residual impacts to their health? Could this potentially increase incidence?
- Is there a material impact for those who postponed services? Does this have an impact on general long-term claims incidence?
- Is it possible that any decreases in facility incidence are offset by increases in home care incidence? LTCI claimants may prefer a home care setting more than ever given concerns of COVID-19 exposure in facilities.

The answers to these questions require informed professional judgment and may impact both the shape and level of the LTCI incidence rate curve in the long term.

LTCI Claim Termination Rates, including Claimant Mortality, Recovery, and Exhaustion of Benefits

COVID-19 is generally expected to increase claim termination rates in the short term. This is fueled, at least in part, by increased mortality rates among older people with underlying health conditions who contract COVID-19. People in LTC facilities appear to have been heavily impacted. Generally consistent with the AARP findings cited earlier, the New York Times reported in June 2020 that more than 40% of COVID-19 deaths were linked to nursing homes.[3]

Early data support the notion that LTCI claim terminations will increase in 2020. One carrier (Unum) announced publicly that LTC claimant mortality increased by 30% in the second quarter of 2020.[4]

With respect to an LTCI privately insured population, however, it bears mentioning that a significant portion of the COVID-19 deaths may be associated with Medicaid-funded homes, which might not house a meaningful number of insureds.

As we move to longer-term impacts on LTCI claimant mortality, items to consider include:

- Will the increase in claimant mortality in the short term create lower claimant mortality long term? Is the impact mostly limited to those who would have experienced earlier claimant mortality rates anyway?
- Will a deferral of claims lead to increased future claimant mortality as insureds may be less healthy upon claim? Correspondingly, would recoveries and benefit exhaustions be fewer?

Aside from the disabled life mortality impact, there may also be an uptick in claim recovery rates as insureds discontinue formal care over concerns of becoming infected at their facility or through a home health worker. To a lesser extent, facility terminations may be compounded as families explore home care options that may not have been considered prior to the pandemic. This seems to be more likely in the short term with some potential ramifications longer term.

Additional items to consider in moving to the longer term include:

- What is the impact on claim termination rates for those who survive COVID-19?
- Are there any residual impacts to survivors' health? Would these residual impacts potentially increase claimant mortality rates? Alternatively, does it increase the need for long-term care services, effectively lengthening the duration of claim?

All of these factors strongly suggest likely impacts in LTCI claim terminations, particularly in the short term extending to the longer term.

3 "More Than One-Third of U.S. Coronavirus Deaths Are Linked to Nursing Homes"; *The New York Times*; Jan. 12, 2021.
4 "COVID-19 Increased LTCI Claimant Mortality 30%: Unum"; *ThinkAdvisor*; July 29, 2020.

Benefit Utilization[5]

In the short term, the difficulty in attracting workers due to medical concerns and temporarily increased unemployment benefits may increase LTC costs. This may be offset as those who need care reduce home care visits and thus home care utilization. These impacts may vary dramatically across different parts of the country.

In the longer term, if utilization in facilities decreases as a result of the pandemic, this could mean that insureds are either receiving services in a home care setting or delaying services all together. Either of these would seemingly drive higher utilization in the future, with the former driving higher benefit utilization in the home care setting and the latter increasing utilization in all settings. Other items to consider include:

- In cases where utilization is already near 100%, will there be minimal future impact?
- What will happen to labor costs as competing forces are at play, including higher unemployment and health concerns for workers in this field?
- What will happen to facility costs if regulations change and measures are put in place to reduce risk of in-facility spreading of infections?
- For indemnity policies, what second-order impacts will there be on incidence rates from cost changes?

With respect to inflation in LTC cost of care (i.e., the rate at which the cost of LTC services will rise in the future), some consider LTC cost of care to be correlated with general U.S. inflation and/or U.S. Treasury rates. Inflation rates historically correlate with short-term U.S. Treasury rates. Given the sharp decrease in Treasury rates during the first half of 2020, this suggests inflation rates may remain quite low for the foreseeable future. Additionally, the U.S. Federal Reserve has signaled that interest rates would remain low for several years,[6] further suggesting the potential for low future inflation rates.

Considering capital market conditions in 2020, one might reasonably conclude that the LTC cost of care will remain low in coming years, as well. However, the situation is considerably more complicated. As with the prices of most goods and services, LTC cost of care is set by a complex balance of market supply and demand. The pandemic may significantly alter the balance of LTC supply and demand. Consider the following, non-exhaustive, list of considerations:

- Perceived risks of nursing homes and/or infected home health workers (discussed earlier) may put downward pressure on LTC demand.

5 Benefit utilization refers to the percentage of the maximum daily or monthly benefit on a reimbursement-style product that the insured will use.

6 "Federal Reserve Will Keep Rates Near Zero Until 2022 As Recession Continues"; *Forbes*; June 10, 2020.

- Supply of health care services may also shift materially—if high unemployment in other sectors pushes more workers to the health care sector, this could shift the supply curve upward, putting further downward pressure on LTC costs. On the other hand, if the LTC provider market recedes in response to demand and/or other macroeconomic conditions, this could counterbalance the downward pressure on demand.
- Factors such as higher demand for home care services and increased cost for facilities may lead to future increases in cost of care (above and beyond historical levels or general inflation).
- Factors such as a shift in situs[7] from facility to home care, telehealth options, artificial intelligence (AI)/robotics, and an increased pool of unemployed workers may put downward pressure on future cost of care inflation.
- Other factors—such as changes to Medicaid or Medicare, and regional or state-level policies—may exert an impact that is difficult to predict, even directionally.
- How, if at all, will government policies impact the supply and demand for LTC services? For instance, might states continue a recent trend of evaluating state-level, publicly financed LTC options?

These factors, and others, might need to be considered in the development of a long-term benefit utilization trend (whether explicit or implicit) as shifts in the cost of LTC services change over time.

Shifts in care situs

In both the short term and the long term, impacts of the pandemic may accelerate a shift in care: away from facilities to home care. This is a shift that was slowly occurring prior to COVID-19 as more people are looking to age in place. The pandemic may at the least be temporarily increasing the trend and drawing enhanced attention to the issue.

Additional items to consider include:

- Similar to that traditional health care space, will there be a movement from formal home care to telehealth?
- Will the LTC insurance industry see a focus on providing more informal care options?
- Are there changes in home care services in 2020 that continue to increase LTCI home care claims incidence relative to facilities? Is there an offset to incidence of claim for facility care?

As LTCI claims experience continues to develop, it will be important to quantify the impacts of COVID-19 on both benefit utilization and situs of care behavior. The aforementioned considerations are not an exhaustive list and there will assuredly be additional considerations that manifest as the LTC landscape evolves post-COVID-19.

7 Situs (or "care situs") refers to the location where care is administered to the patient, and includes primarily nursing facilities, home health care, or assisted living facilities.

Underwriting

Beginning late in the first quarter of 2020, COVID-19 materially disrupted the business operations of many life and health insurance companies, including the underwriting function. From the early stages of the pandemic, actuaries observed the disproportional impact that COVID-19 demonstrated by attained age—e.g., older ages were disproportionately impacted—and the importance of co-morbidities in anticipating the severity of the disease on certain individuals—e.g., individuals with diabetes, pulmonary disorders, and certain cardiovascular conditions were more likely to experience the most severe symptoms.

It was observed that life and health insurers generally, including companies with LTCI business, responded by adjusting (generally tightening) underwriting tools and guidelines. Specifically, companies implemented measures including but not limited to:

- More conservative underwriting standards for applicants above certain ages—e.g., 65 and older—considering the disproportionate impact that COVID-19 had on this population;
- Requirements of a statement of good health for some products (this appears to have been more common on life insurance than health insurance and LTCI);
- Restrictions on policy applicants related to foreign travel and/or travel to regions within the United States designated as high-risk areas based on the prevalence of COVID-19 infections;
- Increased caution for applicants presenting certain co-morbidities determined to be highly correlated to COVID-19 infection or severity of symptoms;
- Asking additional questions related to COVID-19 exposure; and
- Accelerating digital options for buying financial products.[8]

The underwriting risk arising from COVID-19 for traditional, standalone LTCI may be quite small (and there was very little of this business issued in 2020 in any case). As noted elsewhere in this issue brief, COVID-19 appears to have both increased disabled life mortality (particularly for those confined to nursing homes) and reduced LTCI claims incidence rates (perhaps due to fear of entering a nursing facility perceived to be at high risk for COVID-19 infections and/or concerns associated with having an infected home health aide enter a person's home). Both of these factors decrease, at least in the short term, LTC morbidity and potentially reduce underwriting risk—i.e., there is little risk that a potential policyholder will rush to buy a standalone LTCI policy to protect against imminent insurable loss arising from COVID-19.

8 "Pandemic is increasing money woes, interest in life insurance, Prudential finds"; *BusinessWire*; Sept. 16, 2020.

Persistency

Mortality

Short-term mortality impacts from COVID-19 have been disproportionately concentrated on those in LTC settings. Accordingly, many actuaries may expect short-term increases in claimant mortality, with the potential to decrease claim reserves. Impacts from this may vary in both magnitude and timing as spikes occur in different parts of the country at different times.

The long-term outlook is more nuanced. To qualitatively assess the long-term impact of COVID-19 on LTCI mortality, actuaries may consider several key questions, including but not limited to:

- Are the elevated mortality rates observed in 2020 as a result of COVID-19 short-term (here meaning one to three years) accelerations of deaths? Acceleration of death refers to a temporary spike in mortality rates, followed by a period of time with relatively lower mortality. Such a phenomenon may occur when an acute event, such as a pandemic, causes a cohort of people who are already nearing end of life to die several months or years earlier than they otherwise would. Or, on the other hand, will COVID-19 leave survivors with residual health impairments, potentially increasing mortality rates for LTCI insureds that remain inforce beyond the pandemic?
- Depending upon the answer to the immediately preceding question, how are both the level and slope of mortality adjusted to reflect the anticipated impact on mortality for LTCI insureds who persist beyond the pandemic to reflect the anticipated impact on mortality?
- Will policyholder behavior in reaction to the pandemic—e.g., elevated lapse rates—change the mix of business in a way that alters LTCI mortality? For instance, will those deemed as "healthier lives" choose to lapse, leaving an inforce population with higher propensity for claims but also higher mortality rates, possibly offset by lower lapse rates?
- How do the impacts for active life mortality vary compared with disabled life (claimant) mortality?

The answers to these questions can lead to widely divergent views on future experience. From the perspective of COVID-19 deaths as predominantly short-term accelerations of deaths, and considering the disproportional impact that COVID-19 has on those of advanced ages, a reasonable conclusion may be that long-term mortality assumptions after the pandemic will be both lower and have a less steep slope than pre-pandemic mortality assumption. Indeed, historical mortality experience from prior pandemics supports the notion that a pandemic may both shift and bend the mortality curve.

A similar phenomenon occurred in the years following the 1918 flu pandemic, or Spanish flu, though the Spanish flu's disproportionate impact on younger individuals exerted a different impact on long-term mortality than is expected from COVID-19.

If one views COVID-19 as likely to have residual health impairments on survivors, long-term future mortality rates may be higher than pre-pandemic rates. It is too early to say whether such long-term impairments may exist and, if so, how they will manifest themselves. For instance, will the health impairments a) disproportionately impact older ages (consistent with COVID-19 case mortality rates) and therefore increase the future mortality curve, or b) disproportionately impact younger ages (who had low case mortality rates, but potentially higher infection rates), leaving an elevated but flattened mortality curve. This issue warrants careful consideration and monitoring over coming years.

Voluntary Lapse

Shifting attention to voluntary lapses, short-term factors may point to the potential for a decrease in LTCI voluntary lapse rates. Insurers have extended premium grace periods, either voluntarily or because of state mandates, further reducing already-low lapse rates in the near term. However, macroeconomic conditions may partly offset this phenomenon. Because the U.S. economy entered recession in the second quarter of 2020, insureds living on fixed incomes may face financial pressure to lapse their policy in the face of more pressing needs.

The long-term impact of lapses may be similarly important from a liability perspective. During 2020, there was significant media coverage surrounding the elevated levels of COVID-19 infections and deaths in nursing homes. Further, early data in some states suggested that a majority or near majority of COVID-19 deaths were associated with residents in nursing homes, though this trend appears to have moderated as the pandemic progresses. In the long term, this preponderance of coverage could contribute negatively to the desirability of nursing homes, and assisted living facilities more broadly, putting upward pressure on LTCI lapse rates. As a result of fears associated with living in a facility, the perceived value of policies may decrease, which leads to the insured choosing to lapse their policy. Such upward pressure would presumably increase if companies offer some form of cash surrender benefit/policy buyout option in the future.

At the same time, economic conditions may put further upward pressure on lapse rates. The U.S. economy officially entered recession in Q2 2020, according to the National Bureau of Economic Research. Difficult economic conditions may force some insureds to lapse their policies.

Capital Markets

Concurrent with the pandemic, interest rates have decreased markedly, below rates that were already perceived as being at historical lows, and stock market volatility has increased. More specifically, U.S. Treasury rates dropped sharply by March 31, 2020, partially offset by a widening of credit spreads. It should be noted that credit spreads generally narrowed by June 30, 2020. Pre-pandemic, there existed significant uncertainty with respect to default rates fueled in part by struggling brick-and-mortar business, global trade issues (e.g., tariffs, intellectual property), and U.S. energy production due to falling fuel prices. COVID-19 has helped accelerate short-term actual and expected defaults by shifting consumer behavior, real estate supply and demand, and other drivers of defaults. If defaults continue at elevated levels, this may keep downward pressure on net interest rates. It is possible that longer-term defaults may be shaped by more permanent shifts in both consumer behavior and the economy (e.g., global supply chain changes, automation).

Low interest rates and/or stock market volatility may put pressure on insureds' ability and willingness to continue to pay LTC premiums. From an insurer perspective, low interest rates may lead to higher LTCI reserve requirements for year-end 2020. Insurance companies may have limited ability to offset the upward pressure on reserve requirements through inforce premium rate increases; states generally do not consider actual investment returns in premium rate increase requests. Implications of current capital market conditions on various LTC stakeholders are considered later in this issue brief.

Measurement of Experience

Data Collection and Analysis

There are several high-quality sources of U.S. population mortality related to COVID-19, including the CDC[9] and the Johns Hopkins University.[10] These data may give a good starting point for population-level mortality analysis, even while the data may still be emerging and infections rates may be underreported. However, there is in general significant uncertainty as to whether population mortality statistics apply to an LTCI insured population; this uncertainty is magnified in the context of the COVID-19 pandemic.

The Centers for Medicare and Medicaid Services (CMS) collects and reports data related to COVID-19 mortality in nursing homes.[11] These data may provide a more direct comparison to COVID-19 mortality for LTCI population disabled lives. Nevertheless, careful consideration is warranted. As one example, the CMS data includes records for

9 https://www.cdc.gov/nchs/covid19/index.htm
10 https://coronavirus.jhu.edu/data/mortality
11 "COVID-19 Nursing Home Data"; CMS; week ending Dec. 12, 2020.

certified Medicare nursing facilities/Medicaid nursing facilities. The Medicaid facilities, in particular, may not exhibit experience consistent with nursing homes occupied by LTCI insureds.

Regardless of the data source, the quickly developing nature of the pandemic makes it likely that there is some level of misreporting in the data. This may include, but is not limited to: 1) underreporting of infections (due to asymptomatic cases and/or lack of timely testing), 2) misreporting of deaths (e.g., pneumonia deaths reported as COVID-19 or vice versa), and 3) reporting lags or delays, and errors.

Data concerning LTCI morbidity and lapse experience are generally not publicly available. Insurers began tracking morbidity and lapse experience related to COVID-19 (in addition to mortality) as early as the first quarter of 2020. However, there are no known industry sources of this data as of August 2020.

LTCI insurers also face the challenge of measuring situs transfer related to COVID-19—e.g., transfer from nursing homes to home health—or COVID-19 "recoveries"—e.g., temporary withdrawal from the nursing home due to fear of COVID-19 infections.

Measurement Techniques

Short Term

In measuring short-term fluctuations in experience, a general concern is with assessing whether the average mortality rate in a particular time period—say, for instance, Q2 and Q3 2020—is statistically different than average mortality rates for other periods of time. In general, an analysis of variance test (ANOVA) provides a statistically rigorous way to test the null hypothesis that the average mortality rate in the study period (Q2 and Q3 2020) is different than the average mortality rates in other periods—e.g., the corresponding period in the prior year. However, several challenges arise with this approach for measuring short-term experience fluctuations in several respects, including the need to account for changes in mix of business over time and changes in underlying expected experience. Testing for changes in actual-to-expected ratios (rather than changes in average mortality rates themselves) may address this issue by reflecting mortality/morbidity improvements, changes in claims management, etc. into the "expected" part of the equation. However, this distinction changes the nature of the statistical tests, and complicates the analyses.

Predictive models, including generalized linear models (GLMs) and gradient boosted machines (GBMs), may provide viable options for measuring the short-term impact of the pandemic on actuarial experience. GLMs are a general class of models based on the multivariate linear regression framework. The measurement of the short-term impact

of the pandemic would begin by fitting a GLM model to the subject experience (for instance, mortality), including experience collected during the pandemic but excluding initially any predictor variable identifying the subset of the experience that occurred during the pandemic. Once a model is identified, typically a potential new predictor/independent variable to the model is added. The new variable is binary, indicating whether the subject experience occurred during the pandemic period. To the extent that a t-test of the newly added variable demonstrates statistical significance of the variable, one might conclude that the pandemic influenced short-term mortality rates and, more directly relevant to this section, measure such impact by examining the coefficient of the binary indicator regression variable. The advantages of this approach include: a) one has a statistically rigorous way to test the significance of a particular predictor variable (in this case, a binary categorical variable indicating whether the experience falls within the pandemic period or not), and b) if such a variable exists, the model will automatically calculate the impact it has on the dependent variable (mortality) in the form of the regression coefficient. Disadvantages of this approach include potential difficulty in selecting and fitting the "base model" (i.e., the GLM before including the binary predictor variable) and general model complexity.

GBMs may also serve as a useful tool for identifying and quantifying short-term fluctuations in actuarial experience. GBMs are decision tree-based models, which iteratively reduce the model prediction error by stepping through successive trees. Unlike GLMs, the GBM approach to measuring short-term fluctuations can generally be accomplished with one model. All potential predictor variables would be included: morbidity/mortality trends; any other item that may cause annual volatility; as well as the binary variable indicating whether experience falls within the pandemic period. If the binary indicator variable ranks high on the relative influence measure, it suggests that the pandemic has exerted a statistically significant impact on mortality in that period. Disadvantages of this approach include: 1) there is no rigorously defined test of statistical significance that may be used, 2) there is no direct/easy way to quantify the impact of the binary indicator variable, and 3) GBMs require informed professional judgment concerning selection of parameters such as the model "learning rate," the number of trees, and statistical distributions used within the GBM construct. That said, GBMs need not be regarded as a "black box." The difficulty of quantifying the impact of the binary variable might be overcome through modern techniques such as SHAP[12] value analysis or other model visualizations. One potentially strong advantage of using the GBM approach is that GBM models have proven quite effective in developing current actuarial assumptions for LTCI products, including mortality, claim incidence, and claim termination.

12 *SHapley* Additive exPlanations by Lundberg and Lee (2016).

Long Term

Measuring the long-term effects of a pandemic requires statistically credible data. To identify values, a lengthy period of data collection may be required to identify credible levels over time, particularly with the measurement of trends. Those relying on long-term projections should consider the sensitivity of any immediate COVID-19 impact on assumptions and any trend assumptions. Working with too little data or data too early could lead to misleading conclusions.

As with short-term effects, COVID-19 may affect the incidence of disability, the number of recoveries and deaths during disability, the number of deaths among those who are not disabled, and the number of LTCI policies that lapse. For each of these projection assumptions, time-related variables are appropriate when applying statistical tools such as GLM, GBM, and Time Series models. In addition to including variables that identify benefit options, demographics of the insureds, and selection periods, the models might include an identification of whether the data was from calendar year 2020 or later, the calendar year itself beginning in 2020 (or the number of calendar years since 2019), and perhaps a combination of the two. Furthermore, an index marking the date the vaccines became available and/or were widely implemented may be included in the predictive analytics, and the analyst would consider the relevance of the percentage of the population and the demographic segments receiving them.

Ideally, the modeling measures the COVID-19 effects specifically for each type of provider—nursing facilities, assisted living facilities, and home health care. Clearly COVID-19 has prompted changes in the management of long-term care providers, each type in different ways. Future developments may reflect these changes, both immediately and as a developing trend. Furthermore, some projections recognize the transfer of the policyholder from one type of setting to another, and variables may be included in the statistical analytics to identify the previous type of care when initially entering a new type of care. Changes in transfer from one type of care to another may be observed before and after calendar year 2020, and perhaps incrementally over time due to behavioral changes in response to COVID-19.

Public Policy Considerations

This section addresses the public policy considerations potentially arising from the observations raised earlier in this issue brief. Issues from various perspectives are considered, including consumer, regulatory, public policymaker, and insurer.

Affordability of New Policies

The pandemic offers a vantage point to take stock and reevaluate the issue of affordability. There are many items to consider which are driving the affordability of new policies. This brief focuses on three—claim behavior, financial, and regulatory.

Claim Behavior

As society in general seeks to age in place—even prior to COVID-19, but more pronounced post-pandemic—we expect to see a continued shift from facilities to home care. A shift from facility to home care would typically lower reimbursable cost. However, if demand for home care services begins to exceed supply, there is a potential for a shift in the cost curve. An increase in the intensity of home care services related to the use of technology may also occur.

The impacts of the pandemic and the movement to home care may spur changes in the facilities space which, along with the reduced demand, have the potential to increase the facility cost. Such increase in cost may further the decreased demand for care in facilities.

The pending shifts and changes in supply and demand may also spur innovation, either from the provider or insurer. The traditional medical space has already seen broad adoption of telehealth and that adoption has only accelerated during the pandemic. Similar adjustments from providers might also come about. Additionally, increased use of robotics or other nontraditional solutions—e.g., pet therapy—may also be expedited. From the insurer side, the pandemic's impacts may spur product evolution.

Financial

Insurers are facing increasing uncertainty on LTCI financial results. Some public policy financial considerations are as follows:

- Prolonged low interest rates impacting investment yield.
- What is the impact of the short-term increase in mortality? Sections 3 and 4 of this issue brief discuss this issue in more detail.
- How is the insurer impacted by other effects of COVID-19?
- Does an already dwindling list of insurers writing new business become even shorter?

- Does the increased exposure/news coverage serve to raise awareness and drive a change in demand for LTCI products and care paths?
- Could the financial uncertainty for LTCI result in the acceleration of new sales going to combination products?
- Do individuals lapse or decline to buy LTCI coverage and instead self-insure?

Regulatory

In the near term, it will be very difficult to determine which experience trends are temporary aberrations and which are permanent. As insurers seek to adjust rates, companies will have to determine when and how to pursue adjustments. The impact on experience studies will take time to develop. Ultimately, both companies and regulators will need to be comfortable with the experience provided. Additionally, regulators may face prolonged resource constraints.

Rate Increase Impact

Historically, the general need for LTCI rate increases has been driven by adverse lapse experience and overall higher than anticipated costs for claims. However, these adverse assumptions took time to develop and it is the long-term changes to these assumptions that has driven the need for increases. Lapse rates being lower than anticipated is most impactful when talking about the ultimate lapse rate that affects projection years 10+. Investment yields on claims projected 30+ years into the future are much more impactful than investment yields in the next few years. For most blocks of business that are still seeking rate increases, claims peaks are still 10-20 years into the future and long-term morbidity trends will far outweigh short-term impacts.

LTCI rate increases are also driven in part by regulatory rules around the lifetime loss ratio of the product, which is not nearly as sensitive to short-term experience as it is to long-term trends being reflected in projected experience. That means needed future rate increase impacts due to COVID-19-related reasons may not be known until experience has more fully developed and been analyzed. While these possible new trends may be developing as a result of COVID-19, LTCI carriers are still coming to understand and develop assumptions around pre-COVID-19 claims experience that has been generally worse than expected for decades.

COVID-19-Related Delays

There is also impact to rate increases related to COVID-19 stemming from regulatory requests to delay filings for rate increases, unintentional or purposeful delays in regulatory approvals of rate increases, and requests for delays in the implementation of rate increases. In all three scenarios, the impact is a delay to the rate increase

implementation that can have a significant cost to the LTCI carrier and may increase the needed rate increase amount. This all depends on the individual filings themselves and how long delays might last.

Few states, if any, have been requesting for new filings to be held off during the pandemic; it appears most state departments of insurance continued to operate throughout the pandemic either in a work-from-home or limited in-office capacity. Consideration might be given to the potential slowing of the rate increase review process due to limitations brought on to regulatory bodies by these unique working conditions.

Multiple states have imposed restrictions on the implementation of new rate increase approvals until COVID-19 emergency situations have ended. This has been formalized through bulletins and/or emergency regulation or through less formal direct letters or conversations with carriers requesting delay. This is in an effort to provide relief to LTCI insureds who may have uncertain financial conditions that have been brought on by adverse economic conditions of COVID-19. An unintended impact could arise if a number of rate increase implementations are delayed for some time and then begin at the same time.

Carriers may experience additional delays due to the stress that multiple implementations could put on their operations. A consideration should be made for whether a current rate increase requested amount needs to be larger due to the cost of delay in implementation of the current increase. The amount of impact depends very much on how long the delay is and whether the rate increase modeling accounts for the delay in timing.

It should be noted that delays in the approval of warranted increases will lessen the impact of the rate increase once it is implemented and may lead to the need for additional or larger future rate increases. Delays in approvals during the pandemic should not be surprising with increasing level of uncertainty about public health, the national economy, and the impacts of this uncertainty on the future of LTCI experience.

As carriers and regulators navigate these uncertain times and make decisions on LTCI rate increase filings, historical experience development along with possible changes to future experience development are key considerations. Given the state of LTCI as a product, these decisions could have significant impact on LTCI statutory margins and overall company solvency.

Solvency Considerations

When discussing solvency considerations, it is important to always remember that solvency is a unique situation for each carrier and most considerations will not apply to all carriers in the same way or to the same extent. Short-term impacts from COVID-19 may result in reserve charges (or releases). Generally, however, long-term trends that result either directly or indirectly from COVID-19 would have more significant impact on insurer solvency. An extended period of historically low investment yields will almost certainly have an unfavorable impact on LTCI carriers and their solvency position. As mentioned in previous sections, long-term trends such as shifts in situs care, impacts to mortality, and impacts to morbidity components have the potential to greatly affect many carriers' LTCI blocks.

Relatively moderate changes to future claims expectation may cause major margin impacts and could create solvency concerns as many carriers face a quickly shrinking inforce premium base with which to correct for these developments via rate increases. The end result could be increased stress on insurers' margins and potential solvency considerations.

As the impacts of the COVID-19 pandemic and both its short-term and long-term impacts are studied, it becomes clearer that projecting expected policyholder and claims behavior decades into the future continues to present a unique and enormous challenge for actuaries practicing in the LTCI space.

Consumer Perspective and Policymaker Considerations

Early in the onset of COVID-19, the CDC issued a warning that older adults and people of any age with serious underlying medical conditions may be at higher risk for severe illness from COVID-19.[13] There have been reports that have found that nursing homes and other LTC facilities, where many of those in this "vulnerable" population are concentrated, appeared most susceptible to contagion and increased deaths from COVID-19.[14] There are regional variations, depending on the severity of the pandemic levels in the area and ensuing shortage in health care capacity and workers.

What has also been evident through such reports are the feelings of frustration and helplessness of family members due to lack of outside communications and critical updates on their loved ones receiving care in these facilities. Thus, current users of LTC facilities and their families may already be reconsidering and taking immediate action to opt out of community care, even at the risk of any portion of payments already made for LTSS not being refunded or reimbursed. Depending on the source of such

13 People at Increased RiskAnd Other People Who Need to Take Extra Precautions"; CDC; Jan. 4, 2021.
14 "AARP Answers: Nursing Homes and the Coronavirus"; AARP; Nov. 6, 2020. Also see Introduction.

payments—Medicaid, LTCI, or out-of-pocket—and the terms of their contract agreement with the facility, users may have little or no recourse. Prospective users will also be likely to take a closer scrutiny of the quality of the prospective facilities before considering and/or entering any contract agreements with any of them. Additionally, such users will face new, hard choices for LTC alternatives.

Recognizing the congregate setting in LTC facilities, CMS has issued additional COVID-19 guidelines and protective measures for their vulnerable population. As the primary payor of LTSS costs to LTC facilities, Medicaid has also conducted surveys of LTC practices to ensure strict compliance with federal standards for LTSS and LTC facilities, as well as LTC-specific COVID-19 guidelines. Any such, additional payor requirements and regulations create administrative and financial requirements on these facilities, even as they grapple with current shortfalls in Medicaid payments and the potential decline in their LTSS users, leading these facilities to grapple with hard decisions about their future prospects.[15]

Any home care arrangements require assessment of individual family situations. Considerations include but are not limited to: ability to respond to emergencies and other crises, options for payment of services, LTCI or state coverage under Medicaid, careful selection of certified caregivers, and need for special home setup and medical equipment.

During the latter part of 2020, as many parts of the U.S. reopened, the season has changed and families gather for the holidays, a new wave of contagion created new hotspots with a rise in infections and hospitalizations among younger adults. Combined with a rise in previously undiagnosed other chronic illnesses, these events have been placing significant short-term strain on the health care system, as well as LTSS. This may also lead to a potential decline in the number of emergency healthcare and LTC workers, many of whom may have been exposed to COVID-19; some have fallen ill or died. It is uncertain how much these systems can bear, and for how long, and these immediate concerns need to be addressed.

There will be a need to address the impact of COVID-19 experience on potential shortfalls in state finances, and the domino effect on health care, LTSS and other systems, and ultimately the consumers who have already experienced their own personal health and economic setbacks.

15 National Center for Health Statistics"; CDC.

There is optimism over effective vaccines, but it is uncertain how long and severe the effects of the pandemic may be. Regardless of when the pandemic ends, policymakers need to formulate both short- and long-term solutions for the various health and economic systems to ensure the well-being of all Americans.

Combo Products

Combination products are those that combine benefits for LTC with other benefits such as life insurance or annuity benefits. These "combo" products have become more popular in recent years due to a realization by consumers that the need for care may be in their future, but the hesitance to spend significant amounts on standalone LTCI premiums knowing that the care may never be needed.

The increase in mortality associated with the COVID-19 pandemic, particularly among the elderly, may be occasion for an expanded the conversation about these products. There is a natural hedge for both the insured and the carrier when LTCI benefits and offsetting life insurance benefits are contained in the same policy. For the insured, if the LTCI benefits are not needed, at least they will retain the death benefits. For the insurer, they typically will only pay the face amount one time for one benefit or the other (or partially pay for both). As higher mortality may help the overall financial results of the standalone LTCI, which typically does not offer death benefits, the financial impact on combination products may be muted due to potential increased death benefit payments.

The impact of COVID-19 on spousal contagion may impact standalone and combination products. As the incidence of claim is much higher upon the death of one spouse, to the extent that a book of business has significant spousal coverage, there is potential increased LTCI claim risk.

The additional mortality due to COVID-19 has certainly increased the slope of the mortality curve, but it is not certain how long this additional mortality will last. The extra premium for the LTCI coverage may add some margin for the possible additional mortality risk. As discussed previously in this issue brief, the morbidity risk for LTCI due to the COVID-19-related care is not yet clear. If there is a change in claim metrics such as incidence rate or average length of stay, the impact to ultimate profitability will be muted by offsetting impacts for other benefits on combination products.

Combination products have experienced lower morbidity than standalone LTCI products to date. This is particularly true for accelerated-only plans. The impact of COVID-19 will need to be monitored to determine whether there is a significant claim impact. For instance, will individuals who decided not to accelerate their death benefit be more or less inclined to do so in the current and future COVID-19 environment due to financial or other pandemic impacts?

The underwriting risk arising from COVID-19 for combo LTCI policies, particularly those that offer any type of death benefit, is potentially more acute. With life/LTC combo products (or annuity/LTCI combo products that provide a death benefit), the mortality risk is elevated as a result of COVID-19. Many of the underwriting measures outlined above may warrant consideration.

Regardless of the path COVID-19 pandemic takes, there will be various impacts that will emerge regarding health care, convalescent care, and LTC needs as well as the impacts on mortality. This developing information will provide a solid backdrop against which to consider the value of combination products that provide for a variety of these needs.

Conclusion

This issue brief explored the potential short-term and long-term impacts of COVID-19 on the LTC insurance market, focusing on key actuarial assumptions and the ways in which the emerging experience can be assessed and measured. It also examined the implications of this experience on public policy considerations, with a balanced consideration of various stakeholder perspectives.

As of the latter part of 2020, there remained considerable uncertainty concerning the impacts that the pandemic will have on actuarial experience, both short-term and long-term. While a clearer picture of short-term experience is starting to emerge, it will take many years for long-term experience to emerge, stabilize, and allow for accurate measurement. This issue brief lays out considerations as actuaries are beginning to undertake the process of determining how the pandemic will influence LTCI blocks of business.