Life Assumptions Indexed UL Focus

Learn from UL Misestimates of the Past

SEAC Spring Meeting

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wtw

Introduction

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Agenda

1. Introduction
2. IUL Policyholder Behavior Risks
3. Mortality Risks
4. IUL Target Spread
5. YRT Reinsurance Rate Increase Risk
6. Summary & Q&A

Introduction

Robust sales of Indexed UL continue!

Indexed UL continues to be one of the hottest life products:

- LIMRA reported IUL **sales in 2023 were 24%** of the life market as measured by premium
  - Policy count was **up 20%,** though **new premium fell 5%**
- Indexed UL sales grew significantly since the Great Recession and **new premium in 2023 totaled $3.7B**
- More companies continue to enter the market; **competition is fierce**, but companies expect strong returns

In light of this continued growth/popularity of IUL, there are several important assumption topics related to IUL worth noting

ROI target values

WTW 2023 Pricing Methodology Survey

IUL has highest ROI expectation for Life

Product	15th Percentile	Median	85th Percentile
TERM	6.1%	8.8%	11.0%
WL	6.8%	8.5%	10.0%
UL NLG	7.0%	9.0%	13.1%
UL	7.5%	9.3%	12.0%
VUL	7.5%	9.5%	12.3%
IUL NLG	7.8%	10.5%	12.7%
IUL	7.1%	10.0%	12.4%
FA	6.7%	10.0%	12.0%
VA	10.4%	14.0%	16.0%
RILA	9.3%	11.0%	12.5%
FIA	8.0%	11.0%	12.0%
SPIA & DIA	6.4%	10.0%	12.0%

ROI = Statutory return on investment (internal rate of return)

UL and ULSG block historical results

	Statutory Reserves in $ Billions					Net Gain from Operations (Row 33) in $ Billions				
	2023 YE	2022 YE	2021 YE	2020 YE	2019 YE	2023	2022	2021	2020	2019
Top 10	198.4	218.2	203.5	192.7	185.4	(1.2)	(1.2)	(1.7)	(1.1)	(1.4)
Top 20	280.6	301.2	283.8	259.2	250.7	(0.9)	(2.5)	(3.6)	(3.2)	(2.5)
Top 50	353.0	378.9	362.9	337.8	328.0	(2.3)	(3.7)	(4.4)	(3.3)	(2.3)

	Number of Companies with a Loss					Average Loss in $ Millions				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
Top 10	3	5	4	5	6	(595)	(305)	(553)	(338)	(303)
Top 20	8	10	13	13	14	(405)	(313)	(320)	(309)	(214)
Top 50	22	27	31	32	30	(243)	(179)	(170)	(149)	(134)

- Generally, 50% of companies are losing money on these blocks, though UL results improved in 2023
- The average loss is sizeable
- If you look at UL and ULSG alone, you will generally see similar results (many companies losing large amounts)

There are many lessons to learn from UL/ULSG that apply to IUL

In hindsight many companies, for UL priced in 1980s to early 2000s, **misestimated every assumption**

- **Mortality** (Flat % of SOA7580; Older Age mortality slope)
- **Lapse/Surrender** (Much stronger long-term persistency than expected)
- **Interest Rates** (Much lower than expected; Guarantees much higher than IUL)
- **YRT Reinsurance Rates** (Companies didn’t expect increases)

Companies continue to learn:

- Their **lessons on UL/ULSG** (large recent behavior unlockings)!
- From **history and hopefully avoid the misestimations** of the past!

IUL Policyholder Behavior Risks

Surrender assumptions

By what factors have you varied your surrender assumptions of your best-selling IUL by product design?

Risk class and premium funding pattern are the two factors where surrender rate assumptions vary most commonly.

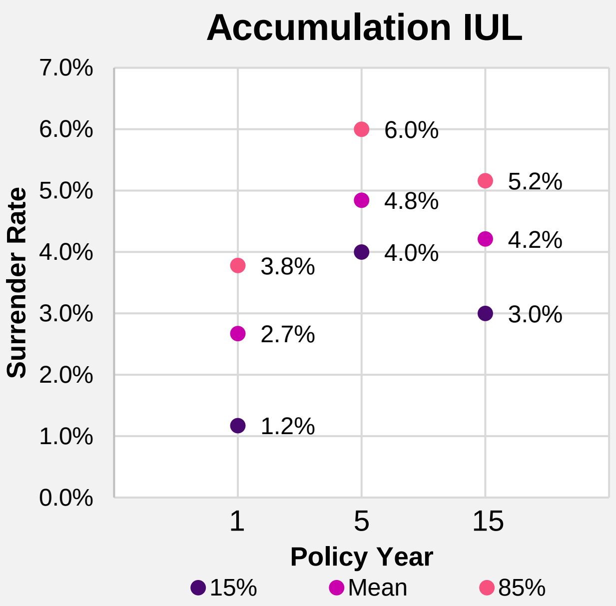
Issue age is also a popular choice.

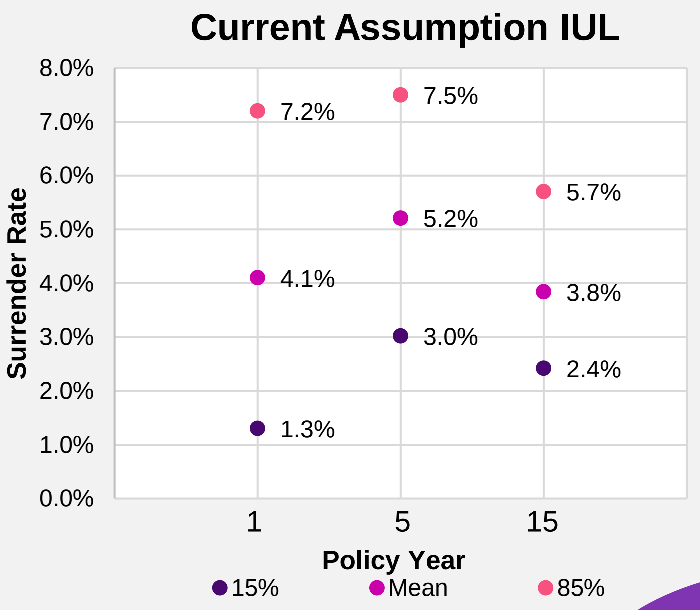
Assumptions are fairly simple - not very dynamic

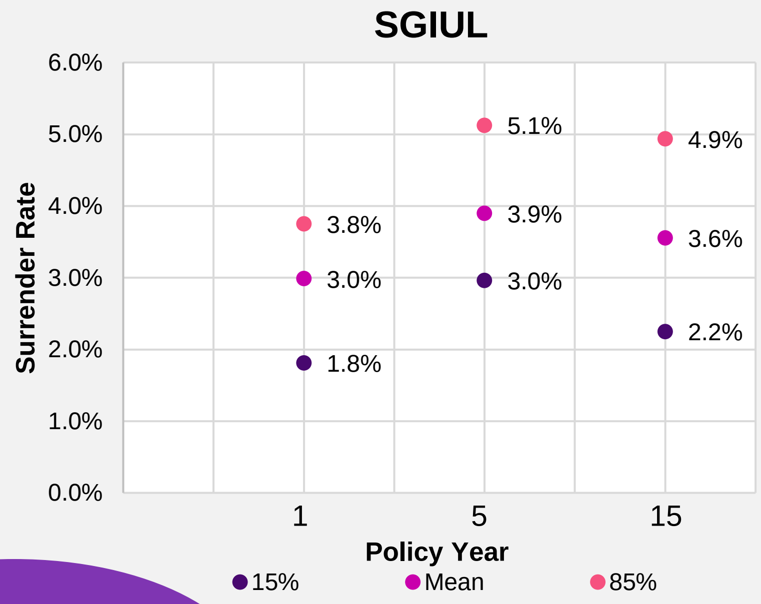
	Accumulation IUL	Current Assumption IUL	Secondary Guarantee IUL
# of Companies Responding	**9**	**5**	**7**
Risk Class (inclusive of gender)	5	4	3
Face Band	3	3	1
Issue Age	4	2	4
Distribution channel	2	2	2
Index account performance or crediting rate	1	2	1
Premium funding pattern (e.g., single pay, short pay, level, etc.)	5	4	4
Other (Premium mode, Policy Year, etc.)	3	1	1

Surrender assumptions

Surrender assumptions for a 45 year old, male, preferred non-smoker, $500,000 of face amount, level pay of your best-selling IUL by product design







Wide range of assumptions

Base and dynamic surrender/lapse

- As indicated in the survey results, **IUL lapse and surrender assumptions are fairly simple**
- There is also a **wide range of expectations**, which makes sense given no long-term experience
  - Most IUL has been sold since 2008/09 - there is very little experience post duration 15
  - Will IUL be similar to UL or VUL or be somewhere in between?
- **Most companies** do not model dynamic surrender/lapse on IUL products
  - They argue that the product will be insensitive to interest rates given equity market focused
    - What about Equity markets? Interest rates? Cap changes? Premium financing?

- **Sensitivity testing becomes important**, including stochastic modeling
- **Routine experience studies are key** to understanding if IUL behavior is truly dynamic!

Withdrawal/Policy loan assumptions

What percentage of 2022 accumulation IUL sales (through 09/30/2022) have illustrated income?

8 companies responded "**yes**“, and 5 companies indicated more than 50% AIUL sales in 2022 had illustrated income.

Did your pricing assume withdrawals and/or policy loans for income purposes?

8 companies responded "**yes**".

More risk around loans/withdrawal assumptions than UL!

Loans and withdrawals

- Importance of loans and withdrawal assumptions is **more material for IUL**
- **Pricing assumptions** for loans and withdrawals **vary widely**
- **Assumptions for valuation** can often be more **simplified** (e.g., X% of CSV is loaned)
- The key is **what spread are you assuming** for loans relative to unloaned account value!
  - How different these assumptions are determines **how important accurate loan balance modeling** can be
  - In many cases, IUL products have very **low target spreads and/or negative spreads if bonuses** are factored in
  - Assuming a positive loan spread (if not wash loans) can **drive a material impact**

- **Sensitivity testing becomes key** to understanding the risk
- It's important to **perform regular experience studies on loan and withdrawal behavior!**

Hedge decrements

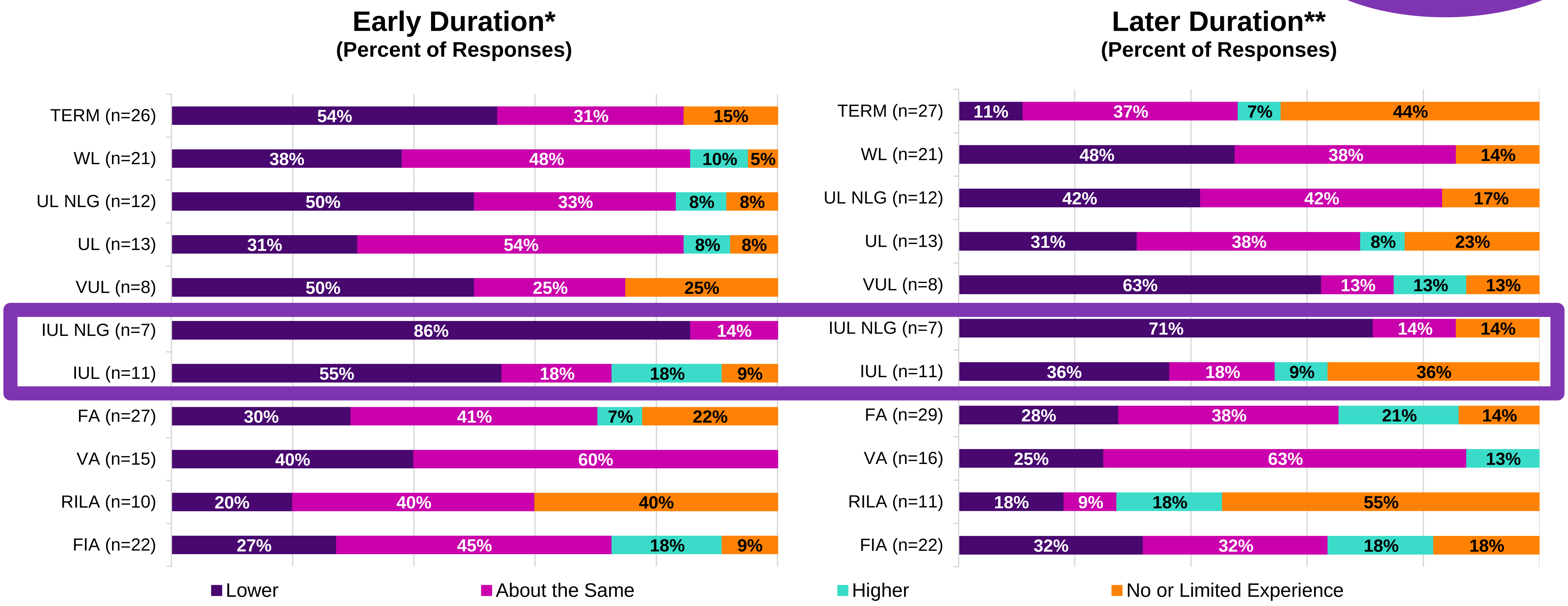
- **Many companies model IUL just like a UL** and assume they will earn the target pricing spread
- Given the multi-deposit nature of IUL and multiple available index options, **hedging will not be perfect**
- Many companies also **assume decrements in setting their hedge targets**
  - Policies that terminate prior to a crediting segment year typically only receive guaranteed interest crediting
- The **hedge decrement assumption often is fairly simple** and combines assumptions
- All of these factors will **typically lead to some amount of hedge inefficiency**
- Hedge **inefficiency should be built in as a cost** to your target pricing spread

- You should **routinely update your assumed decrement assumption** in your hedge target
- In early years of business, this will be **driven by lapse/surrender**, but that will change over time

Inforce surrender experience compared to expected

WTW 2023 Pricing Methodology Survey

IUL early and late lapse lower than expected



* Early duration (Term: During level term period; Annuity: During surrender charge period; All other products: Policy years 1-5)

** Later duration (Term: After level term period; Annuity: After surrender charge period; All other products: Policy years 6+)

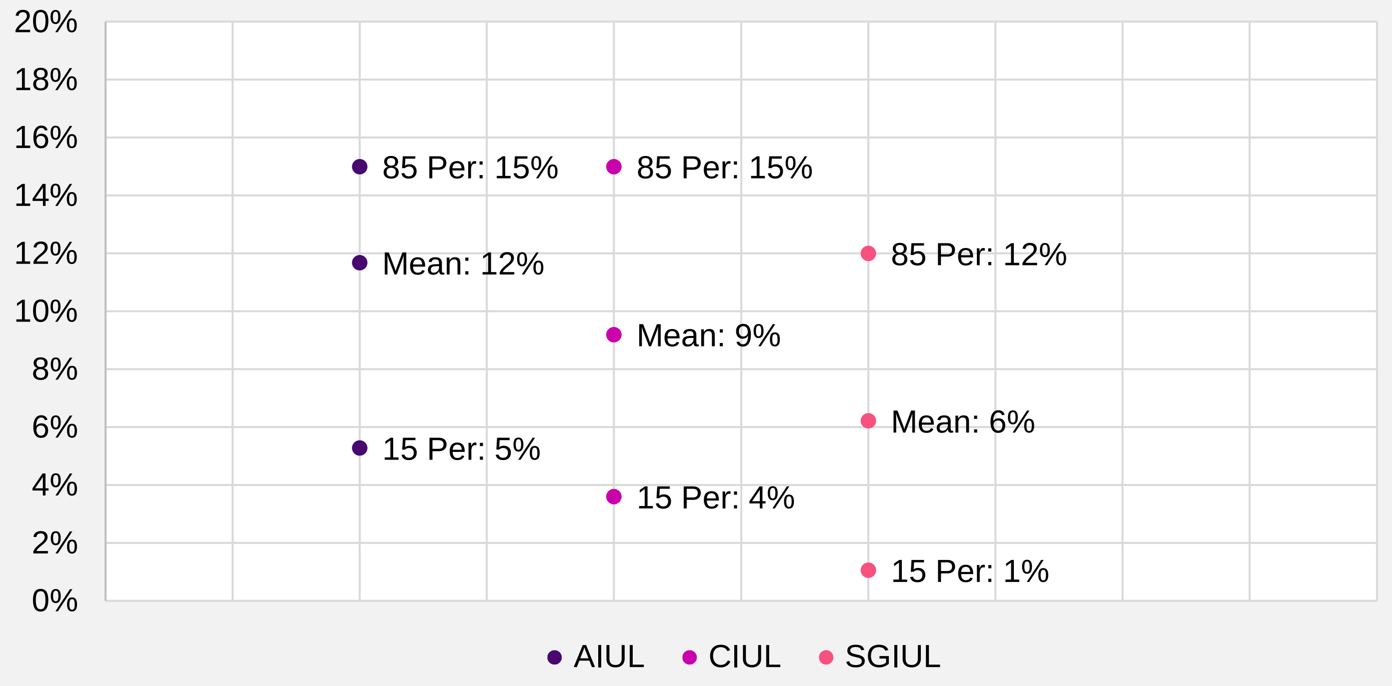
Life/IUL Mortality Risks

Underwriting and mortality

Relative to your fully underwritten policies, by approximately what percentage was your accelerated underwriting mortality assumption higher for 45 years old, male, preferred non-smoker, $500,000 of face amount, level pay?

There is a fairly wide range of difference in assumptions for AUW with a **0%** to **25%** increase.

Four companies assume at least a **15%** increase.



Accelerated UW

- **Prevalence of Accelerated UW continues to grow**
- IUL Survey shows a **wide range of assumptions being used** by companies
  - Do some companies have a better mouse trap? Maybe
  - Or, is there just a lot of uncertainty about what experience is going to be?
  - Will it ultimately get back to fully UW mortality experience? Seems like a stretch
- Accelerated UW also **lowers the barrier to replace business**
  - The past barrier of going through more invasive underwriting is being removed
  - Will this lead to more replacement activity and/or poorer experience for older blocks?

- **Sensitivity test mortality assumptions** and **understand your risk of misestimating**
- **There will be mortality slippage** – it's just a question of how much, where, and for how long!

Mortality Improvement

Did your pricing assumption include any mortality improvement?

10 companies responded “yes”.

Multiple companies are likely using stale assumptions given recent mortality dis-improvement.

Mortality improvement assumptions may be stale

If yes, what factors do the mortality improvement assumptions vary by?

Factors	Number of Companies
# of Companies with MI	**10**
Attained age	9
Gender	9
Risk Class	4
Duration	5
Face amount	2

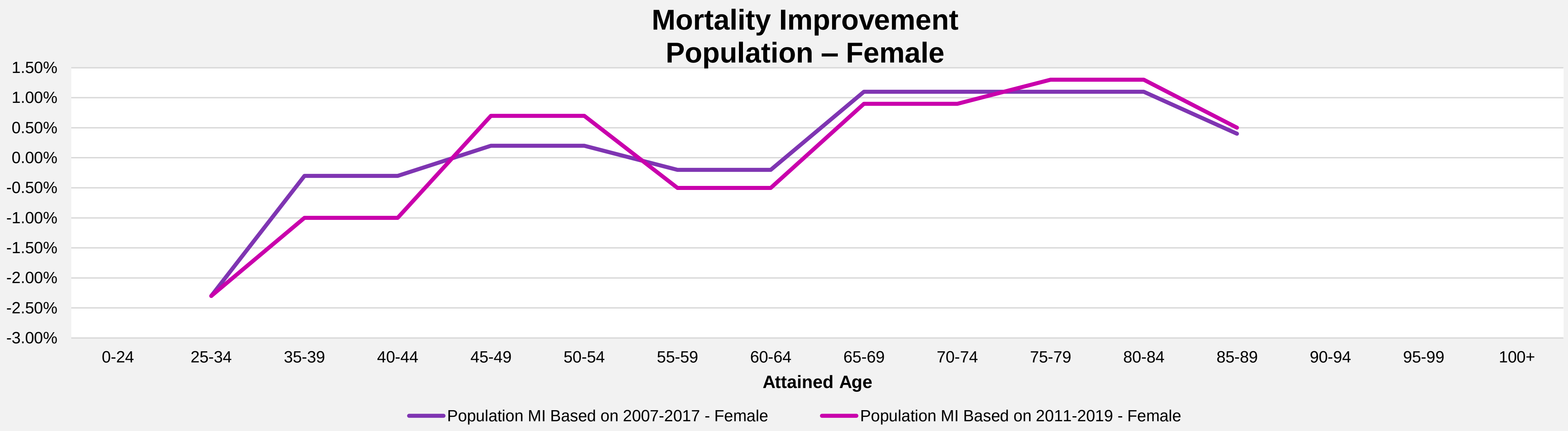
How many years of mortality improvement were applied (only 6 companies responded).

Years of mortality improvement applied	Number of Companies
15 Years	1
20 Years	3
>20 Years	2

In what year did you last make significant updates to your mortality improvement assumptions?

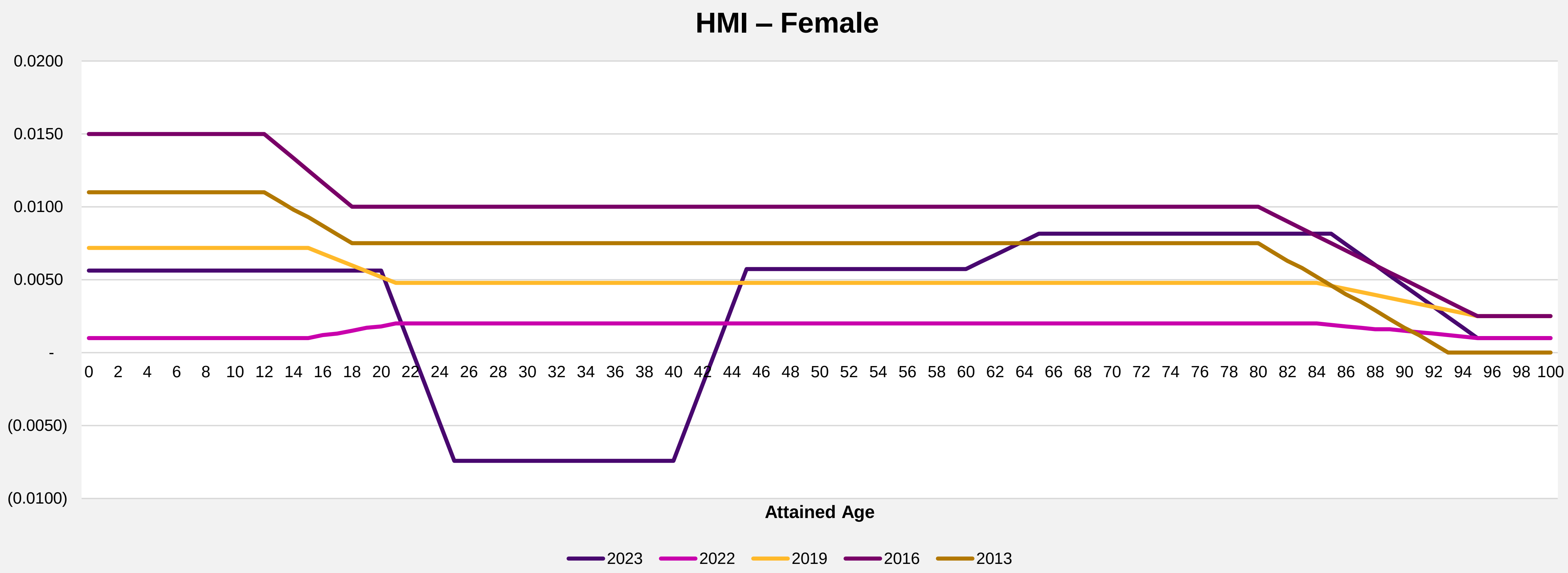
Calendar Year	Number of Companies
2020-2022	4
2017-2019	3
2016 and prior	2

Future Mortality Improvement (FMI)



AA	0-24	25-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99	100+
Pop MI 2011-2019		-2.30%	-1.00%	-1.00%	0.70%	0.70%	-0.50%	-0.50%	0.90%	0.90%	1.30%	1.30%	0.50%			
Pop MI 2007-2017		-2.30%	-0.30%	-0.30%	0.20%	0.20%	-0.20%	-0.20%	1.10%	1.10%	1.10%	1.10%	0.40%			

Historical Mortality Improvement (HMI) used with VM-20



HMI and FMI

- Prior to COVID, mortality improvement had materially changed for many younger ages
- As can be seen in our IUL survey, **many companies have not updated their FMI**
- Arguments can be made that **general population improvement < insured population**
- Recent studies also suggest **the improvement gap is widening for higher socio-economic groups**

Considerations:

- However, can you completely ignore the recent population trends?
- Have you updated your HMI for recent COVID experience?
- What portion of the population are you selling to?
- If you think this is just temporary, should you grade from current to a longer-term assumption?
- Mortality Improvement Scale MP-2021 is used with retirement plans
- It grades from a current experience assumption to a long-term assumption

Mortality assumptions updated due to COVID-19

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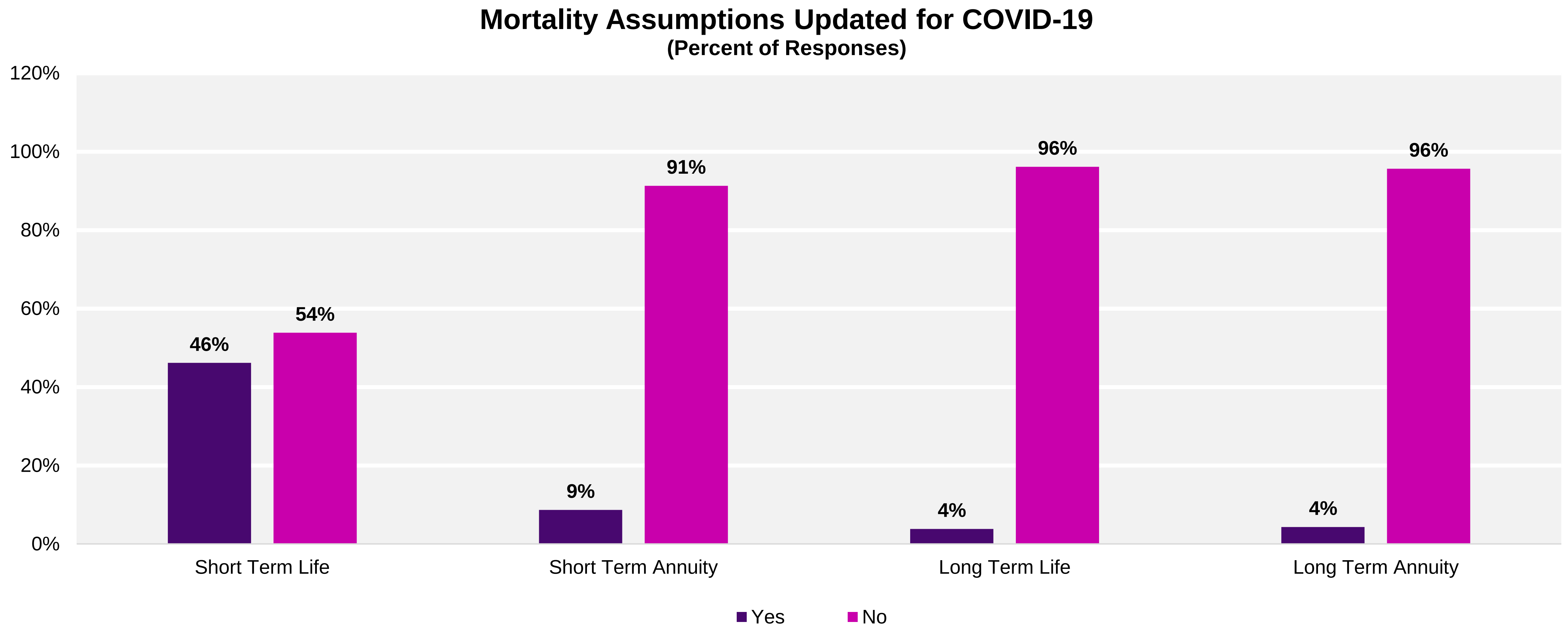
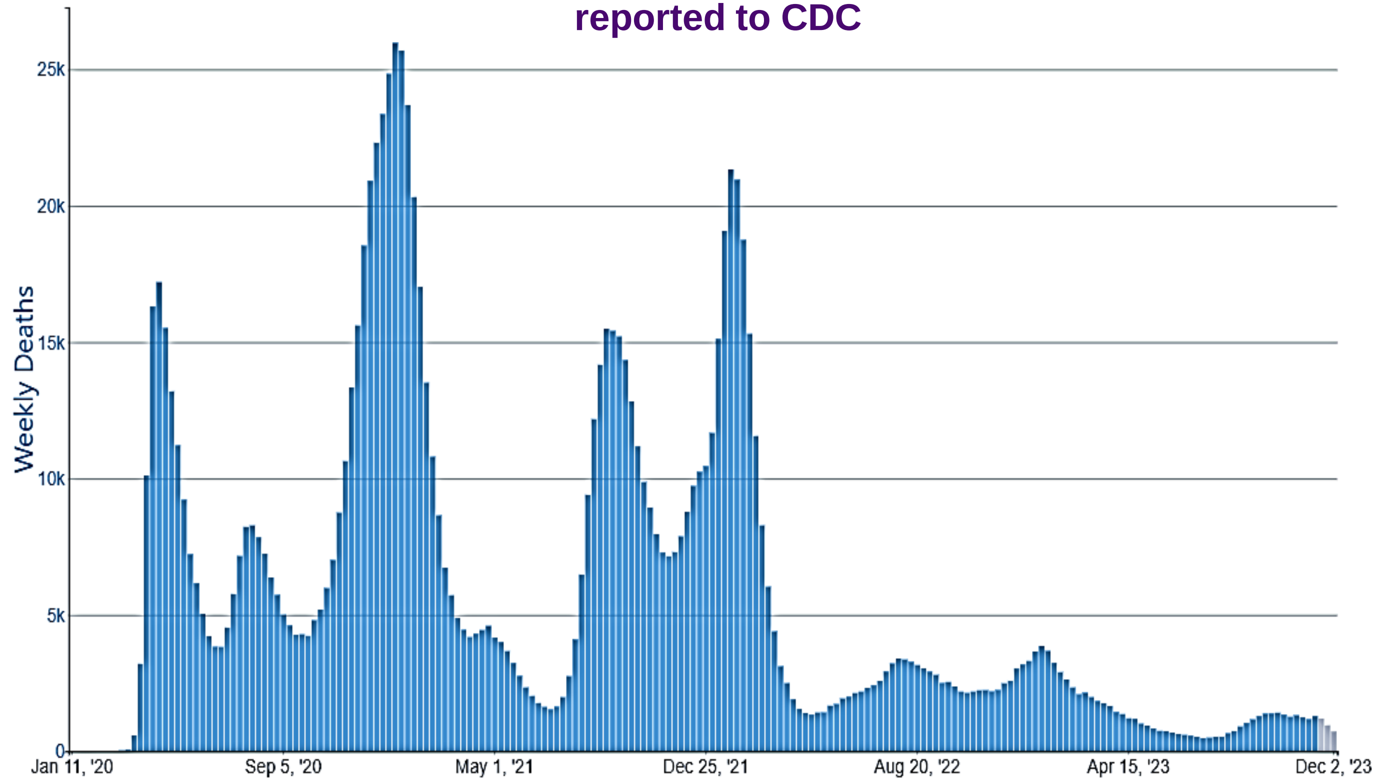


COVID: Where do we go from here?

When will we reach the endemic state?

Provisional COVID-19 deaths, by week, in the U.S., reported to CDC



Centers for Disease Control and Prevention. COVID Data Tracker. Atlanta, GA: U.S. Department of Health and Human Services, CDC; 2023, December 12. https://covid.cdc.gov/covid-data-tracker

Source: https://covid.cdc.gov/covid-data-tracker/#trends_weeklydeaths_select_00

COVID deaths in last 4 weeks of 2023: . . 1,700 - 2,000

COVID deaths first 2 weeks of 2024: . . . . . 1,800 - 2,000

Extrapolate **2,000** per week

Divide by

about **3** million deaths pre-COVID

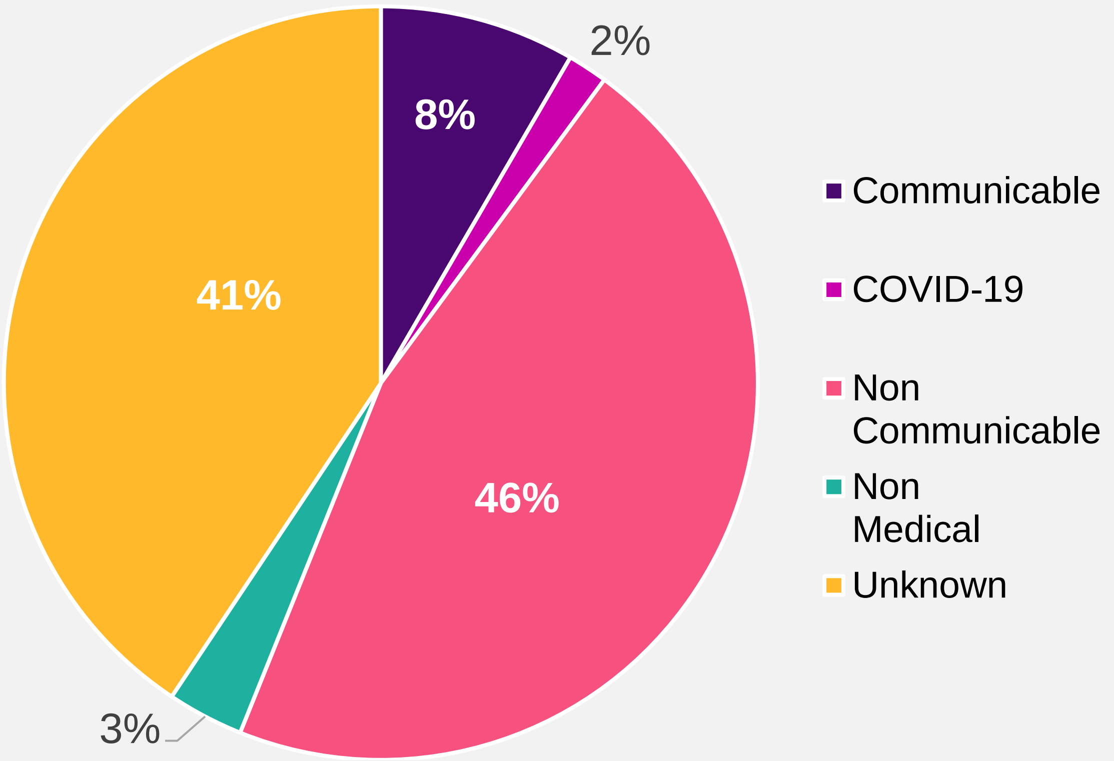
= Still about 3.5% excess

Safe to completely ignore it?
What about the next COVID?

Non-COVID excess deaths

How Reliable is the Data?

Percentage of deaths by cause 2015 - Q1 2021



Source: 2022 Cause of Death Report

With a large percentage of cause of deaths being unknown, care must be taken in interpreting the results

Non-COVID excess deaths

Observations

- **Accidents and other non-medical causes** are driving additional excess deaths at the youngest ages (i.e., less than 40)
- Other leading causes of death for ages were somewhat elevated as well:
  - **Cancer** for ages 40-74 (2-5% higher)
  - **Cardiovascular disease** for ages 75+ (4% higher for 40-94)
- While small, **CVD was also elevated** for ages <40
- **Deaths from diabetes** were much higher than expected for older age groups (up to 30%)
- **Death ascribed to the nervous system were substantially higher** than expected, sometimes as high as 30% higher than expected
- Results **varied by underwriting class**
  - COVID was the driver of excess deaths for preferred risks
  - Standard risks experienced an increase in non-COVID causes of death, as well
- **Older ages experienced displacement** of other causes of death by COVID, which was not observed at younger ages

Source: 2022 Cause of Death Report

Where do we go from here?

Drivers of longer-term trends

- Endemic COVID levels
- Non-COVID claims
- Long COVID
- Severe variants
- Overwhelmed medical system
- More sedentary lifestyle

- Acceleration of deaths
- New medical treatments
- Improved immunity
- Mild variants
- More active lifestyle
- Weight loss drugs

IUL Target Spread

Potential Causes of Missing Target Spread

Hedge Ineffectiveness	• Multiple reasons why IUL hedging may be ineffective • Challenging to deal with multiple deposits/index parameters/indices/index dates • Practice varies on use of static versus dynamic hedging • Lapse and termination and what to reflect in hedge targets needs to be dynamic/more granular • Practice varies on what terminations (if any) companies reflect in their target • Do you have the investment income needed to support the hedge budget (AV versus Stat Reserve)? • **Granular attribution and determination of the sources of ineffectiveness are key** • **Do you reflect the impact of hedge ineffectiveness in your spread?**
Cap Management	• 1 year indexes with 100% participation, 0% floors, and a cap are most common design • IUL sales can often be driven by illustration performance • So, companies are more hesitant to lower caps and impact their illustrations • Cap changes also require system and illustration update needs, adding to change hesitancy • As volatility and rates change, cost of hedges changes, but do caps change? • **How much does this cap stickiness hurt profitability and achieving the target spread? Do you track/model this possible slippage?**

YRT Rate Increase Risk

YRT rate increase risk

- Already outlined areas of IUL risk related to persistency (stronger) and mortality (higher)
- Implies that non-guaranteed YRT rates may also be at risk if adverse experience develops
- Reinsurers may also have simplified Net Amount at Risk modeling
- Adverse fund value development (e.g., lower fund values = greater future NAR) could be problematic

Considerations:

- If you are assuming ongoing material reinsurance gains, you may be misestimating your liabilities
- At this point in time, reinsurers have no ASOP they need to follow for YRT repricing
- Consider whether you should assume more than current best estimate YRT rates
- Factors to consider: Treaty language, size of future gains, prior experience with reinsurers, etc.

- **Sensitivity test the impact of potential YRT increases to understand the risk!**

Summary

Indexed UL assumption risk – key takeaways

Many companies have pivoted or are pivoting sales to IUL due to the perception that it is less risky than ULSG and higher minimum guarantee UL

- The less risky perception is in part based on the assumption of effective hedging
- Effective hedging can be difficult due to monthly premiums, decrements and multiple indices and options

Recommendations:

- **Improve assumptions and modeling methodology** to make sure you fully understand the risks you are taking
- **Perform a lot of sensitivity testing!**
  - Multiple items and risks can differ materially from UL to IUL
  - Greater uncertainty of long-term behavior assumptions (no credible long term IUL experience; how will it differ from UL and VUL; will assumed loans/withdrawals happen; how will bonuses impact persistency)
- **Implement robust earnings analysis and A/E monitoring** to help identify and manage the risk of assumption drift and underperformance
  - Hedge effectiveness; VNB/EV; Source of Earnings; Assumption reviews
- **Try not to repeat the misestimates of the past!**

Growing IUL sales is great, as long as that eventually turns into growing earnings!

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