Mortality and Longevity

# 2019 Individual Life Insurance Mortality Experience Report

## Exhibit 2 - Comparison of ILEC vs Population Movements by Calendar Year

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SOA Research INSTITUTE

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## Exhibit 2 - Comparison of ILEC vs Population Movements by Calendar Year

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Society of Actuaries

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## Section 1: Report

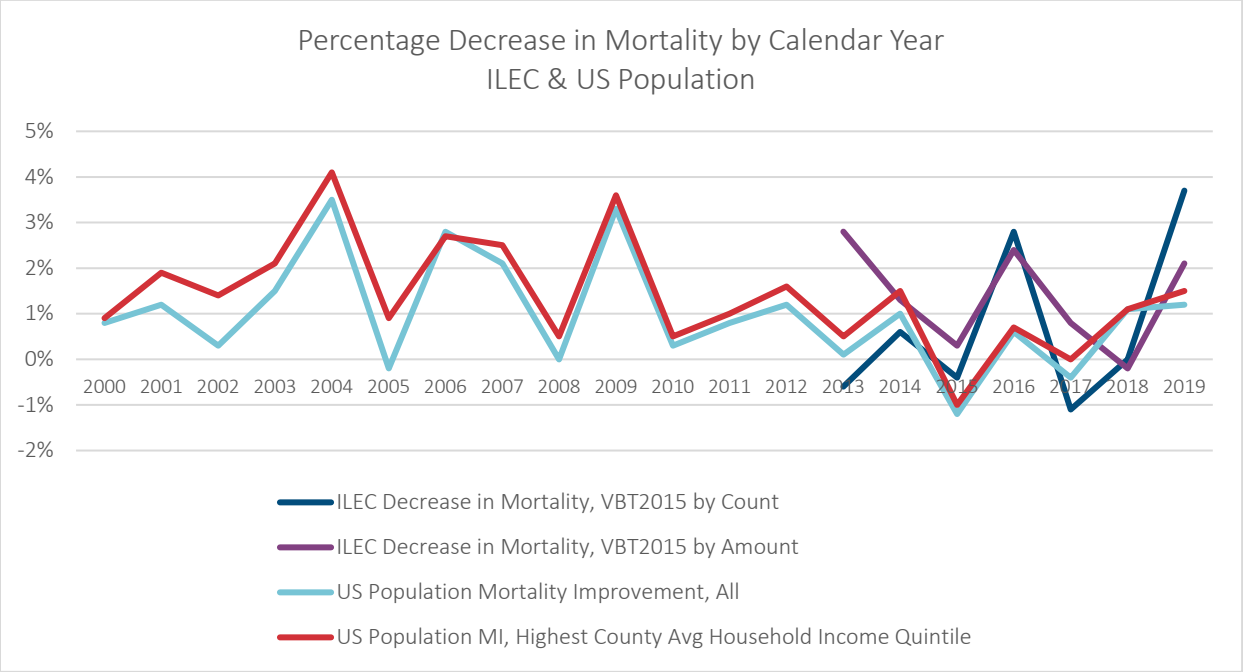
To gauge the reasonableness of the transition to the new 2018-2019 NAIC data, we used population mortality improvement (MI) as a proxy. The idea was that the ILEC change in mortality should be similar in magnitude and direction to the population MI. While there are many reasons the population MI is not an exact predictor of ILEC mortality movement, it was considered a valid sense check. Using actuarial judgement, the group decided that any deviation beyond approximately 3% for each of the calendar years 2018 and 2019 would warrant further investigation.

Population data, age, and gender-adjusted population mortality movements generally reflect mortality improvement, with minor effects such as net migration notwithstanding. For ILEC data, MI is likely still a significant driver of the overall change in mortality by calendar year. However, other contributing factors include different contributing companies, different blocks contributed within the same companies, changes in distribution over time, greater volatility, any inappropriate slope in the base table, and anti-selection.

Given the substantial basis risk of using population MI as a proxy for this specific movement, the team deemed it appropriate to use the movement as a general sense check, but not to specifically hypothesis test whether to accept or reject the new data. Additionally, due to the imperfect nature of the proxy, the comparison was kept at the aggregate level. Further subgroup examination was performed by the ILEC Data Consistency and ILEC Predictive Analytics subgroups of the ILEC Data Integrity Team.

ILEC and U.S. Population Trends in Mortality Decrease:

| Year | ILEC Decrease in Mortality, VBT2015 by Count | ILEC Decrease in Mortality, VBT2015 by Amount | US Population Mortality Improvement, All | US Population MI, Highest County Avg Household Income Quintile |
|---|---|---|---|---|
| 2000 | | | 0.8% | 0.9% |
| 2001 | | | 1.2% | 1.9% |
| 2002 | | | 0.3% | 1.4% |
| 2003 | | | 1.5% | 2.1% |
| 2004 | | | 3.5% | 4.1% |
| 2005 | | | -0.2% | 0.9% |
| 2006 | | | 2.8% | 2.7% |
| 2007 | | | 2.1% | 2.5% |
| 2008 | | | 0.0% | 0.5% |
| 2009 | | | 3.3% | 3.6% |
| 2010 | | | 0.3% | 0.5% |
| 2011 | | | 0.8% | 1.0% |
| 2012 | | | 1.2% | 1.6% |
| 2013 | -0.6% | 2.8% | 0.1% | 0.5% |
| 2014 | 0.6% | 1.3% | 1.0% | 1.5% |
| 2015 | -0.4% | 0.3% | -1.2% | -1.0% |
| 2016 | 2.8% | 2.4% | 0.6% | 0.7% |
| 2017 | -1.1% | 0.8% | -0.4% | 0.0% |
| 2018 | 0.0% | -0.2% | 1.1% | 1.1% |
| 2019 | 3.7% | 2.1% | 1.2% | 1.5% |




Based on the population comparison, the ILEC data for this aggregate level does not appear to be notably out of line. Further analysis at a more granular subgroup level is performed by reviewing the appendices available for download with the report and through predictive modeling.

## Section 2: Acknowledgments

The ILEC vs Population Movements subgroup was charged with validating the data after the change in statistical agent from MIB to the NAIC. The members include:

Ed Hui, FSA, MAAA, MSDS, CFA (Subgroup Chair)

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Dan Reilly

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Jim Stinson

Finally, our team at the Society of Actuaries includes:

Korrel Crawford, Senior Research Administrator

Pete Miller, ASA, MAAA, Experience Studies Actuary

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