



# **SOA Post-Level Term Results**

**Joel Phillips** FSA

**November 20, 2014**

SEAC 2014 Annual Meeting

**RGA**

**RGA**

**Background**

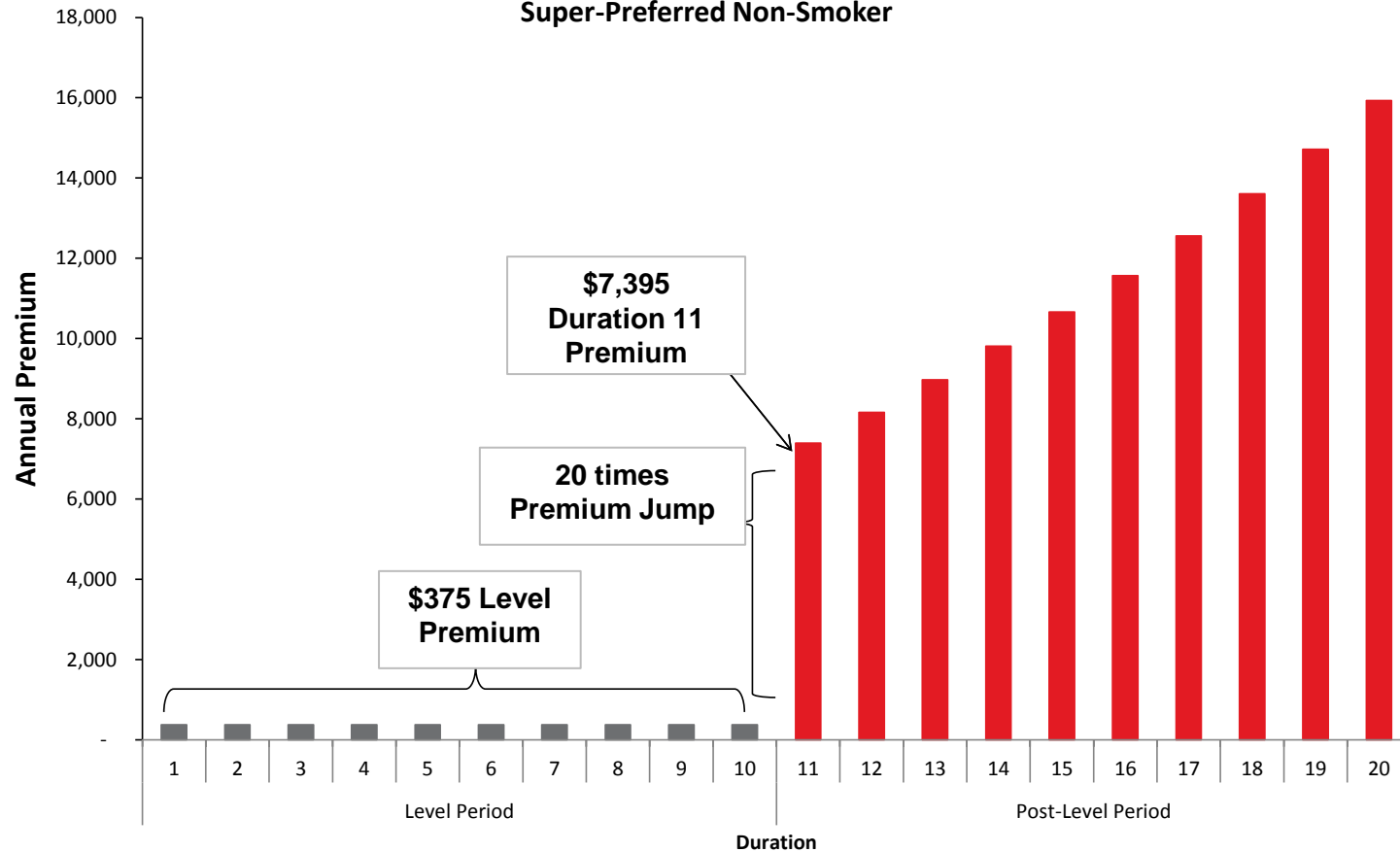
# Introduction to Post-Level Term

## 10-Year Term: Premium Structure with Jump to ART

### 10-Year Term - Sample Premium Structure

Male Age 45, \$500,000 Death Benefit

Super-Preferred Non-Smoker



**RGA**

**RGA**

# **Lapse Study Experience Results**

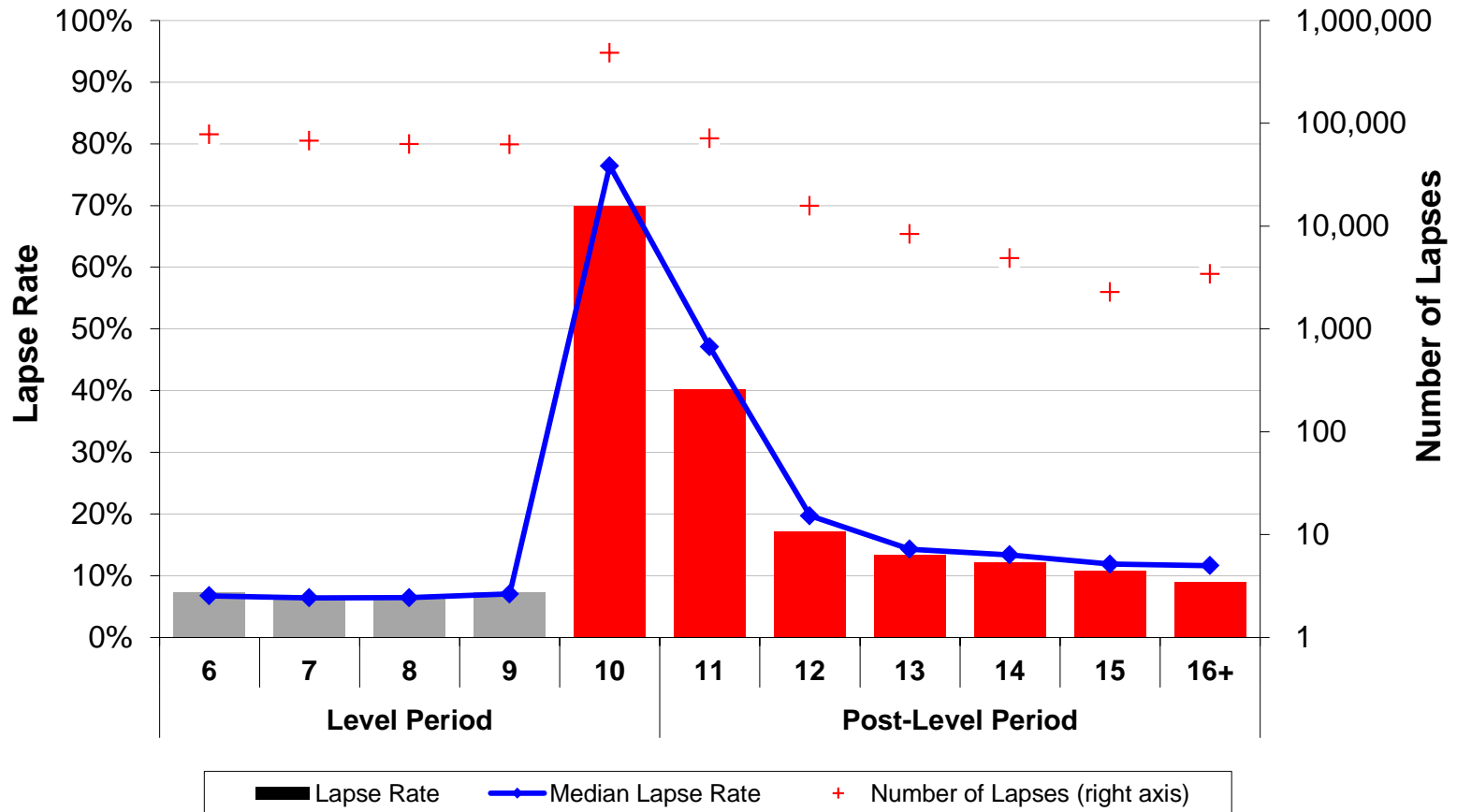
# Shock Lapse Experience Results Overview

## 2000-2012 Policy-Year Study

		2014 Study	2010 Study	Change
<b>10-Year Term</b>	Number of Companies w/ Post Level Experience	36	25	144%
	Post-Level Lapses with Premiums	436,307	87,544	498%
	Post-Level Lapses without Premiums	258,030	170,171	152%
<b>15-Year Term</b>	Number of Companies w/ Post Level Experience	15	7	214%
	Post-Level Lapses with Premiums	37,673	12,191	309%
	Post-Level Lapses without Premiums	1,364	1,359	100%

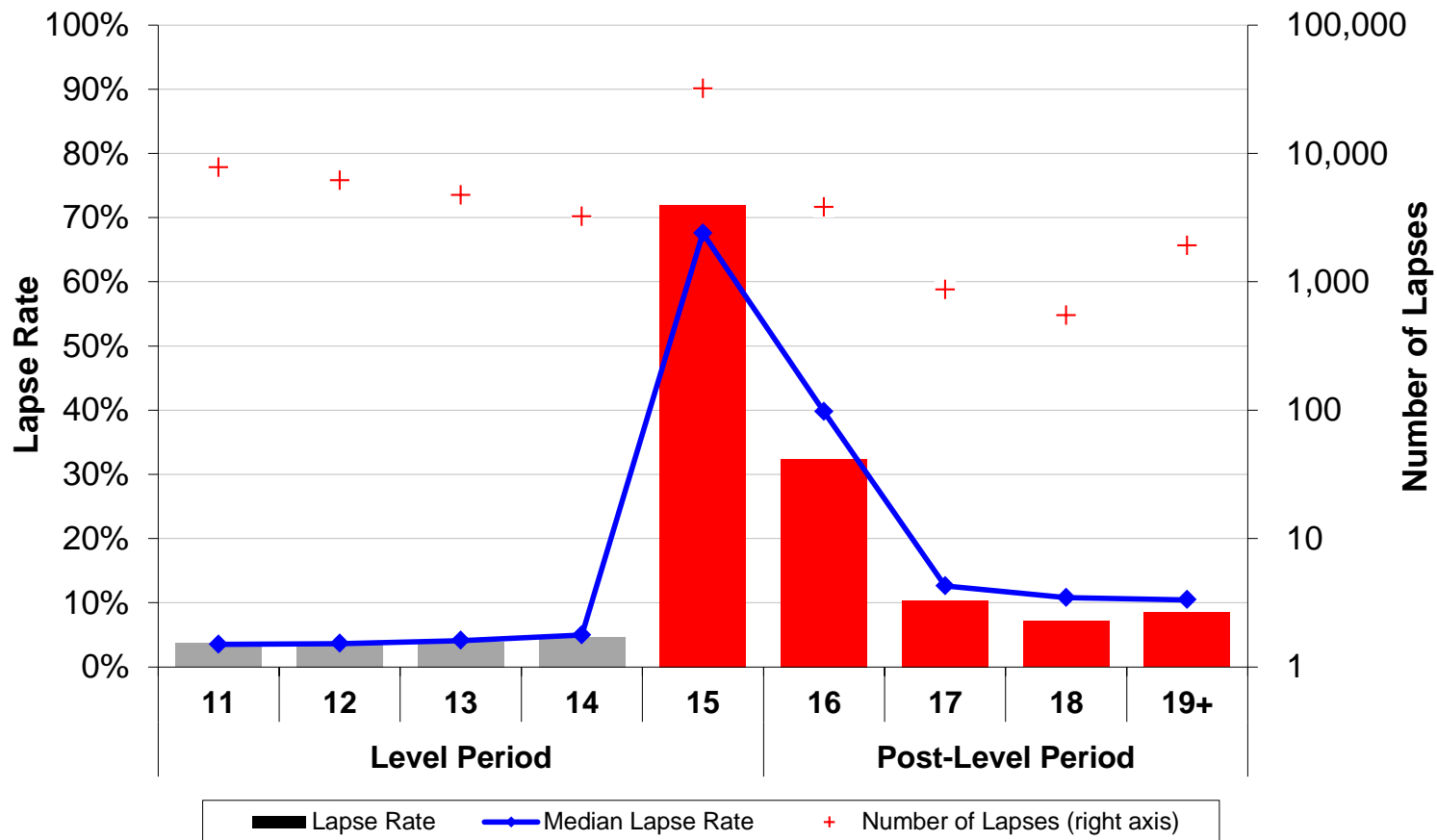
# Shock Lapse Experience (Jump to ART)

## T10 By Duration



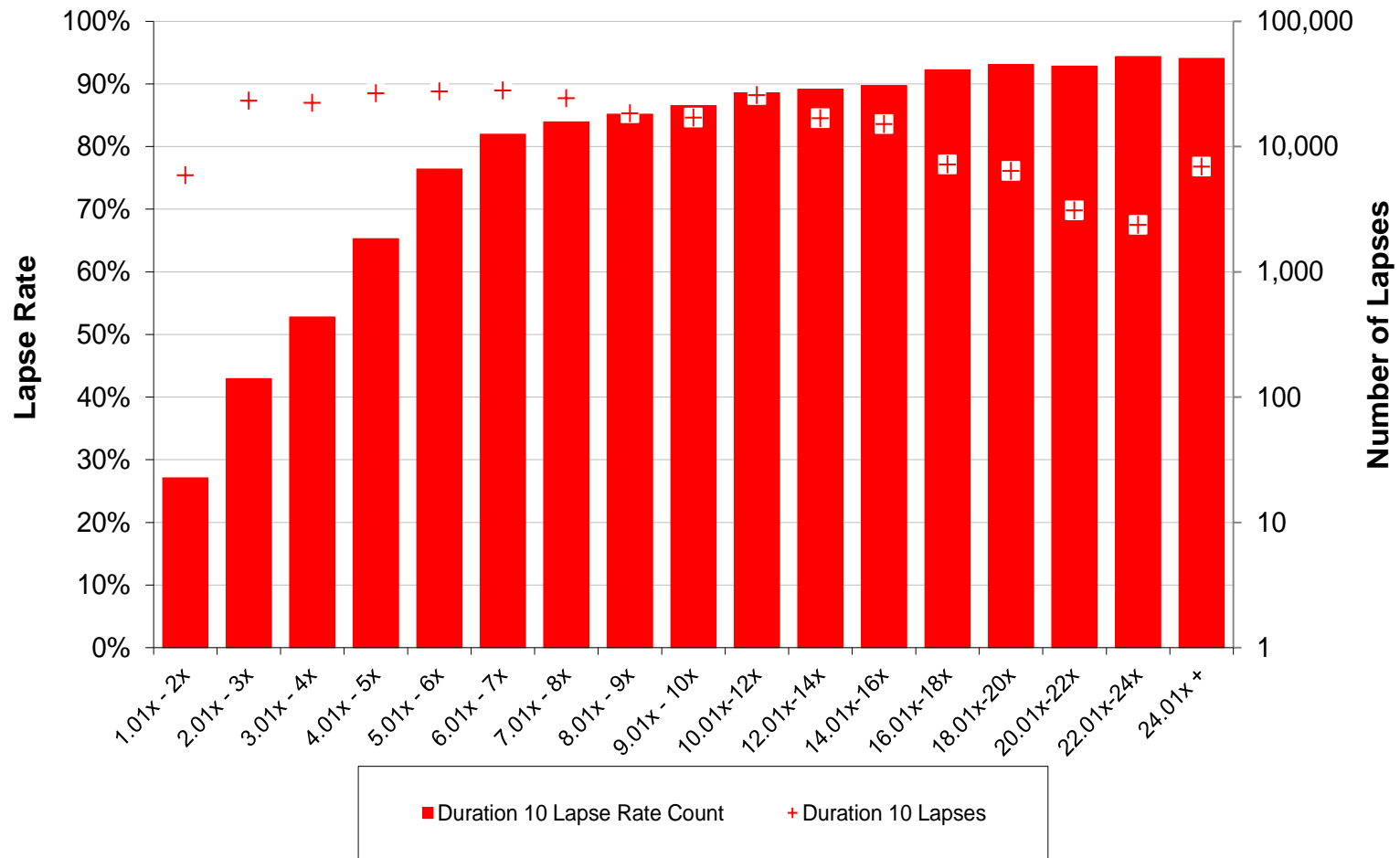
# Shock Lapse Experience

## T15 By Duration



# Shock Lapse Experience (Jump to ART)

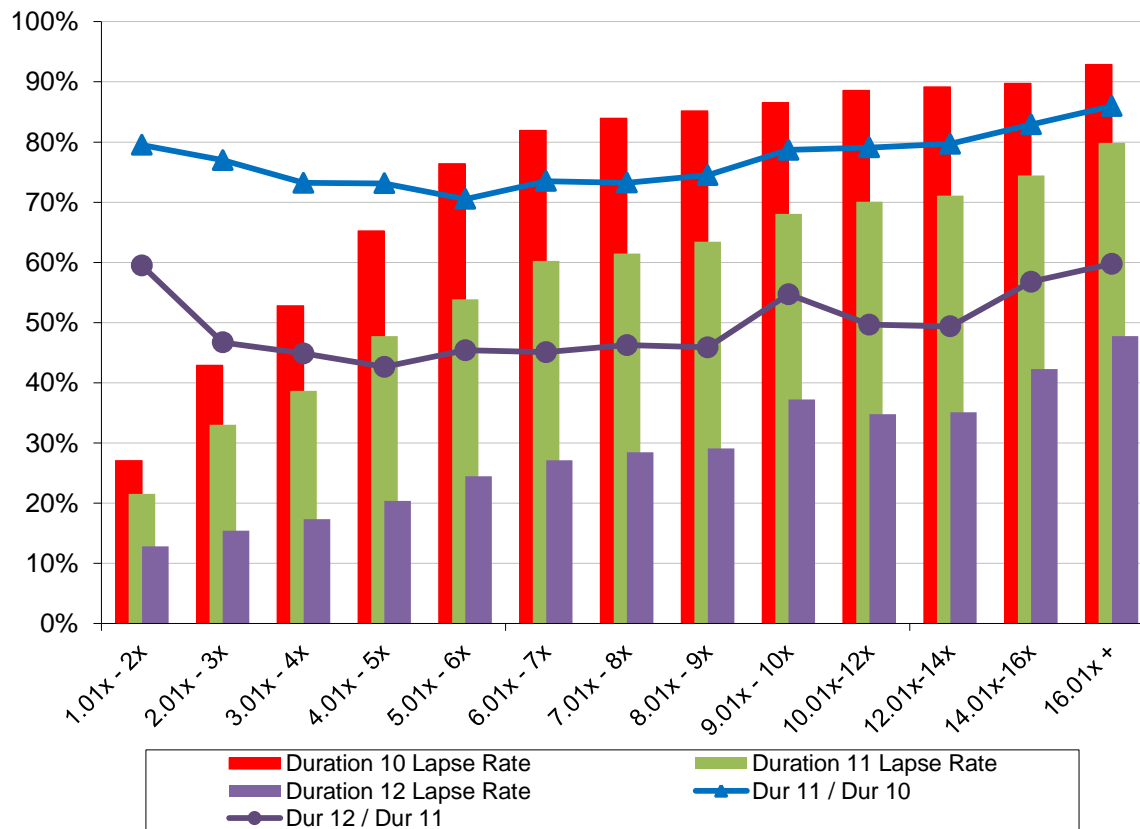
## T10 By Premium Jump Ratio





# Shock Lapse Experience (Jump to ART)

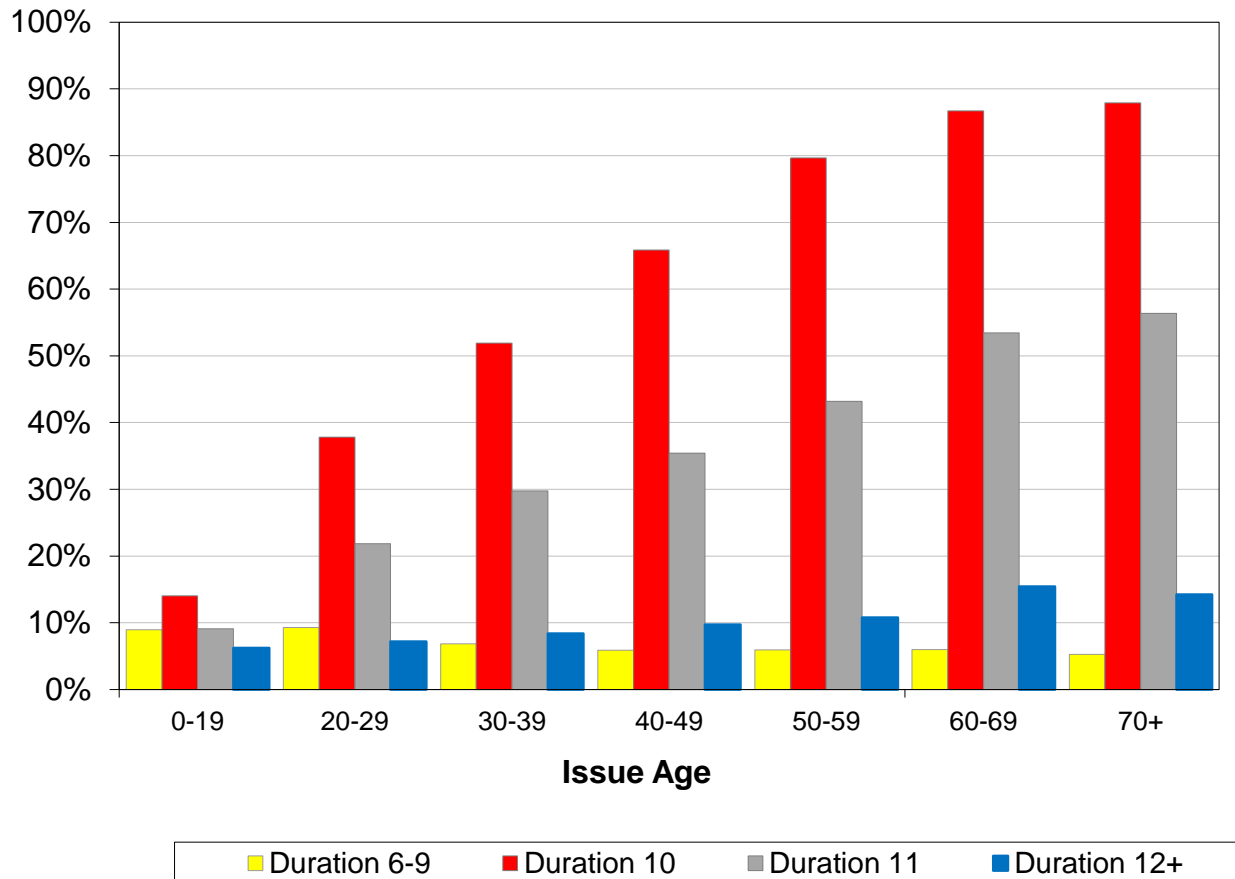
## T10 By Duration & Premium Jump



Duration 11/10 Premium Jump Ratio Band	Dur 11 / Dur 10	Dur 12 / Dur 11
1.01x - 2x	79.5%	59.5%
2.01x - 3x	77.0%	46.7%
3.01x - 4x	73.2%	44.9%
4.01x - 5x	73.1%	42.7%
5.01x - 6x	70.5%	45.4%
6.01x - 7x	73.5%	45.1%
7.01x - 8x	73.2%	46.3%
8.01x - 9x	74.5%	45.9%
9.01x - 10x	78.7%	54.7%
10.01x-12x	79.1%	49.7%
12.01x-14x	79.7%	49.4%
14.01x-16x	82.9%	56.8%
16.01x +	86.0%	59.8%
Subtotal Prem Data Available	59.4%	42.9%
No Prem Data Available	55.0%	43.1%
Grand Total	57.4%	42.9%

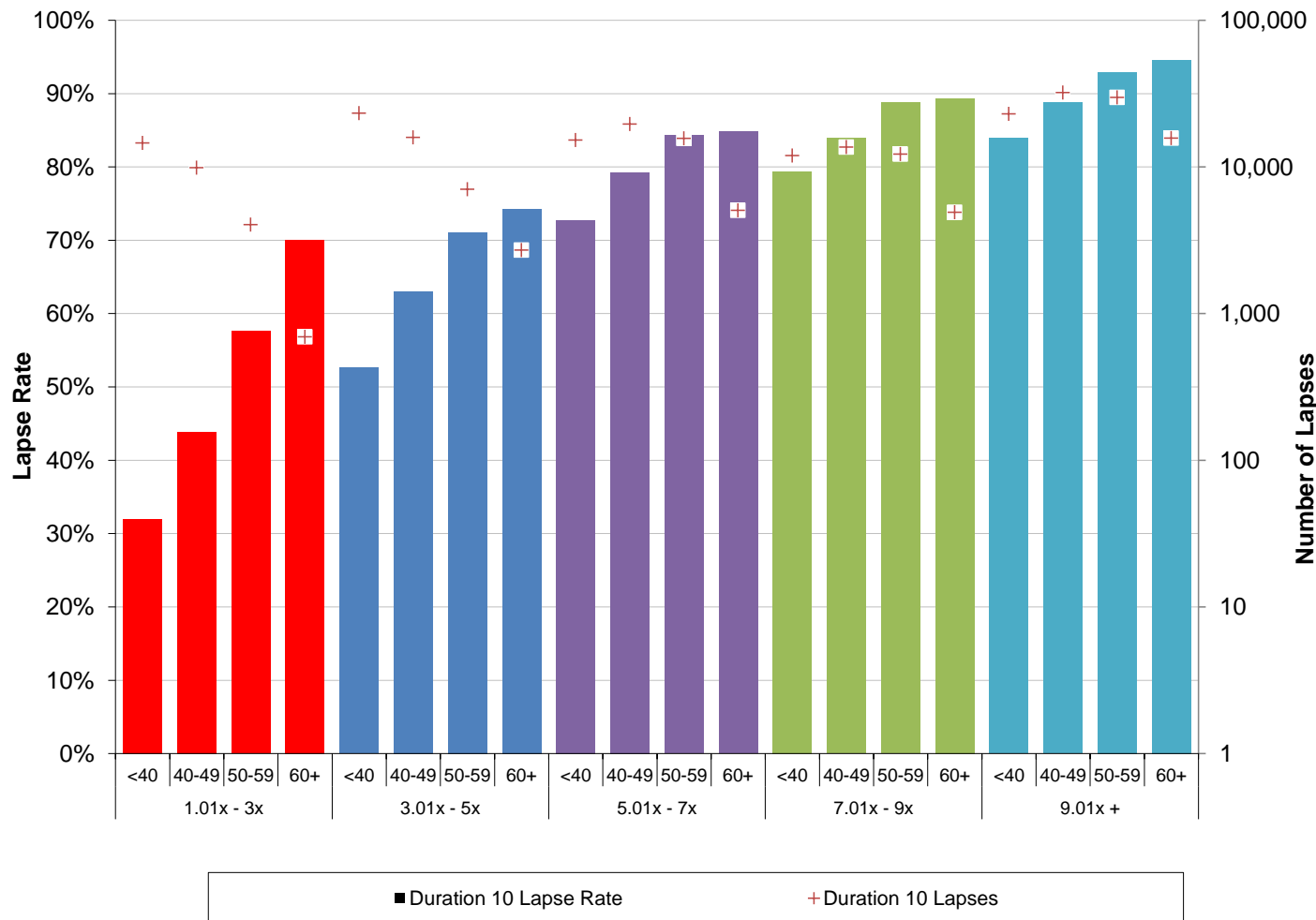
# Shock Lapse Experience

## T10 By Duration and Issue Age



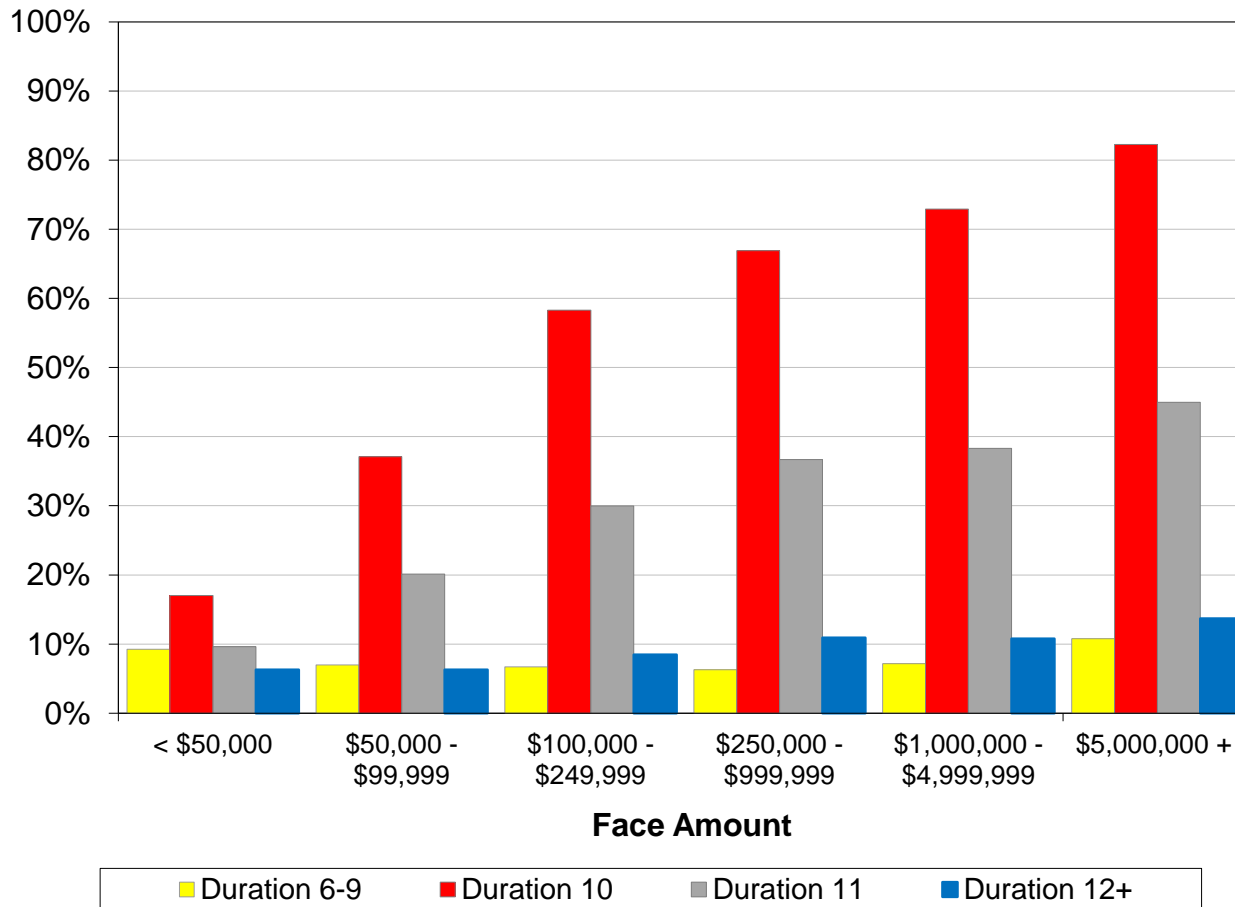
# Shock Lapse Experience (Jump to ART)

## T10 By Premium Jump and Issue age – duration 10



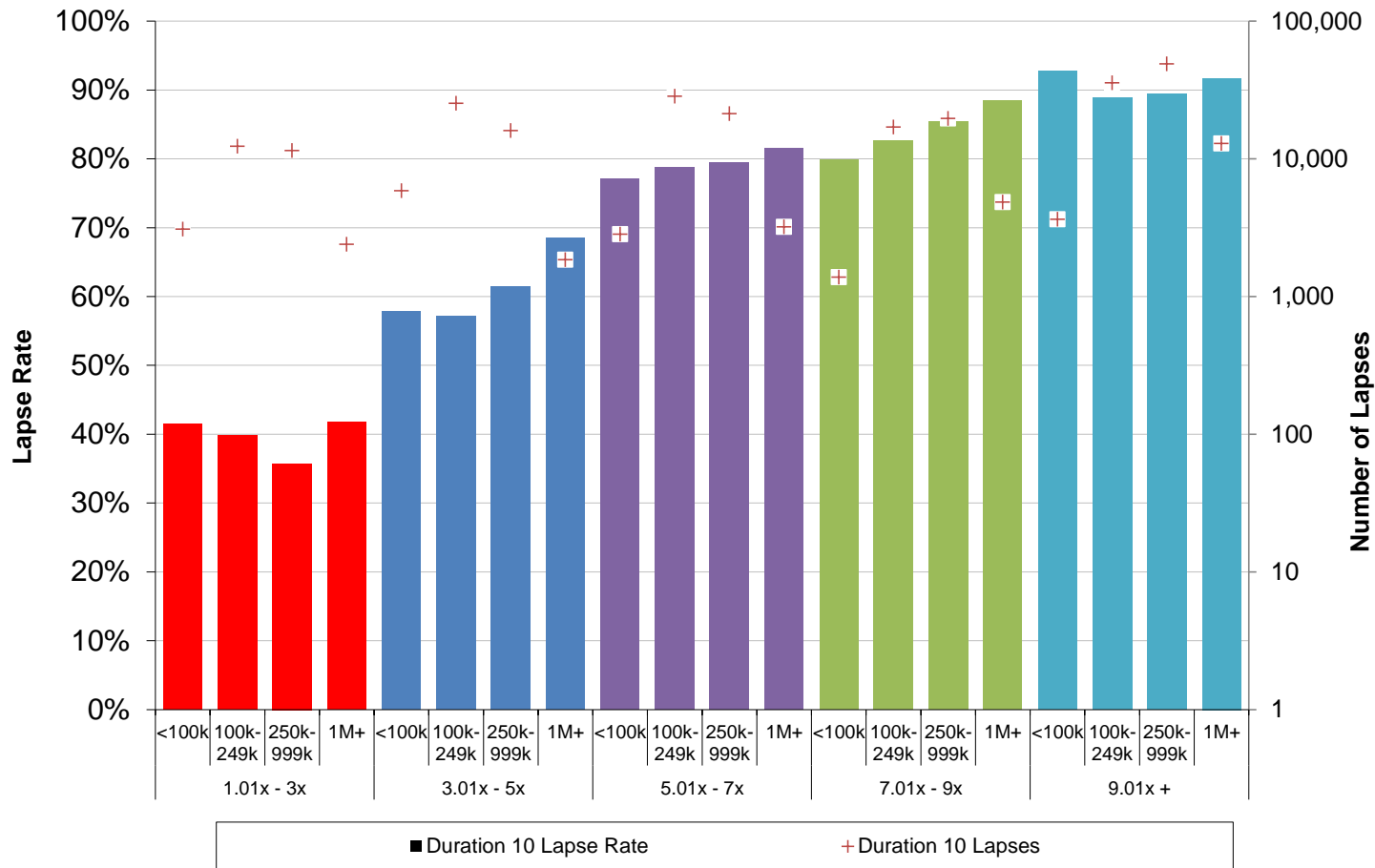
# Shock Lapse Experience

## T10 By Duration & Face Amount Band



# Shock Lapse Experience (Jump to ART)

## T10 By Premium Jump and Face Amount Band – duration 10



**RGA**

**RGA**

# **Mortality Study Experience Results**

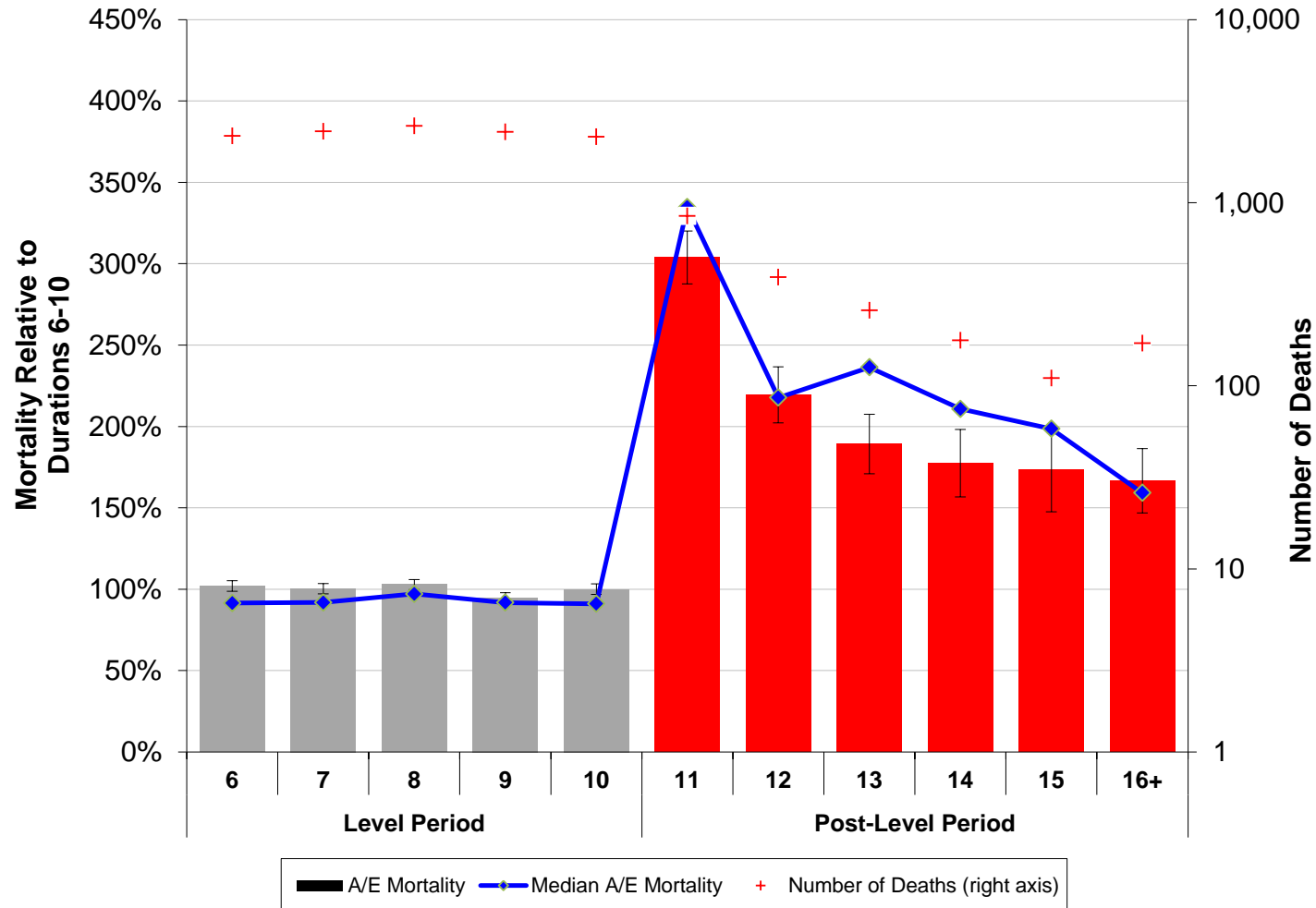
# Mortality Experience Overview

## 2000-2012 Calendar Year Study

		2014 Study	2010 Study	Change
<b>10-Year Term</b>	Number of Companies w/ Post Level Experience	36	24	150%
	Post-Level Claims with Premiums	2,651	382	694%
	Post-Level Claims without Premiums	729	381	191%
<b>15-Year Term</b>	Number of Companies w/ Post Level Experience	6	5	120%
	Post-Level Claims with Premiums	432	145	298%
	Post-Level Claims without Premiums	12	13	92%

# Mortality Experience (Jump to ART)

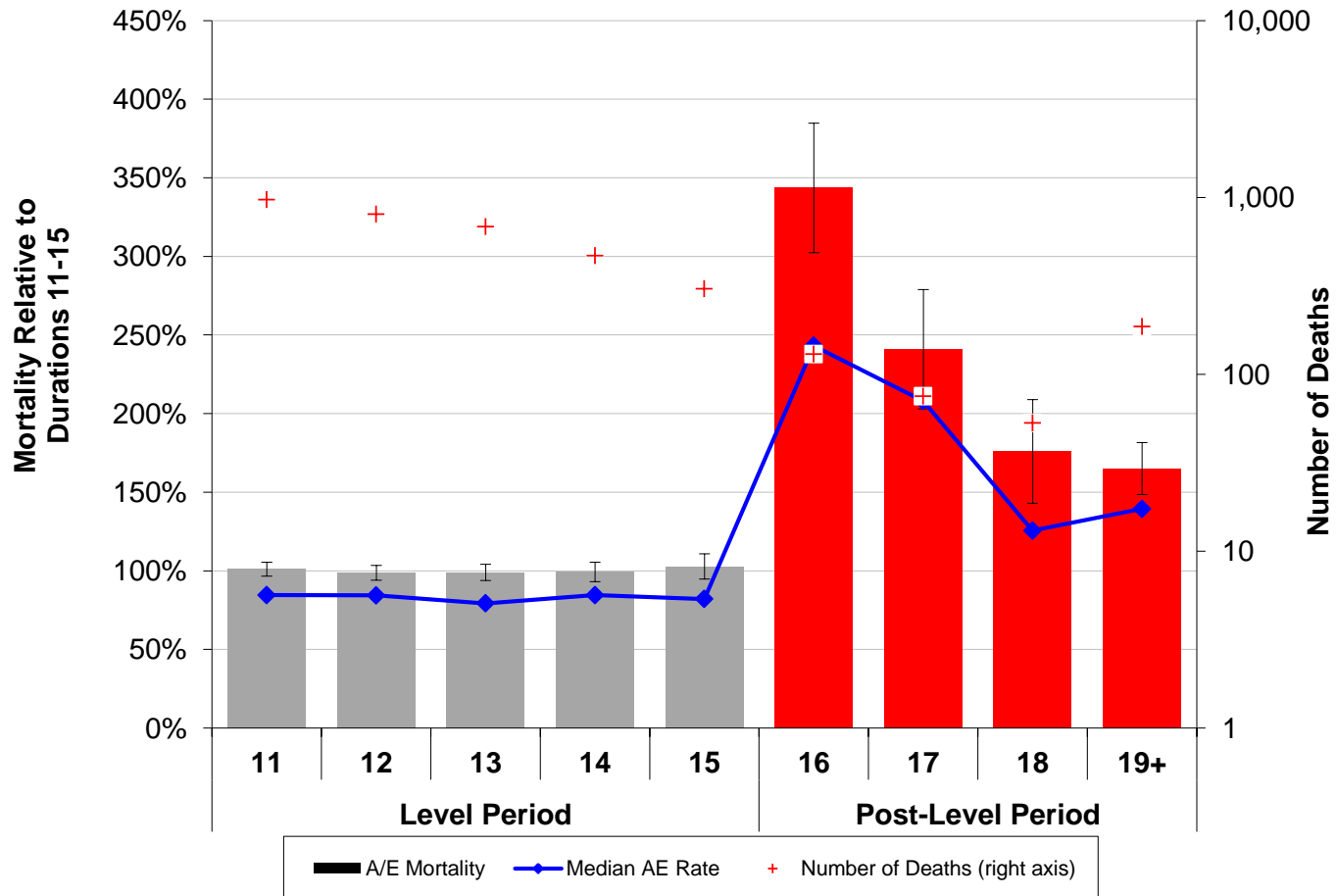
## T10 By Duration





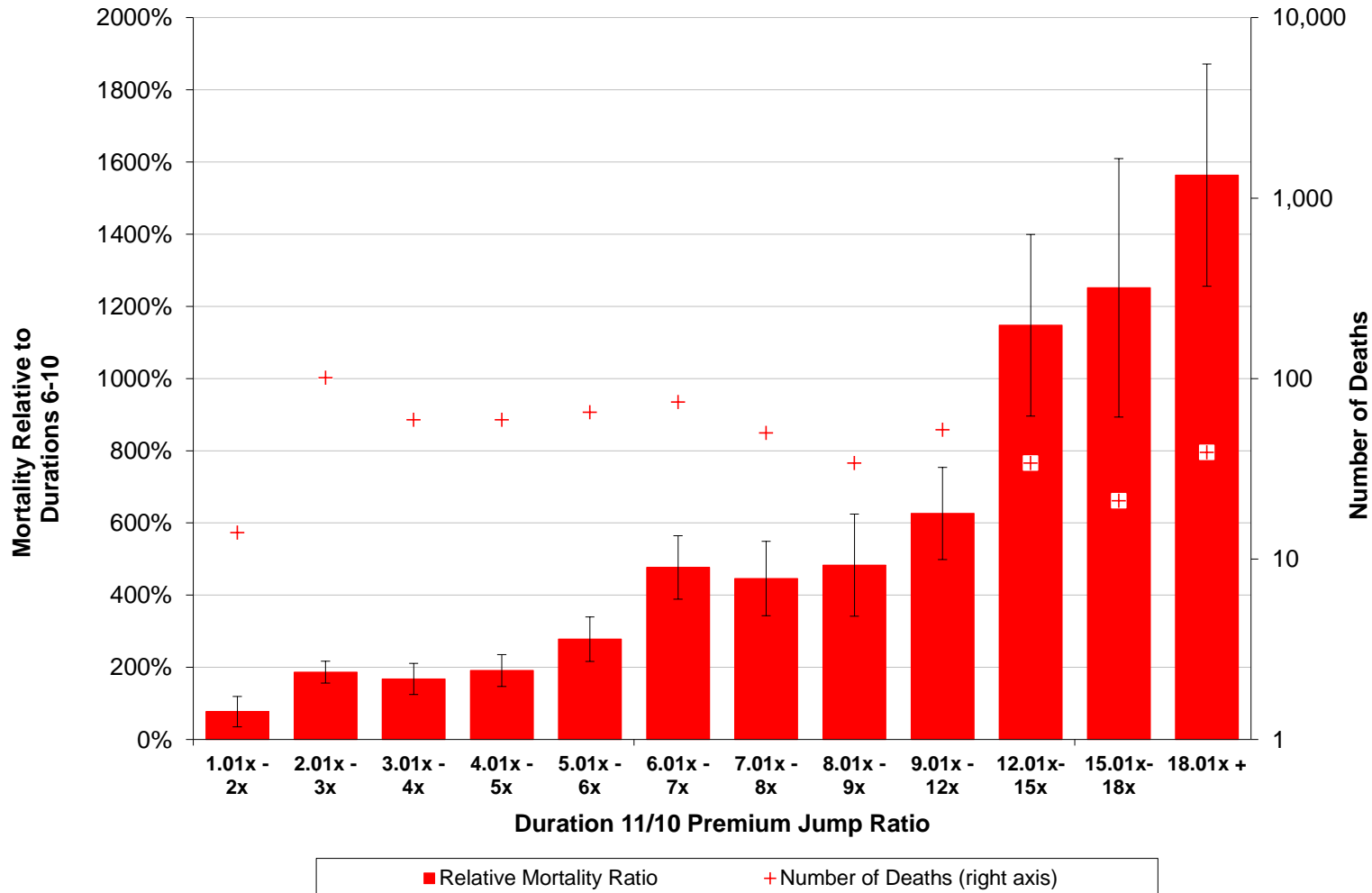
# Mortality Experience

## T15 By Duration



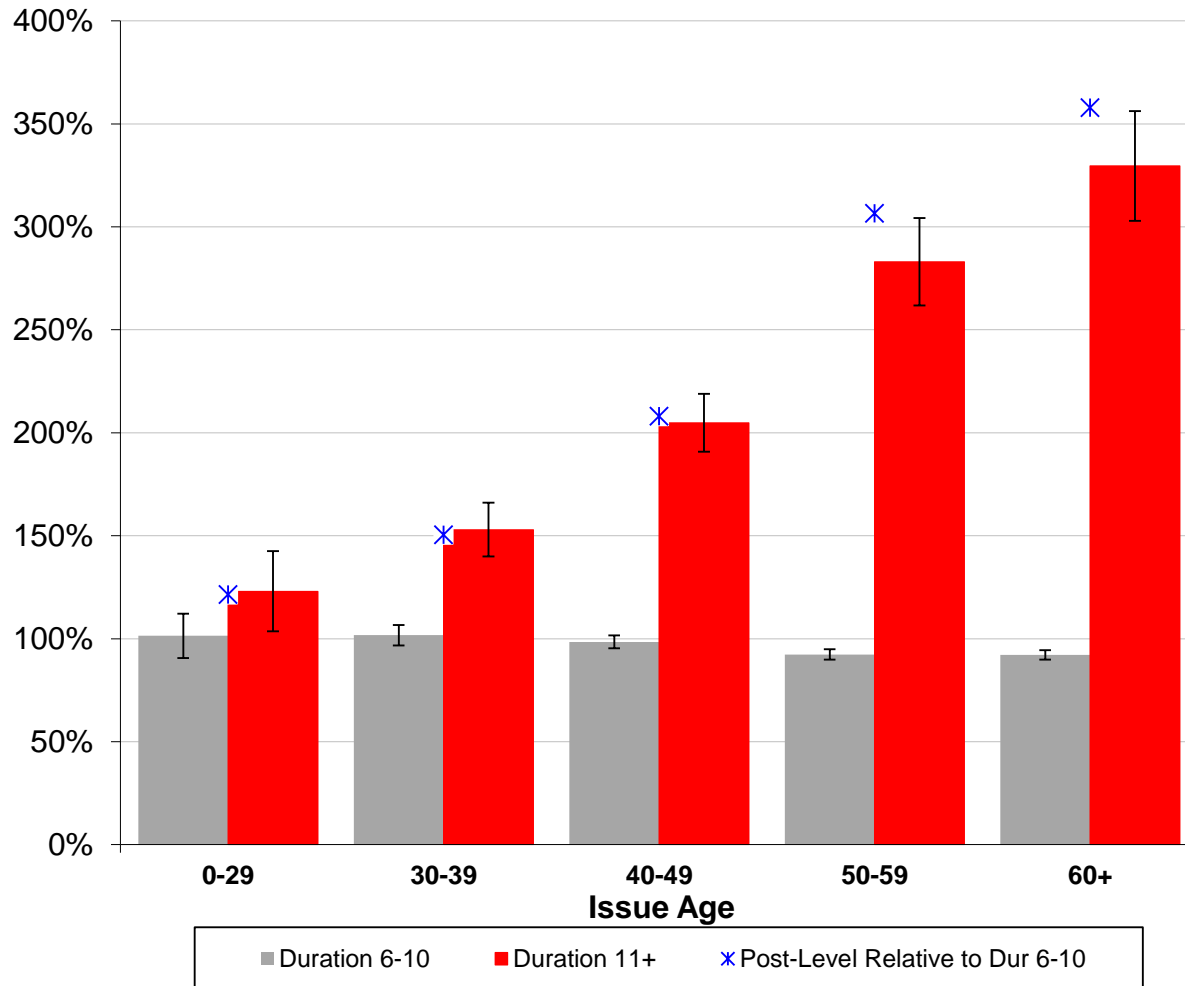
# Mortality Experience (Jump to ART)

## T10 Duration 11 Mortality by Premium Jump



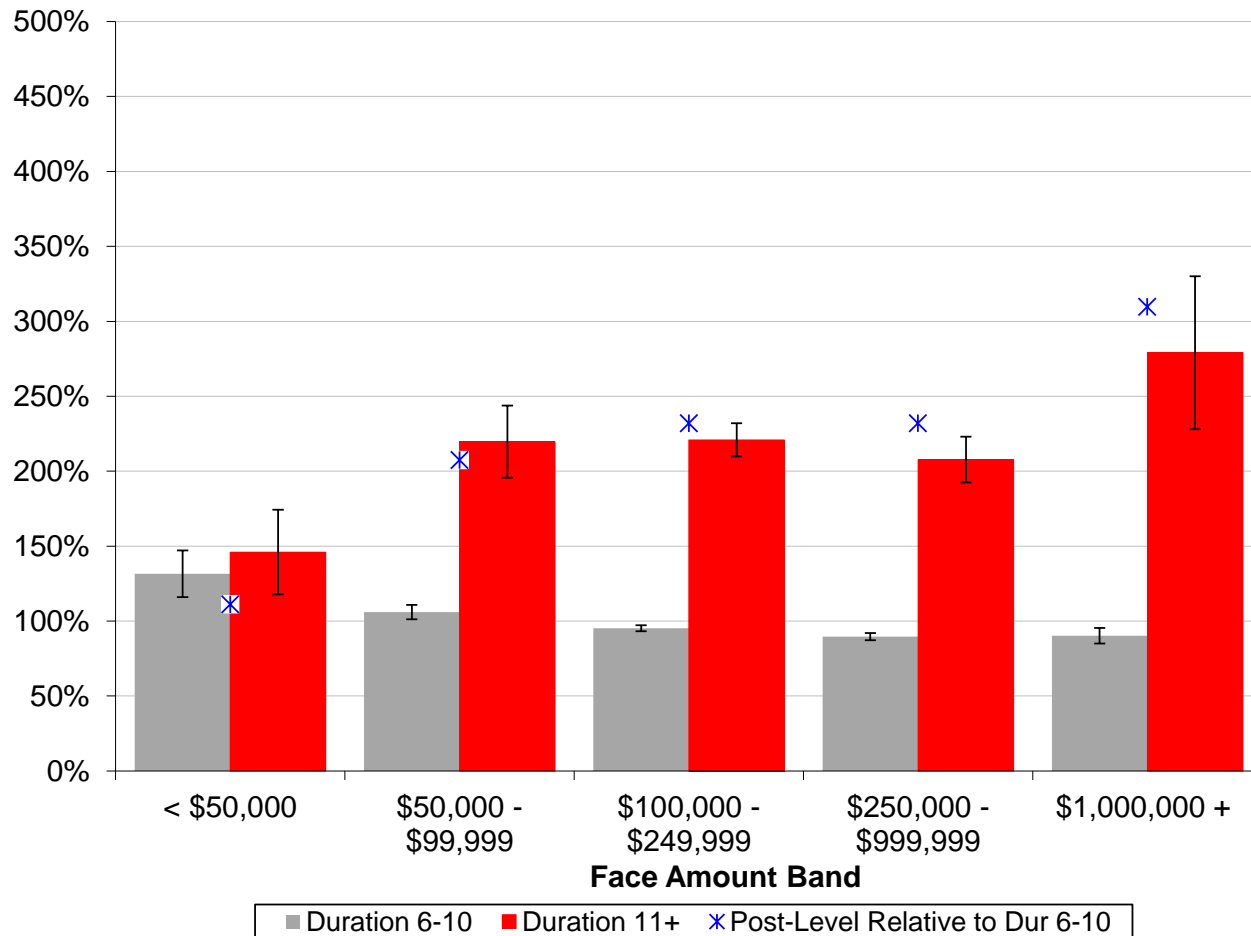
# Mortality Experience (Jump to ART)

## T10 Duration 11+ Mortality by Issue Age



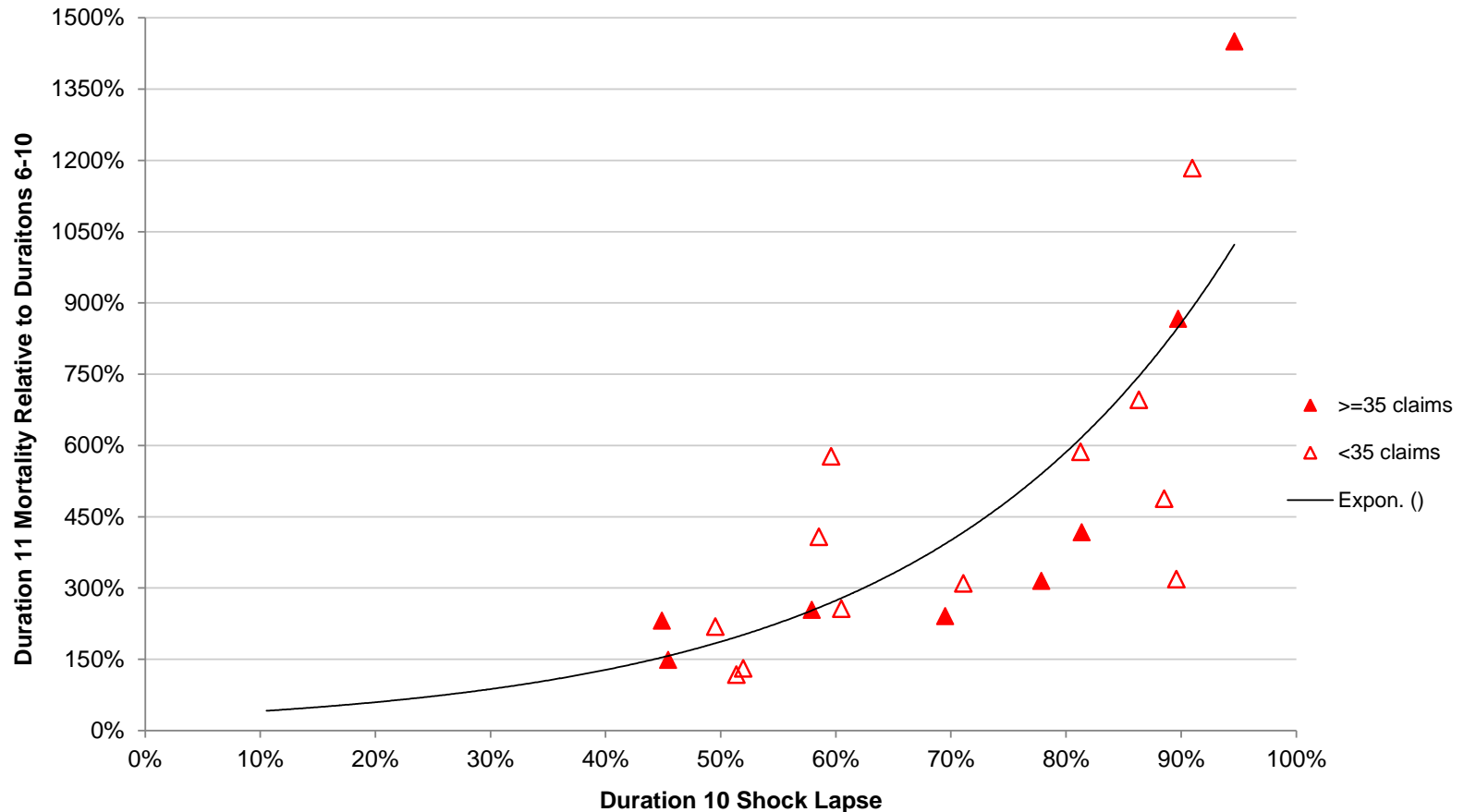
# Mortality Experience (Jump to ART)

## T10 Duration 11+ Mortality by Face Amount Band



# Mortality Experience (Jump to ART)

## T10 Duration 11 Mortality by Duration 10 Shock Lapse by Company



**RGA**

**RGA**

# **Assumptions vs. Experience**

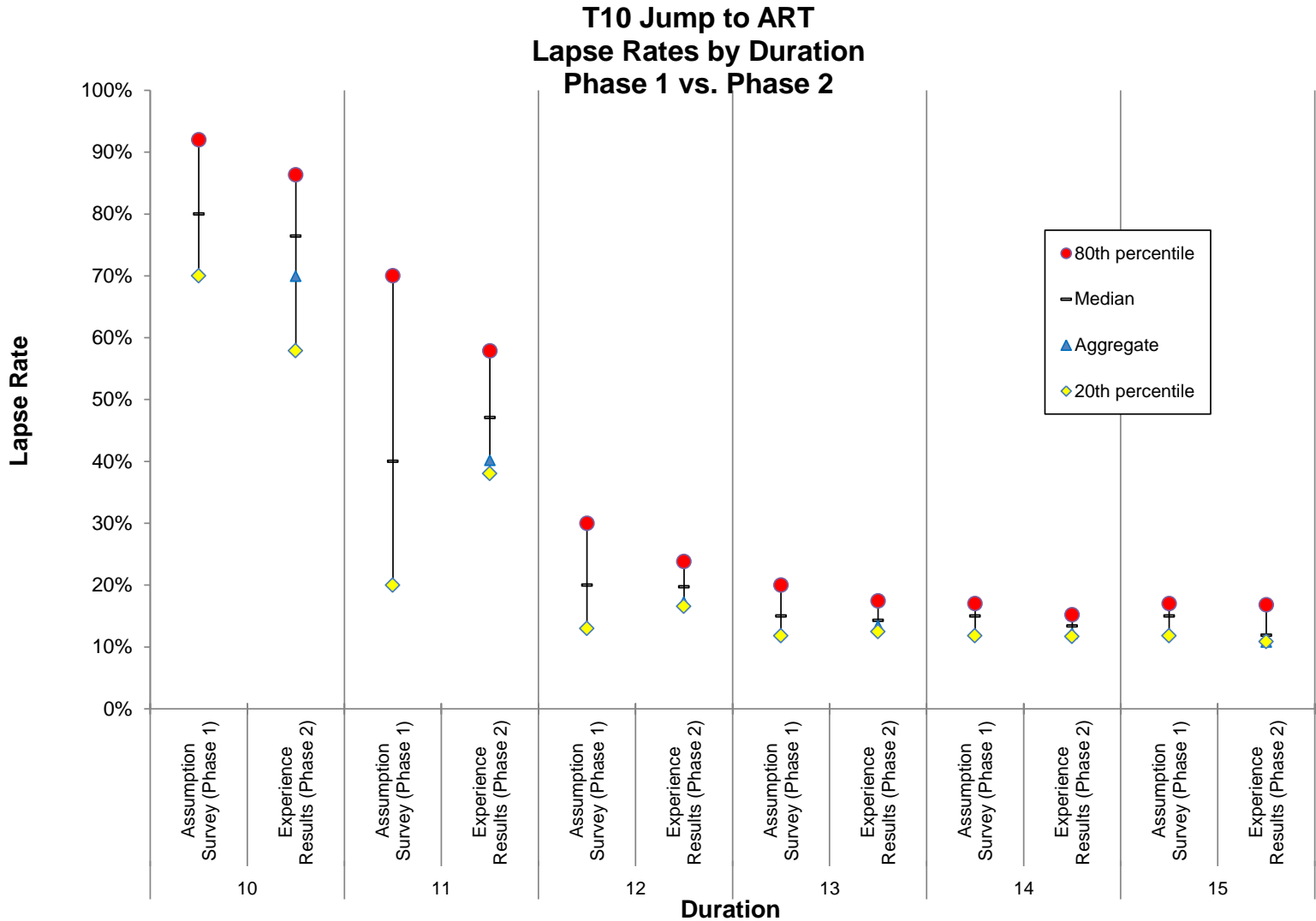
# Assumption Survey Results

## Overview

- Sent to top 100 term providers based on 2012 term insurance sales
  - Responses from 41 companies
  - Responses represented 62% of 2012 term sales

Level Premium Term Product Mix by Level Period				
Product Level Period	Aggregate Distribution for Respondents	Number of companies where product represents at least x% of individual company's term sales		
		x=5%	x=15%	x=30%
5 Year Term	1.20%	3	1	0
10 Year Term	22.70%	42	36	8
15 Year Term	8.60%	32	6	1
20 Year Term	52.00%	44	44	42
25-30 Year Term	15.10%	33	23	9
Other	0.40%	5	2	1

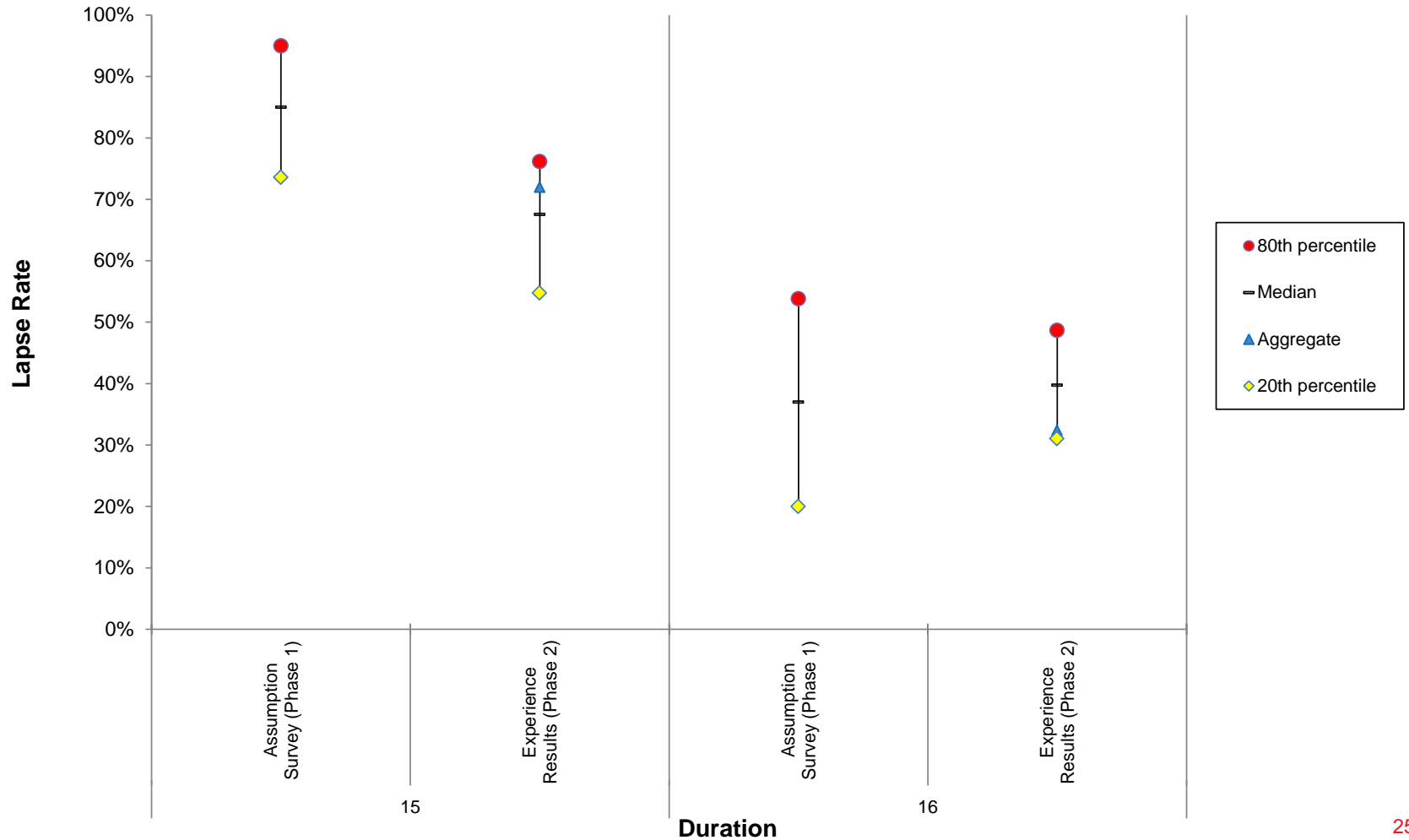
# Survey Responses vs. Experience Study





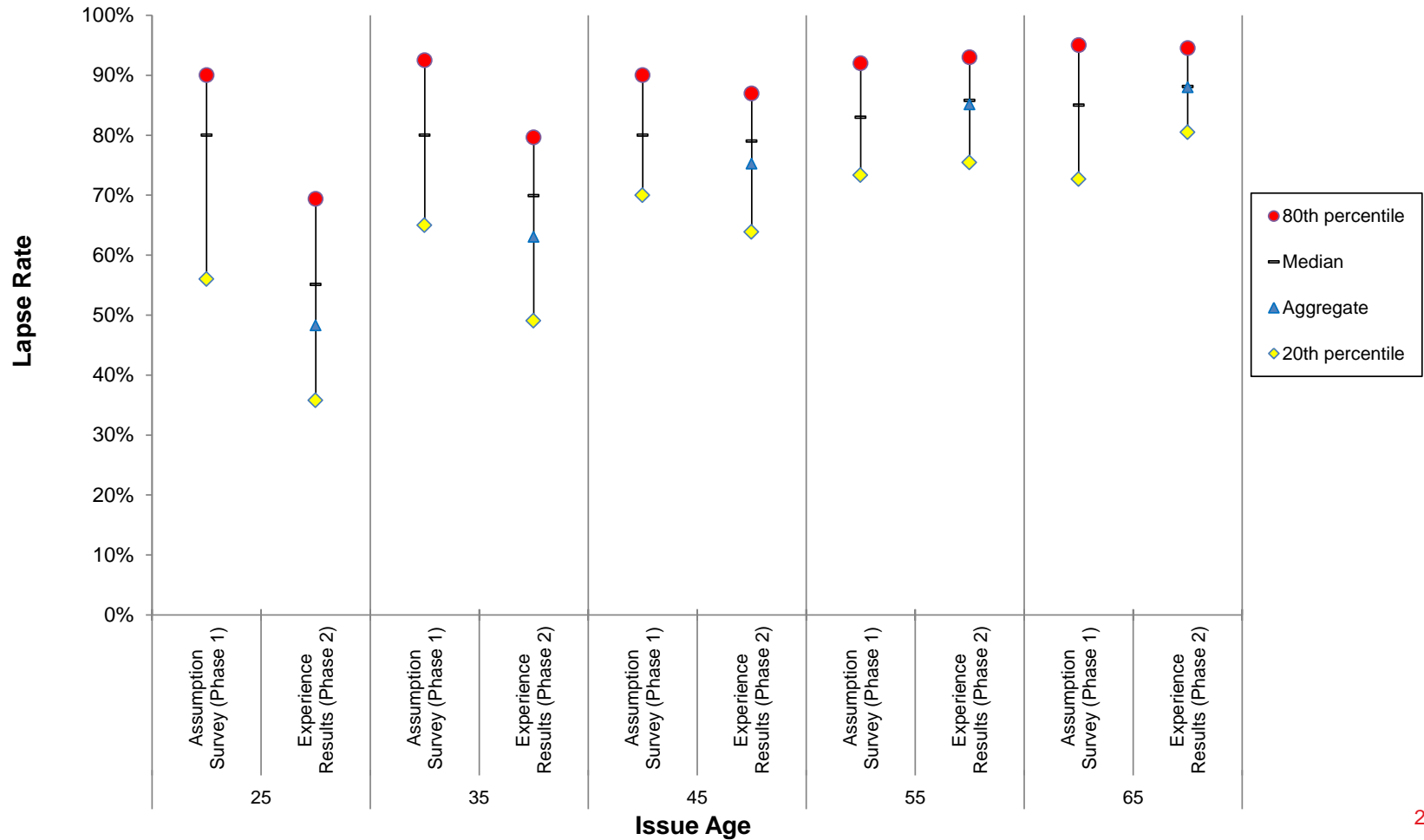
# Survey Responses vs. Experience Study

**T15 Lapse Rates by Duration  
Phase 1 vs. Phase 2**



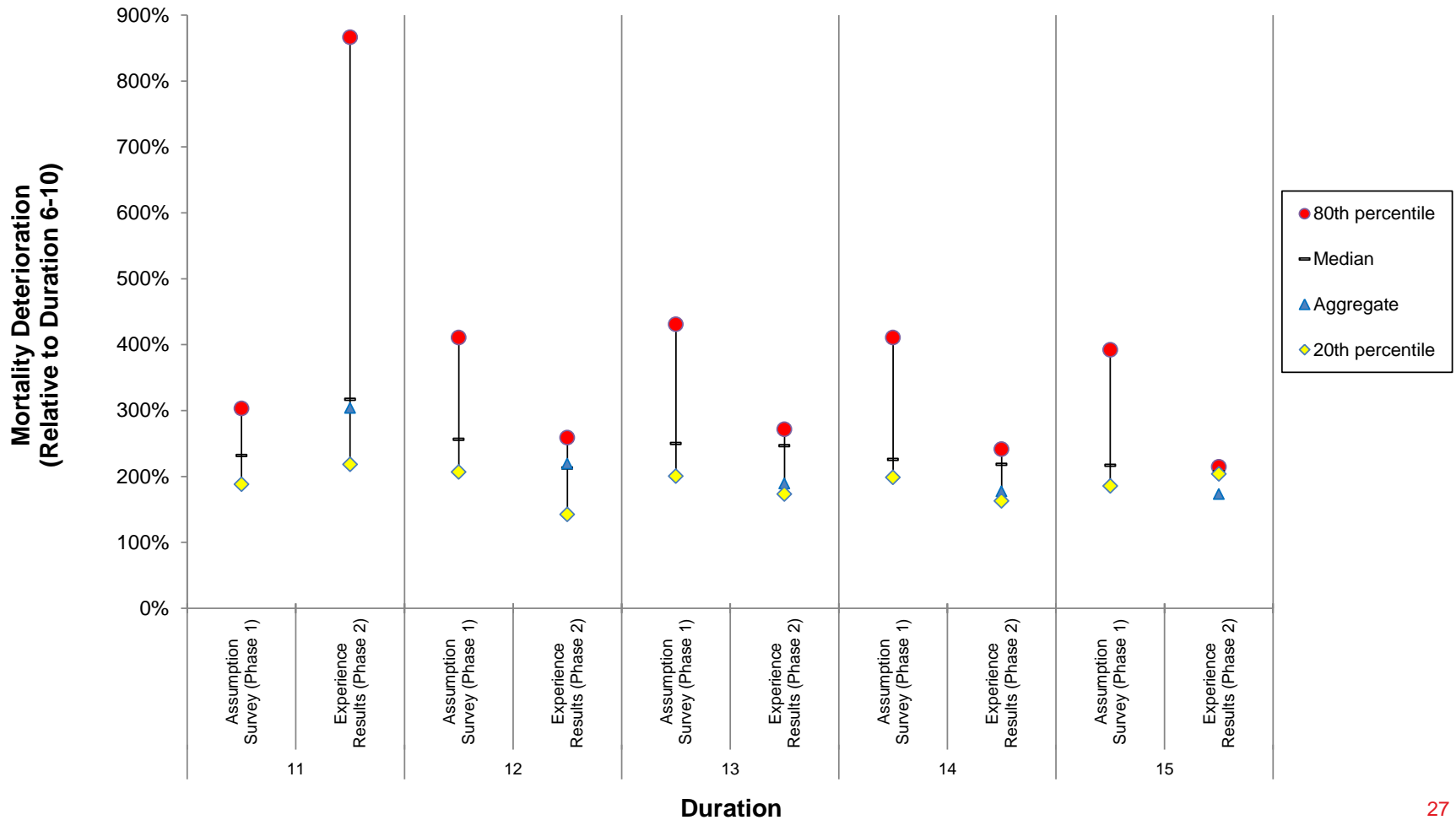
# Survey Responses vs. Experience Study

**T10 Jump to ART  
Duration 10 Lapse Rates by Issue Age  
Phase 1 vs. Phase 2**



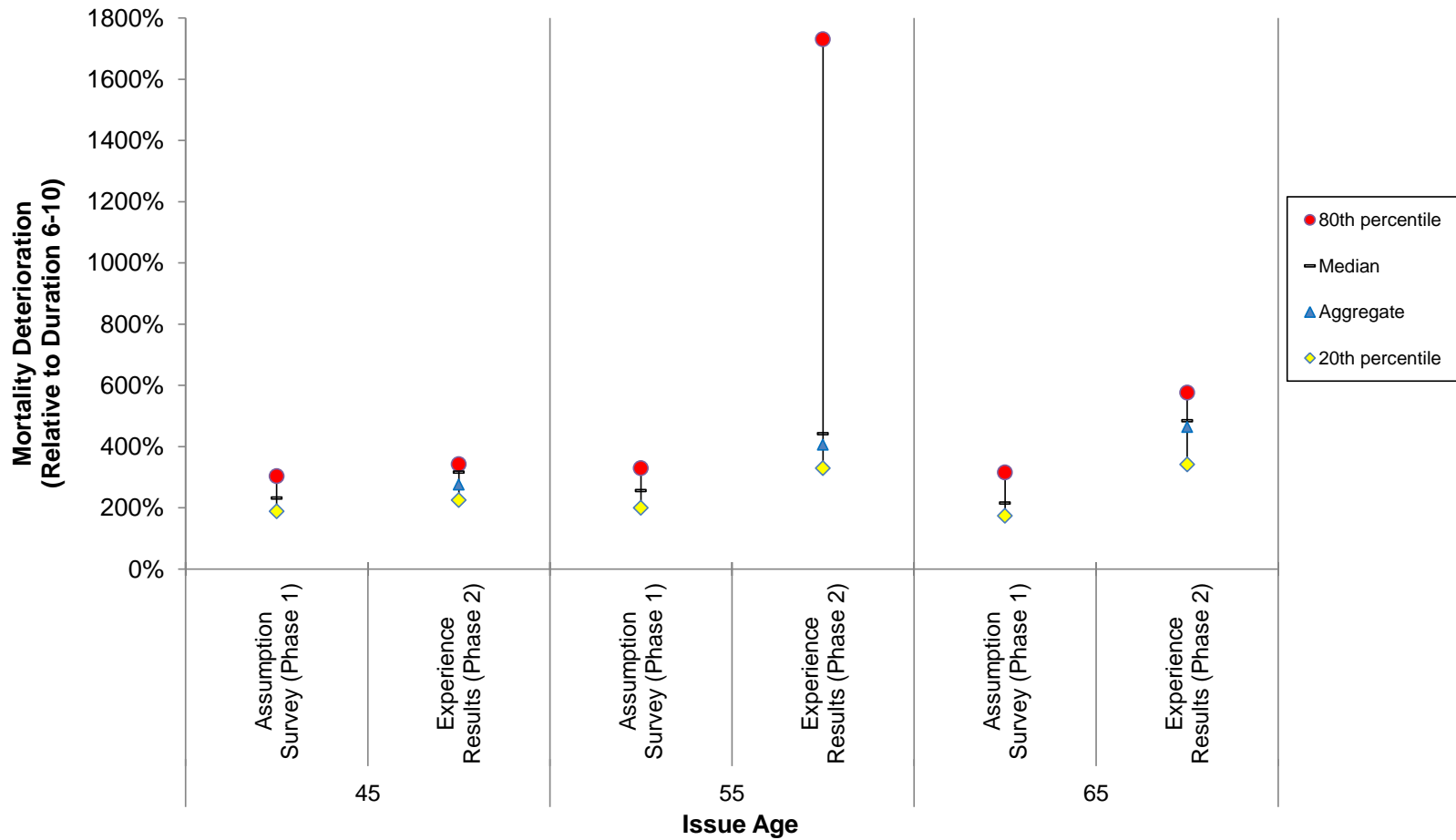
# Survey Responses vs. Experience Study

**T10 Jump to ART  
Mortality Deterioration by Duration  
Phase 1 vs. Phase 2**



# Survey Responses vs. Experience Study

**T10 Duration 11**  
**Mortality Deterioration by Issue Age**  
**Phase 1 vs. Phase 2**



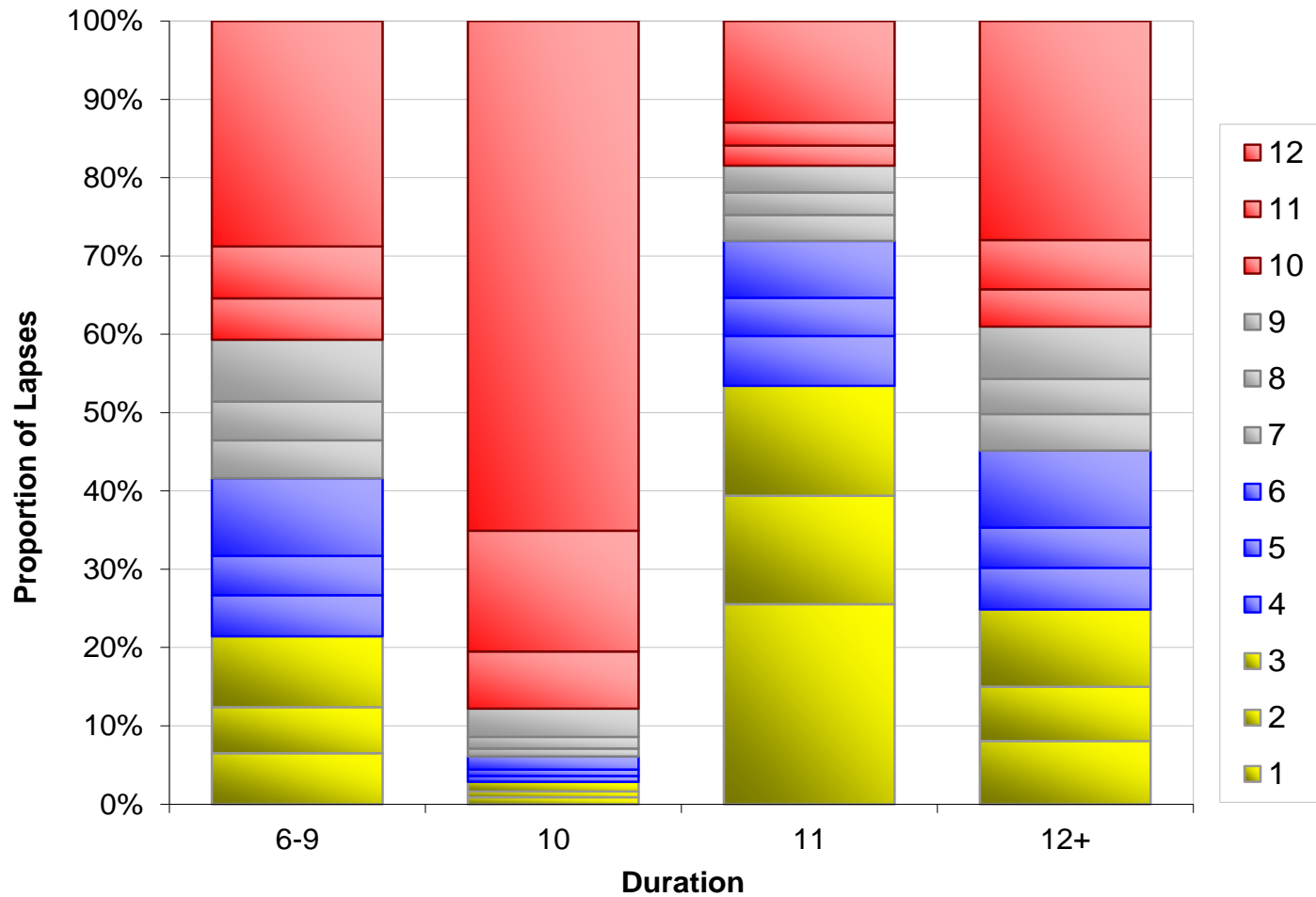
**RGA**

**RGA**

# **Practical Applications**

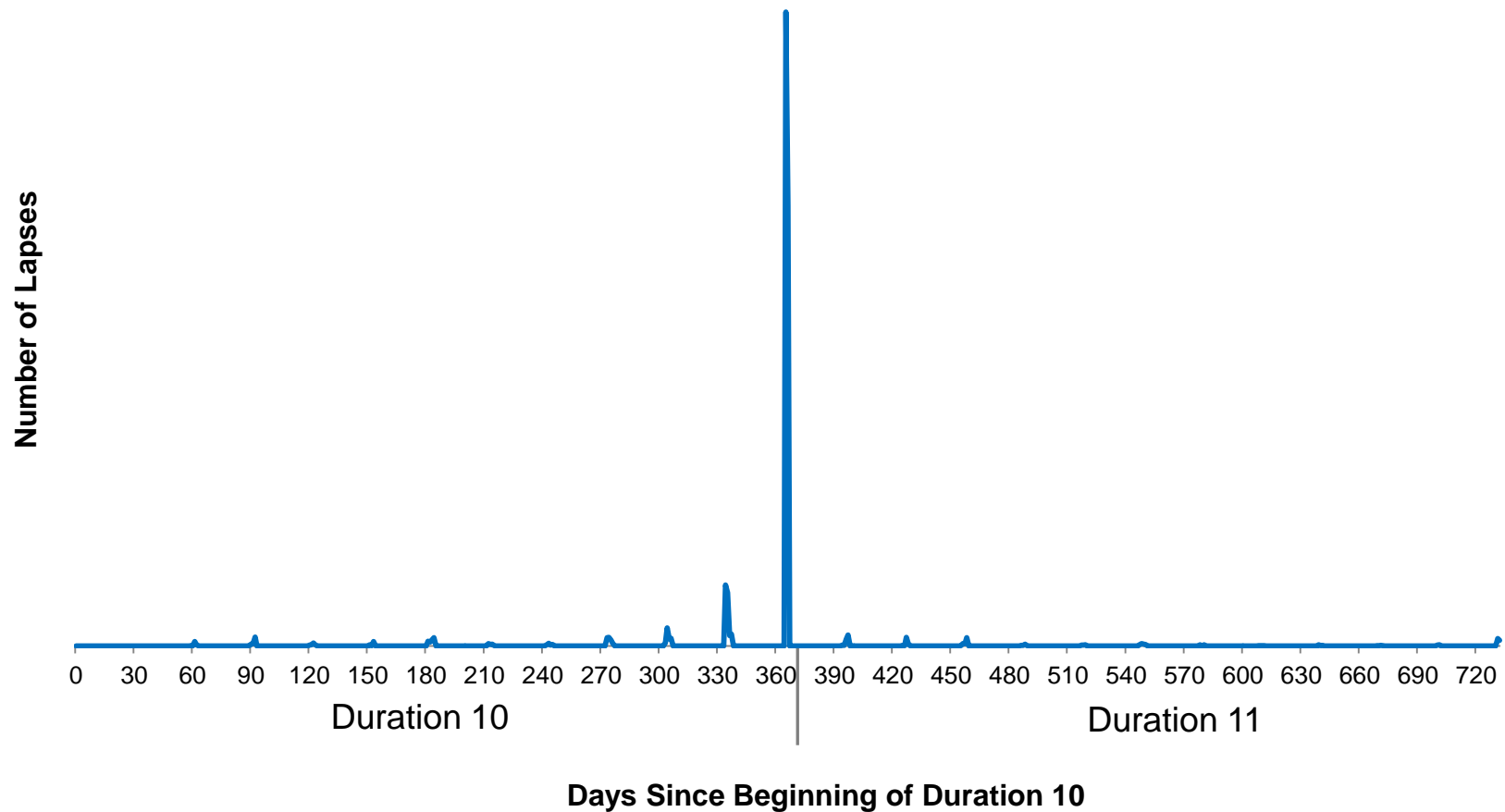
# Shock Lapse Experience

## Skewness of Lapses



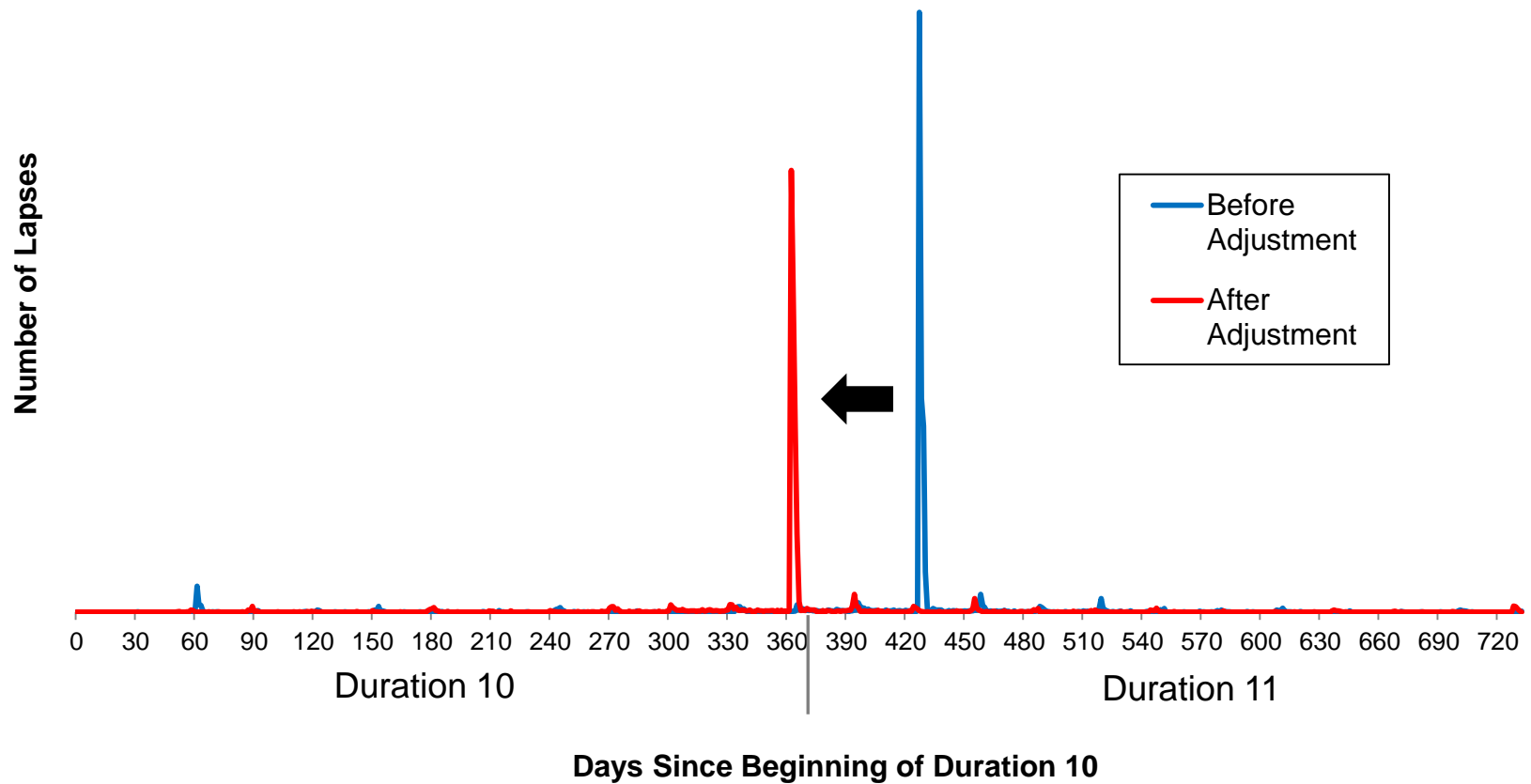
## Skewness by Day - Duration 10 and 11

**Example – unadjusted lapse date**



## Skewness by Day - Duration 10 and 11

### Example - lapse date adjustment

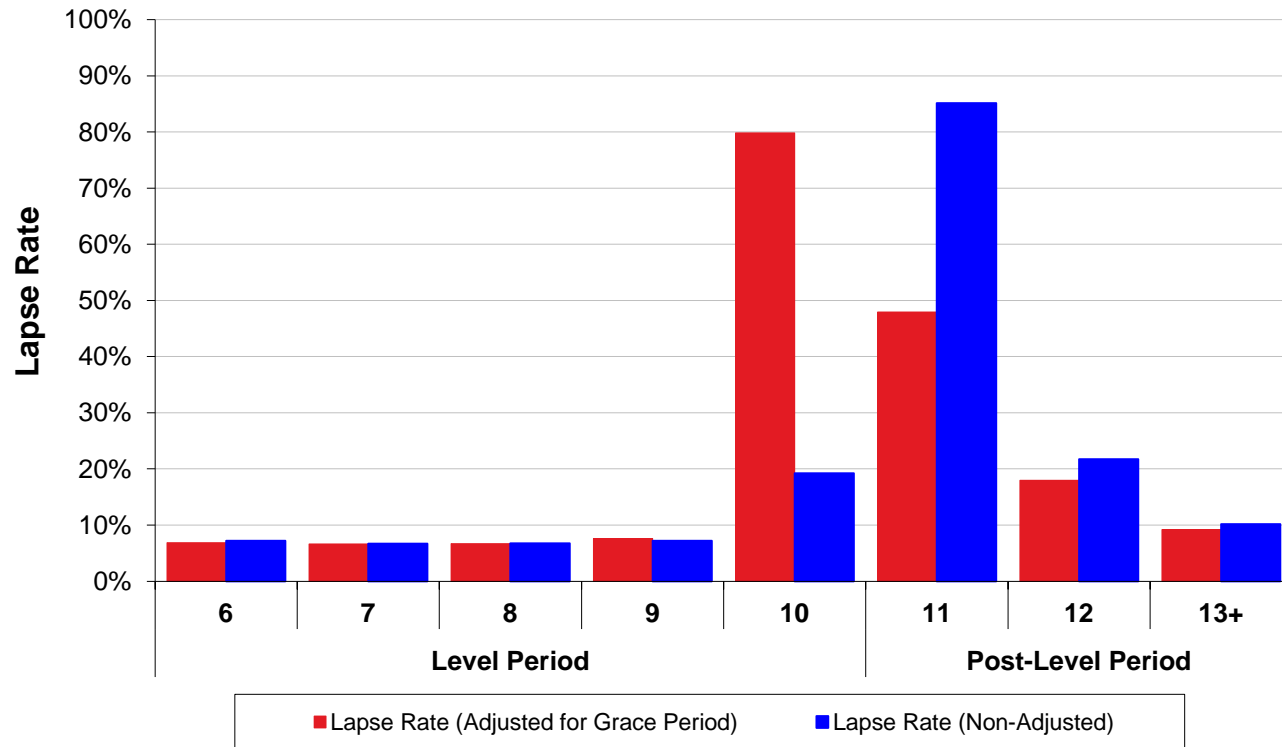




# Shock Lapse Experience (Jump to ART)

## T10 by Duration

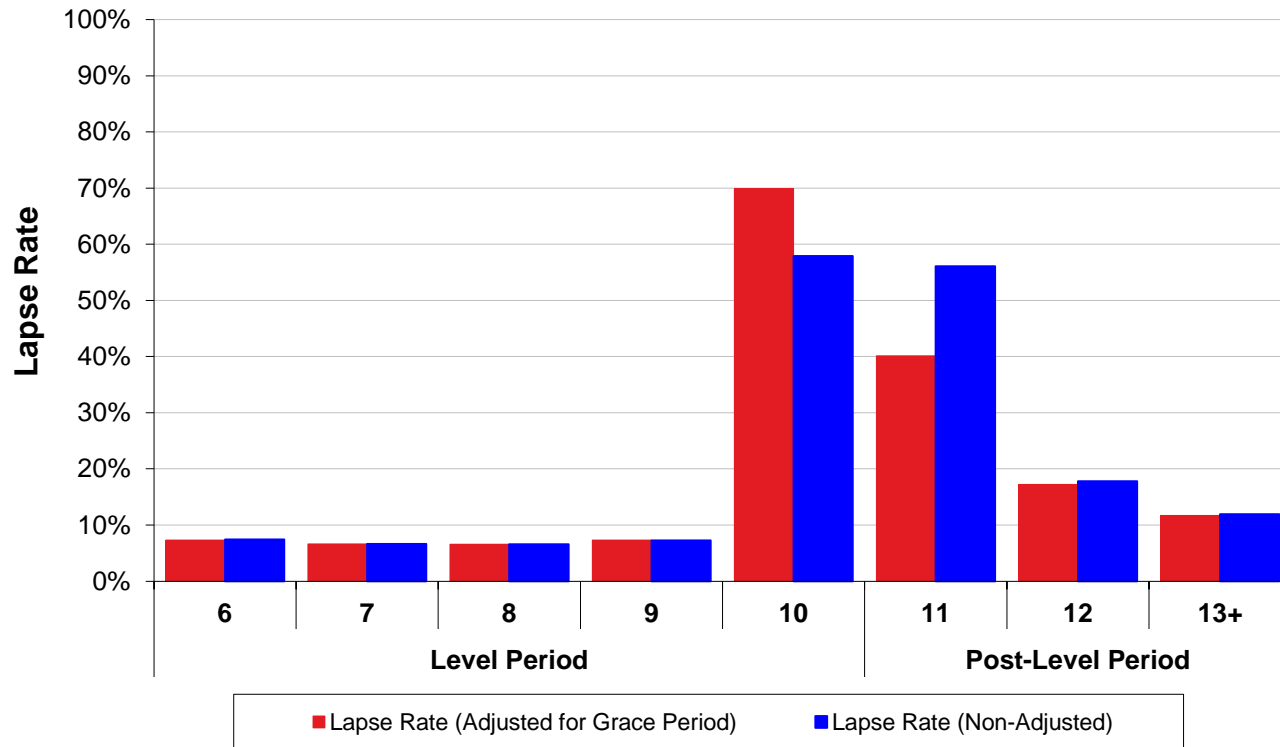
### Impact of Adjusting for Grace Period (only adjusted companies)



# Shock Lapse Experience (Jump to ART)

## T10 by Duration

### Impact of Adjusting for Grace Period (all companies)

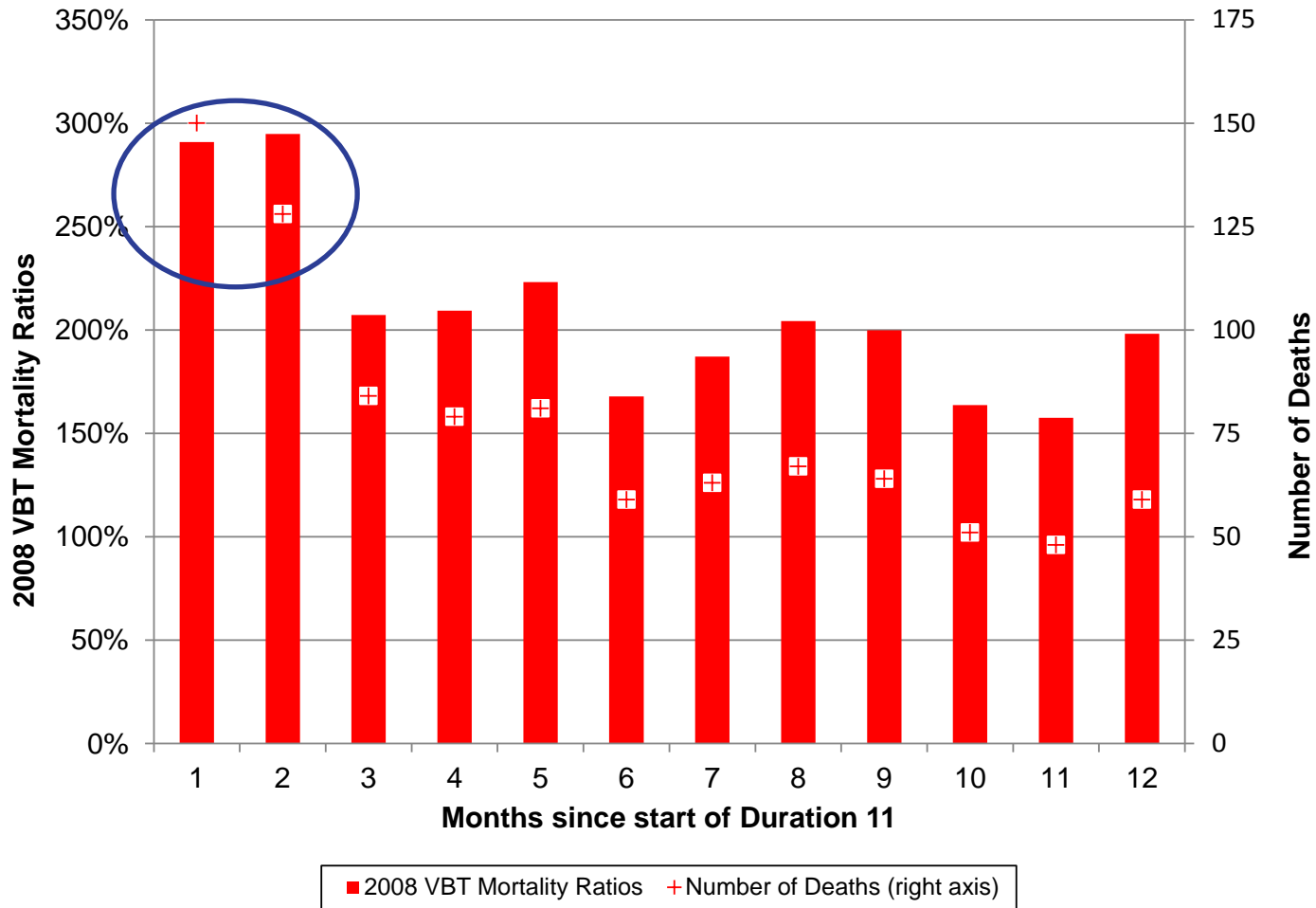


## Grace Period Subsidy

- **Grace period creates mismatch between exposure basis for claims and premiums**
- **No duration 11 premium received, but effective duration 10 exposure extends into grace period.**
- **Premium-paying persisters must subsidize “free insurance” during the grace period for policyholders who intended to lapse on their anniversary.**
- **Much bigger impact with shock lapse**
  - Small number of premium-payers...lots of lapsers
  - Magnitude increases for higher lapse rates or longer grace periods

# Mortality Experience

## Duration 11 Mortality by Month



**RGA**

**RGA**

# Key Takeaways

## 2014 SOA Post-Level Term

### Key Takeaways

- Lapse rates beyond the level period are largely driven by the level of the premium compared to the original level premium
- Mortality in the post-level period is driven by the size of the shock lapse
- Lapses are skewed towards the end of the last duration of the level period and the beginning of the first duration after the level period
- Further calibration of lapses and mortality within the industry may be justified
- Grace period can lead to excess mortality, especially at the higher shock lapse levels