

**Reflection of COVID-19 in Life Insurance Mortality Improvement**  
**A Discussion Brief**  
**Academy of Actuaries Life Experience Committee**  
**May 23, 2022**

The American Academy of Actuaries Life Experience Committee is discussing how pandemics, and specifically COVID-19, would appropriately be reflected in projects such as asset adequacy testing and principle-based reserves (PBR) testing. The committee's conclusion was that we will likely not find the perfect answer. However, it believes that it would be helpful to develop a list of considerations that may be considered when developing mortality improvement assumptions.

**General Questions**

1. Does COVID-19 impact the mortality improvement assumption for PBR up to the date of valuation?
2. Does COVID-19 impact the mortality improvement assumption for asset adequacy testing?
3. Does COVID-19 impact the future mortality improvement assumption for PBR?
4. Does COVID-19 impact the future mortality improvement assumption for asset adequacy testing?
5. When considering COVID-19, should decreases in the mortality improvement be considered for annuity/long-term care insurance (LTCI) mortality?

**What Should Be Considered a "COVID-19" Death?**

At issue: If one is trying to determine excess deaths due to COVID-19:

1. Does the determination include all deaths where COVID-19 was a factor in the death?
2. Are COVID-19 deaths only those where it is listed as the primary cause of death?
3. How does one determine COVID-19 deaths when some states do not list cause of death?

**Considerations in Actuarial Work**

**For PBR and Asset Adequacy Mortality 2020-2022:** Should past COVID-19 deaths be ignored in determining mortality improvement to date of valuation?

**Yes**

1. It is a rare event that can be covered by surplus.
2. May have front-loaded deaths that would have occurred soon, so it is a positive for future life insurance mortality.

**No**

1. Methodology originally established for the PBR mortality improvement to date of valuation included all deaths.
2. Ignoring it would be the equivalent of ignoring stock market corrections.
3. If future mortality is expected to be better, it would be reflected in future mortality improvement numbers instead.

**COVID-19 and Future Mortality Assumptions in PBR and Asset Adequacy Testing:** The impact of COVID-19 on future mortality is unknown. It can also have different impact on various companies due to several factors. A possibility is to allow company actuaries to reflect their best estimate plus provisions for adverse deviations (PADs), as long as they have considered the factors that could impact their company's mortality.

Note that the Society of Actuaries (SOA) Research Institute's paper, *U.S. Population Mortality Observations Updated with 2020 Experience*, published in January 2022, is an excellent source of information.

**Factors That Can Impact Future Mortality Improvements:**

**Positives**

1. May have front-loaded deaths that would have occurred soon, so it is a positive.
2. Population mortality is generally improving, albeit at slower rates absent COVID; e.g., for cancer.
3. Increased use of self-testing and telemedicine has increased access to medical care for many.
1. Long COVID could negatively impact future mortality.
2. There are mental health impacts of COVID such as suicides and drug use.
3. Mortality rates on certain diseases—e.g., heart disease, diabetes, liver disease, hypertension—have not improved recently.
4. The delay in care will likely lead to extra mortality for a while.
5. There are still additional waves of virus.

**Negatives**

**Items Actuaries May Want to Consider When Determining Future Mortality Improvement Rates**

1. Mortality improvement varies by socioeconomic variables. The SOA Research Paper noted above (which is on population mortality versus insured mortality) breaks mortality improvement into quintiles and deciles. An actuary may want to review these and determine which quintile/decile best matches their company's block of business.
2. The larger the PAD on the mortality improvement assumption, the more uncertainty there is in the assumption.
3. Margins used in mortality improvement rates for PBR testing and asset adequacy do not have to be the same, but differences need to be justified.
4. Actuaries must follow state regulations related to use of mortality improvement. At least one state (New York) does not allow mortality improvement assumptions to be used in life insurance asset adequacy testing projections.
5. To date, the negative impact of COVID-19 on annuity mortality improvements has not yet been studied. Therefore, it may be aggressive to reflect these negative impacts on annuity assumptions at this time.
6. To date, the negative impact of COVID-19 on long-term care insurance (LTCI) mortality improvement has not been studied; the positive impact of front-loaded deaths may be offset with claimants experiencing long COVID.
7. Expected mortality improvements vary by age groups. The impact of COVID-19 on various age groups has been different; although older ages have experienced higher COVID-19 deaths, the working-age population—and therefore those covered by group insurance—experienced a greater increase in mortality rates from prior years' mortality rates. These are factors to be considered when determining future mortality improvement rates.
8. Consider differences in pandemic versus endemic phases of COVID-19.

**Regulators** may want to consider setting an established a range of acceptable mortality improvement rates that could be allowed.

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