

Older Age Mortality Analysis

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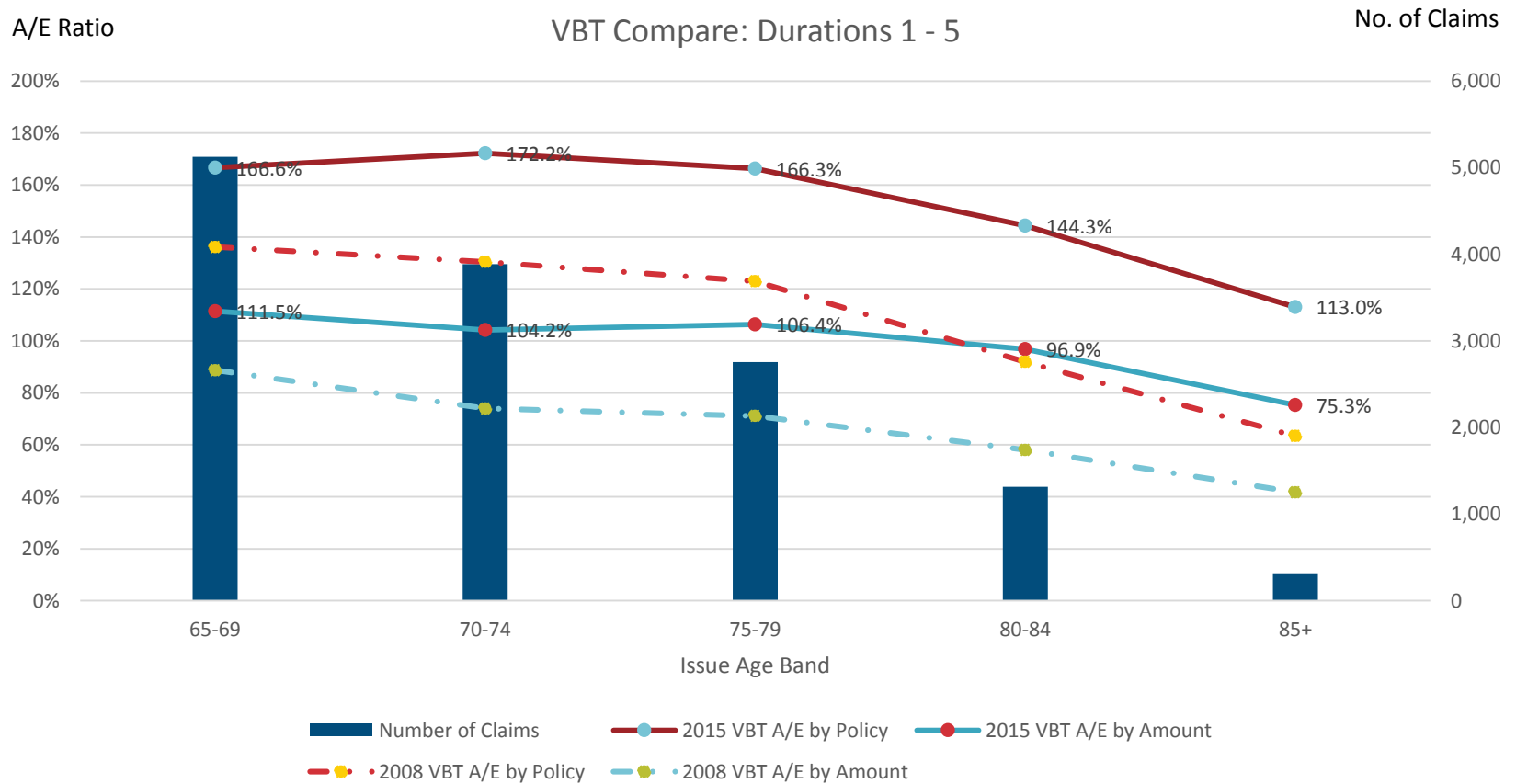
Older Age 2002-09 Data



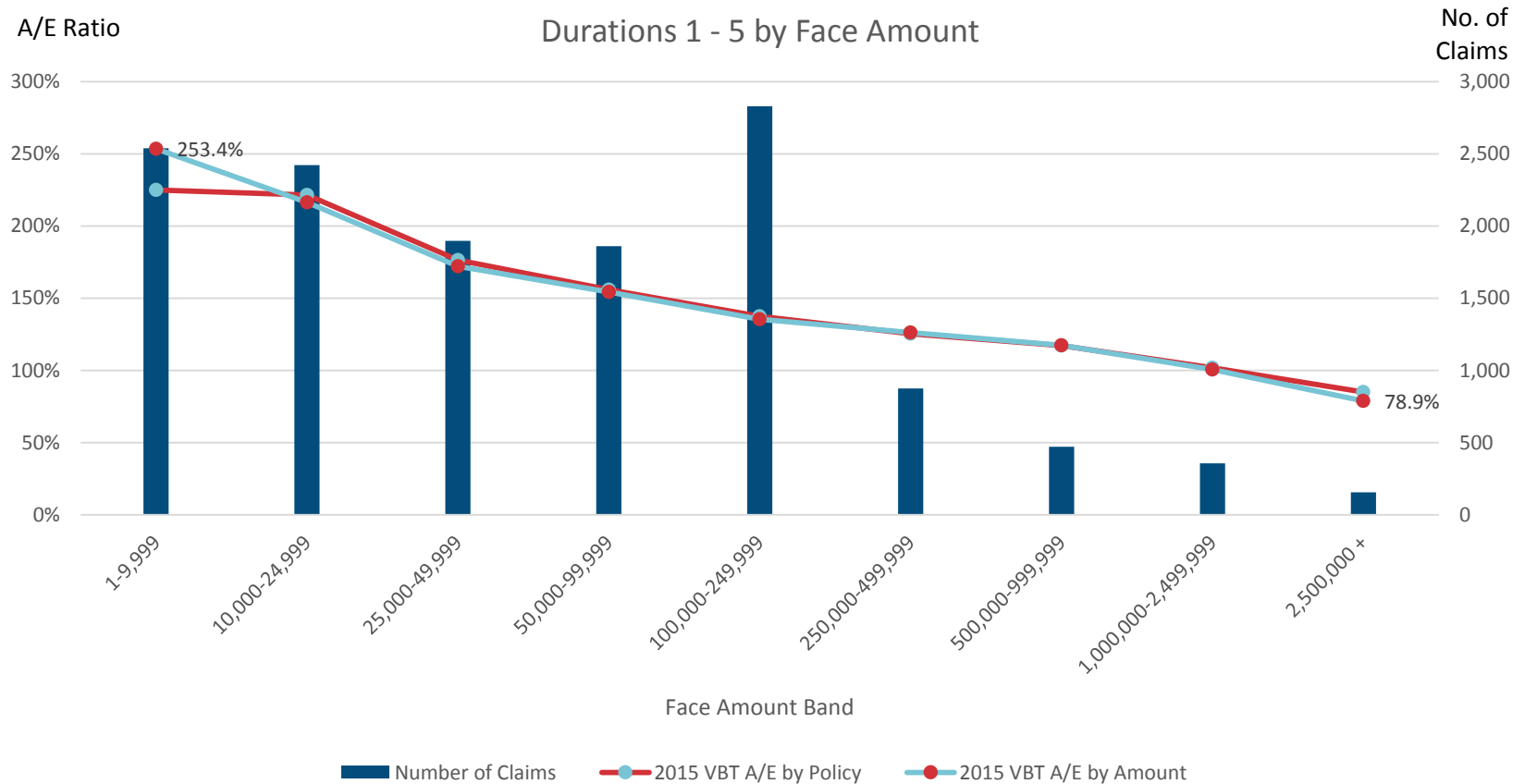
Background 2002-2009 Dataset

- 2015 VBT / 2017 CSO
- Graduated 2002-09 experience
- Older age aspects
 - Mortality patterns
 - Issue amount patterns
 - Select duration patterns

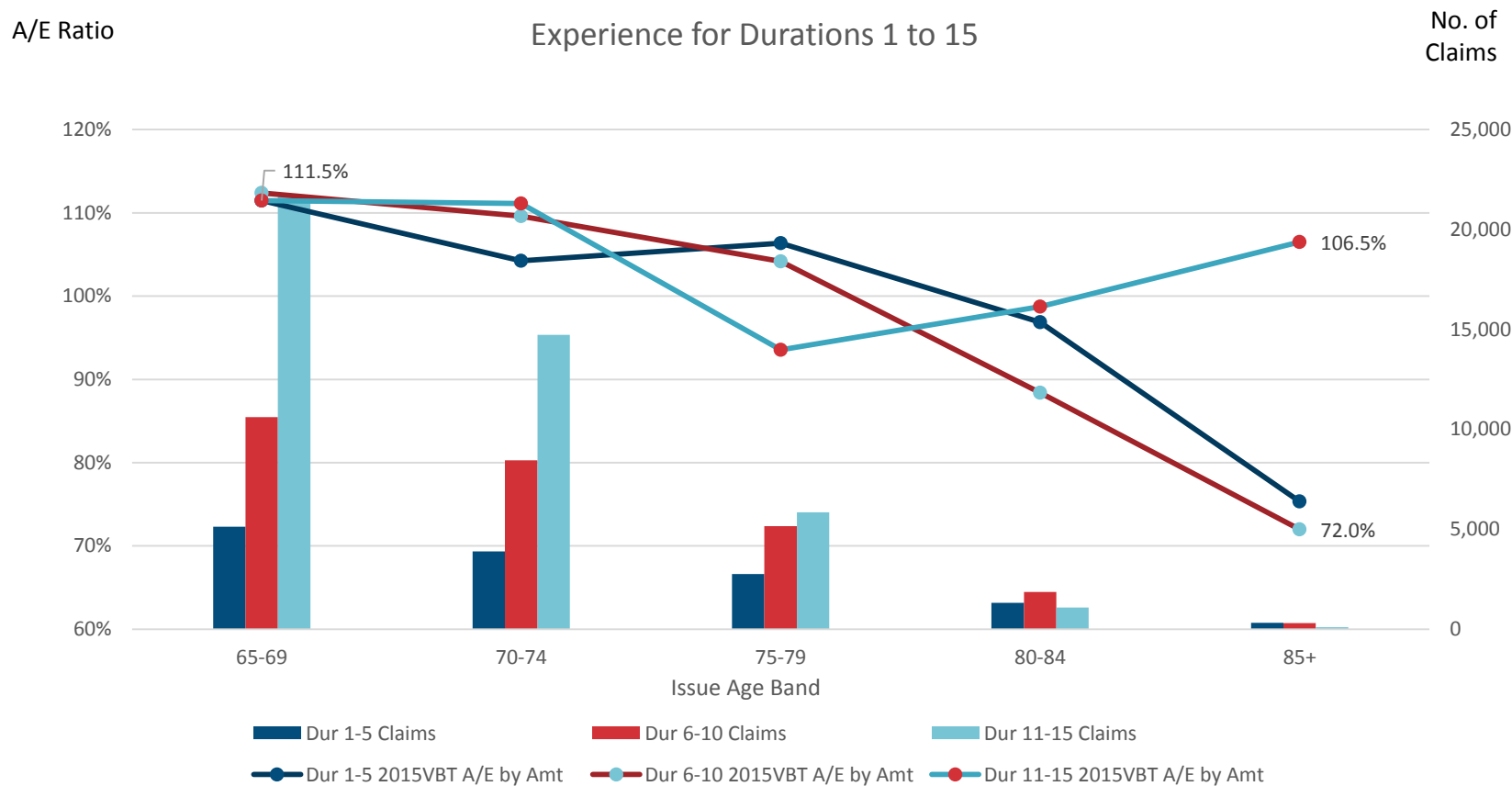
2002 – 09 Mortality: Durations 1 to 5



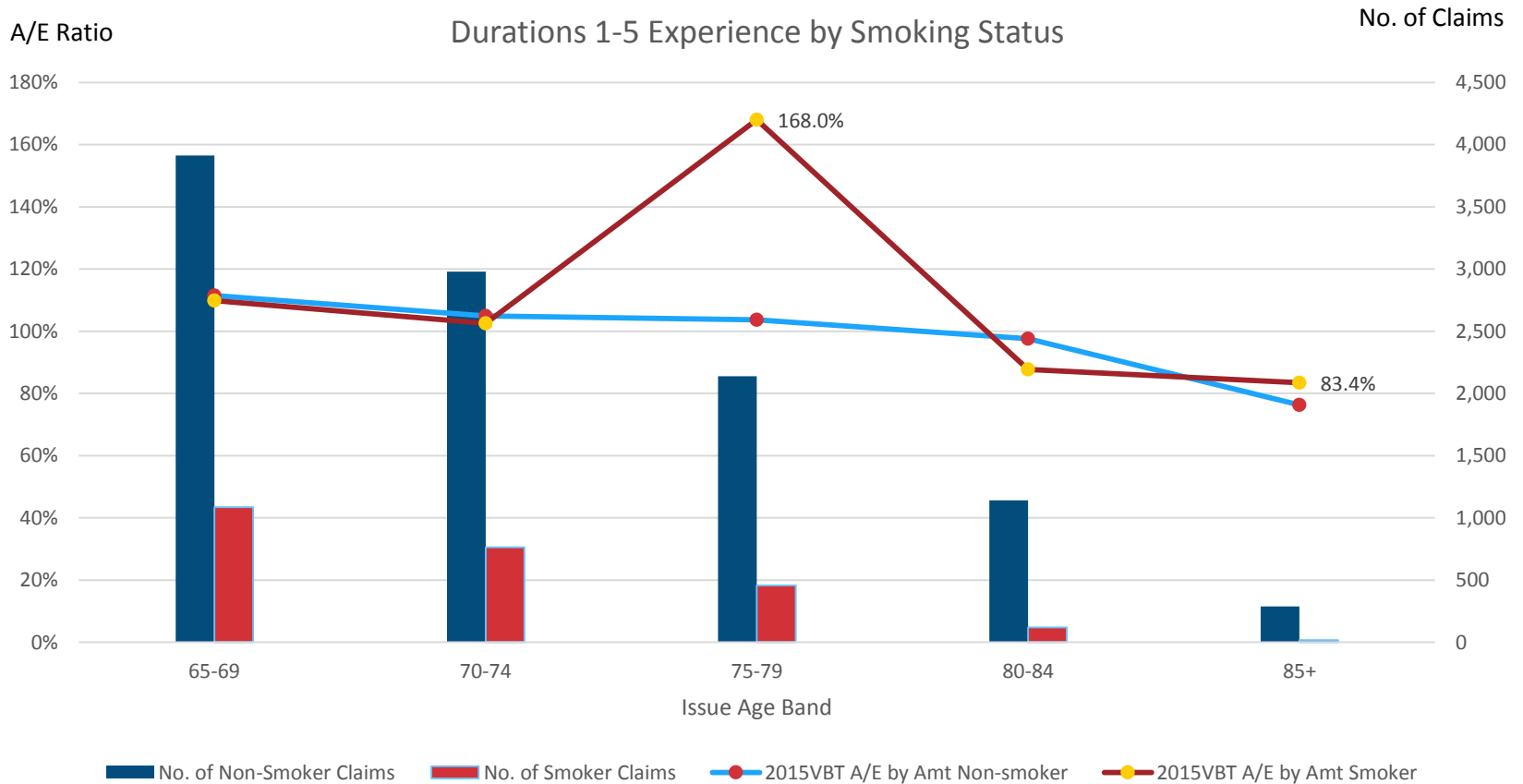
Mortality: Durations 1 to 5 by Amount of Insurance (Issue Ages 65+)



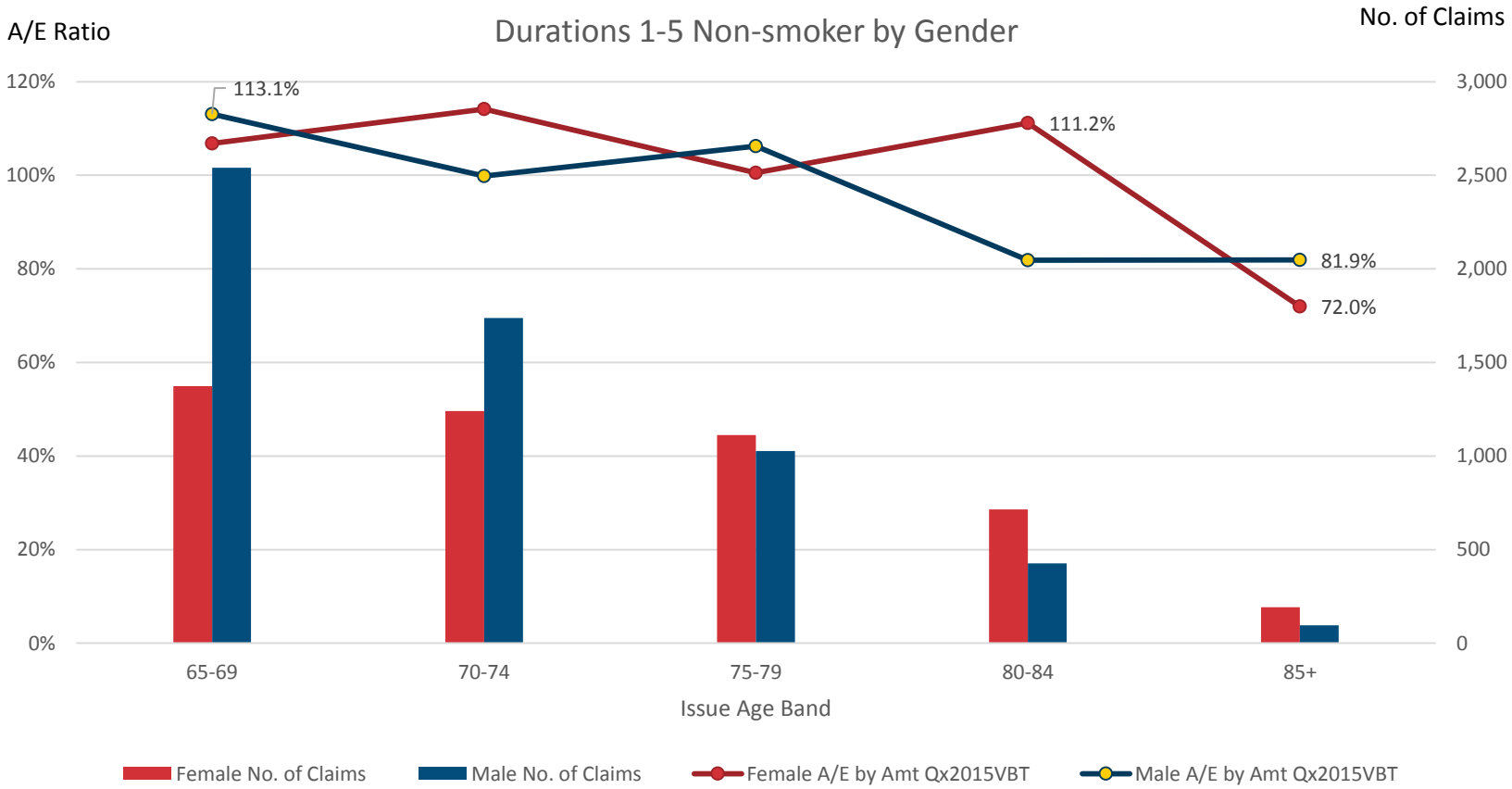
Mortality by Amount by Duration Group



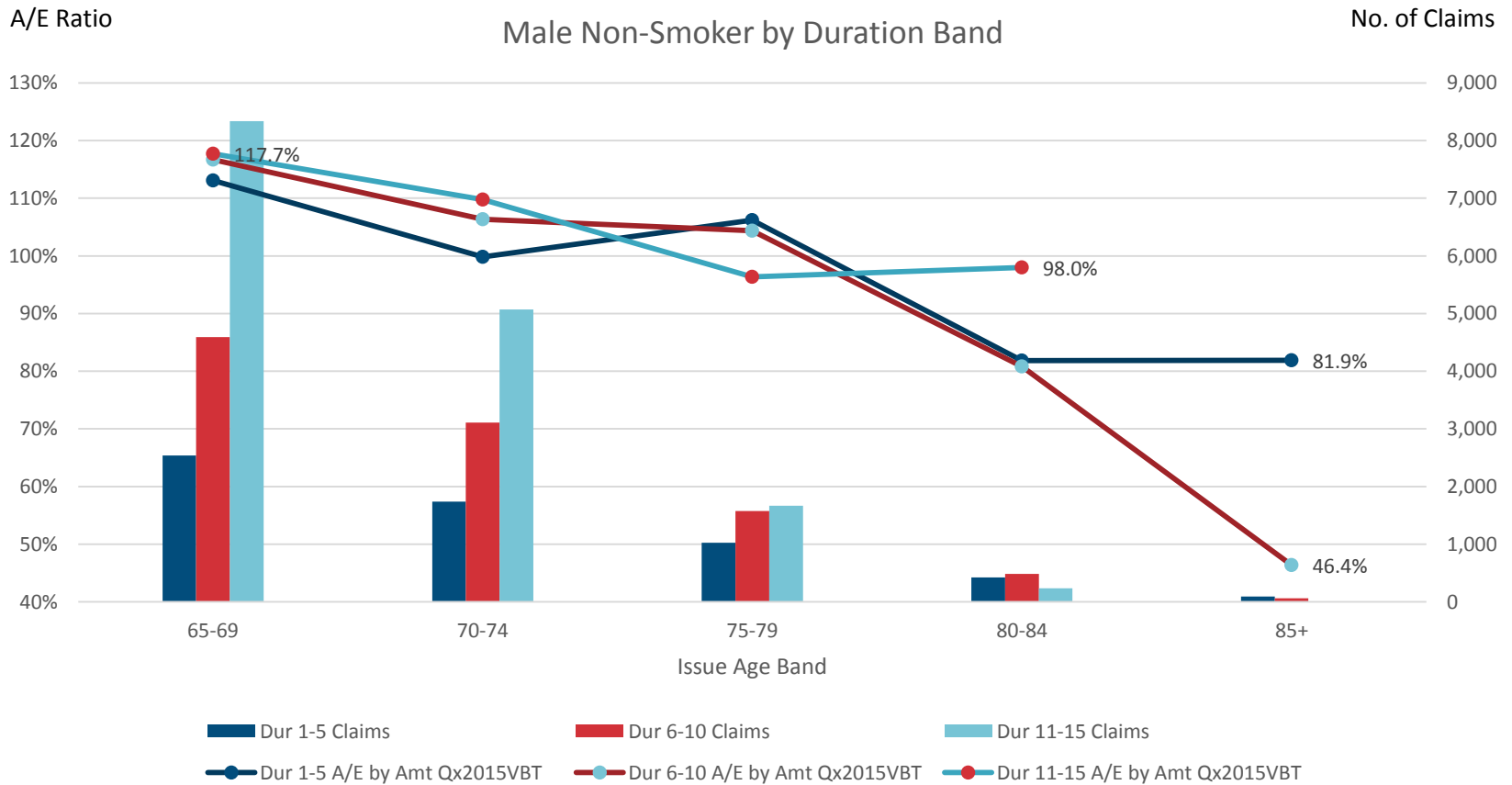
Durations 1 to 5 Mortality by Smoking Status



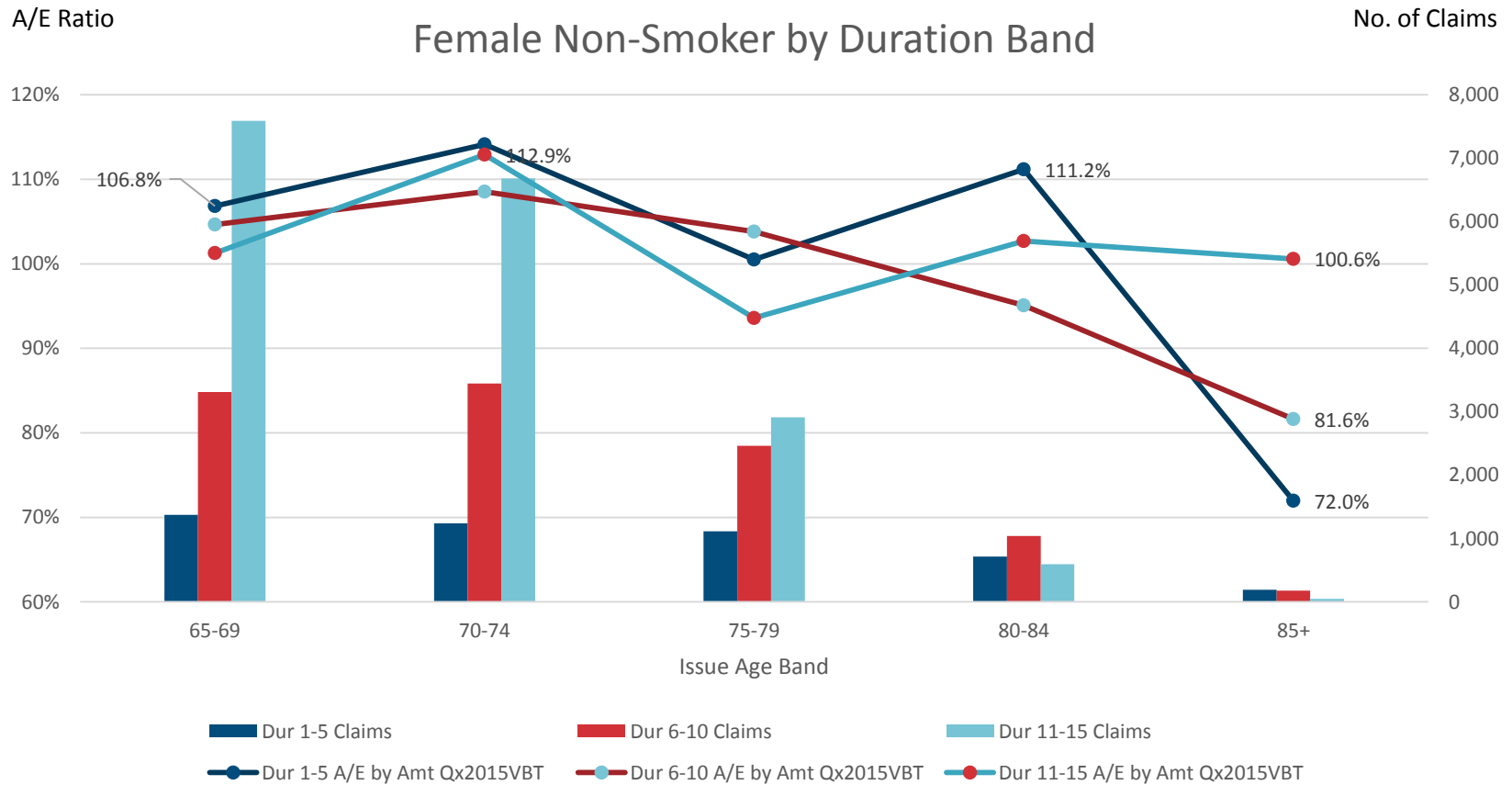
Non-Smoker Mortality by Gender



Male Non-Smoker Experience

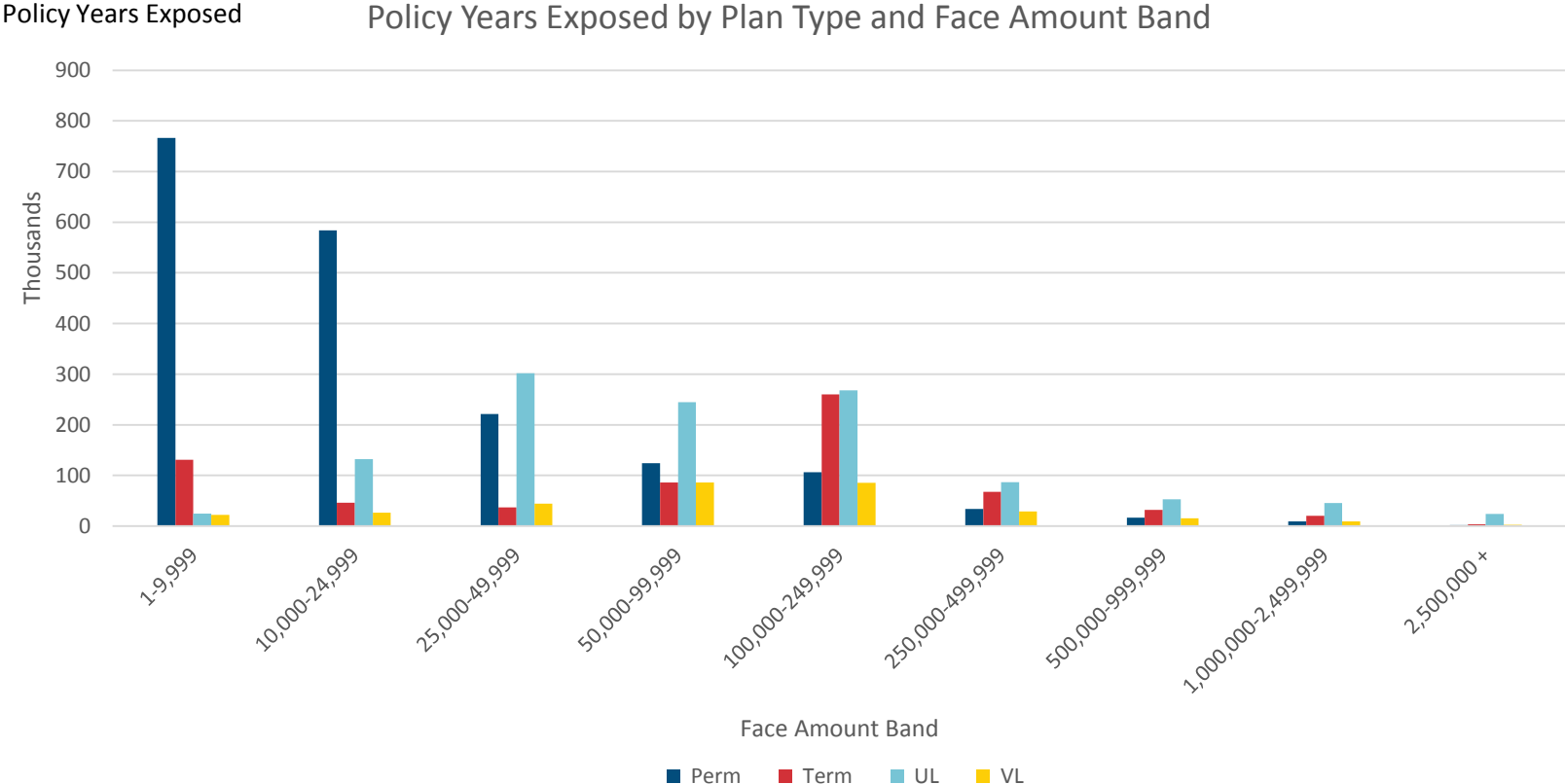


Female Non-Smoker Experience



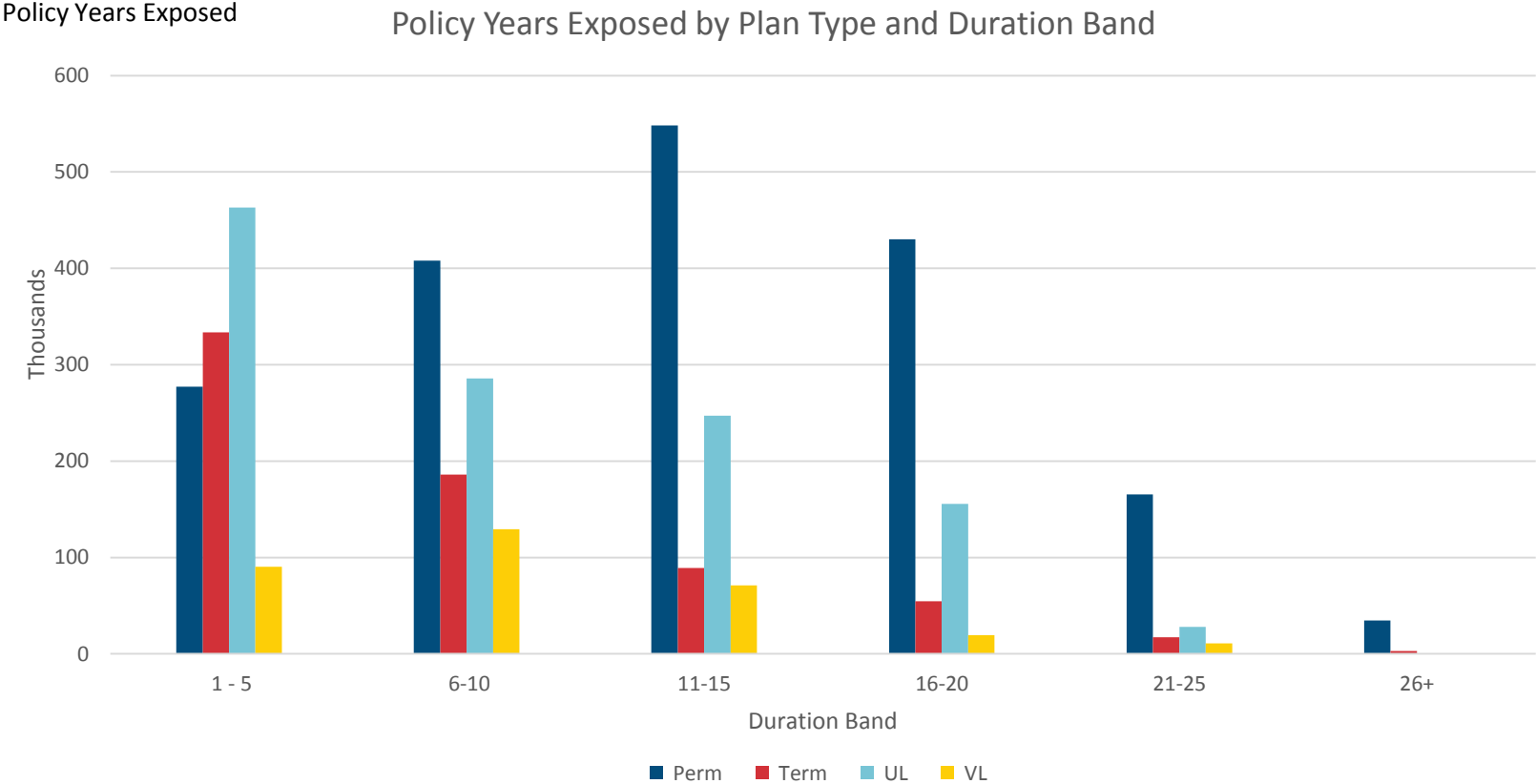
Plan Distribution by Face Amount

(Issue Ages 65+)

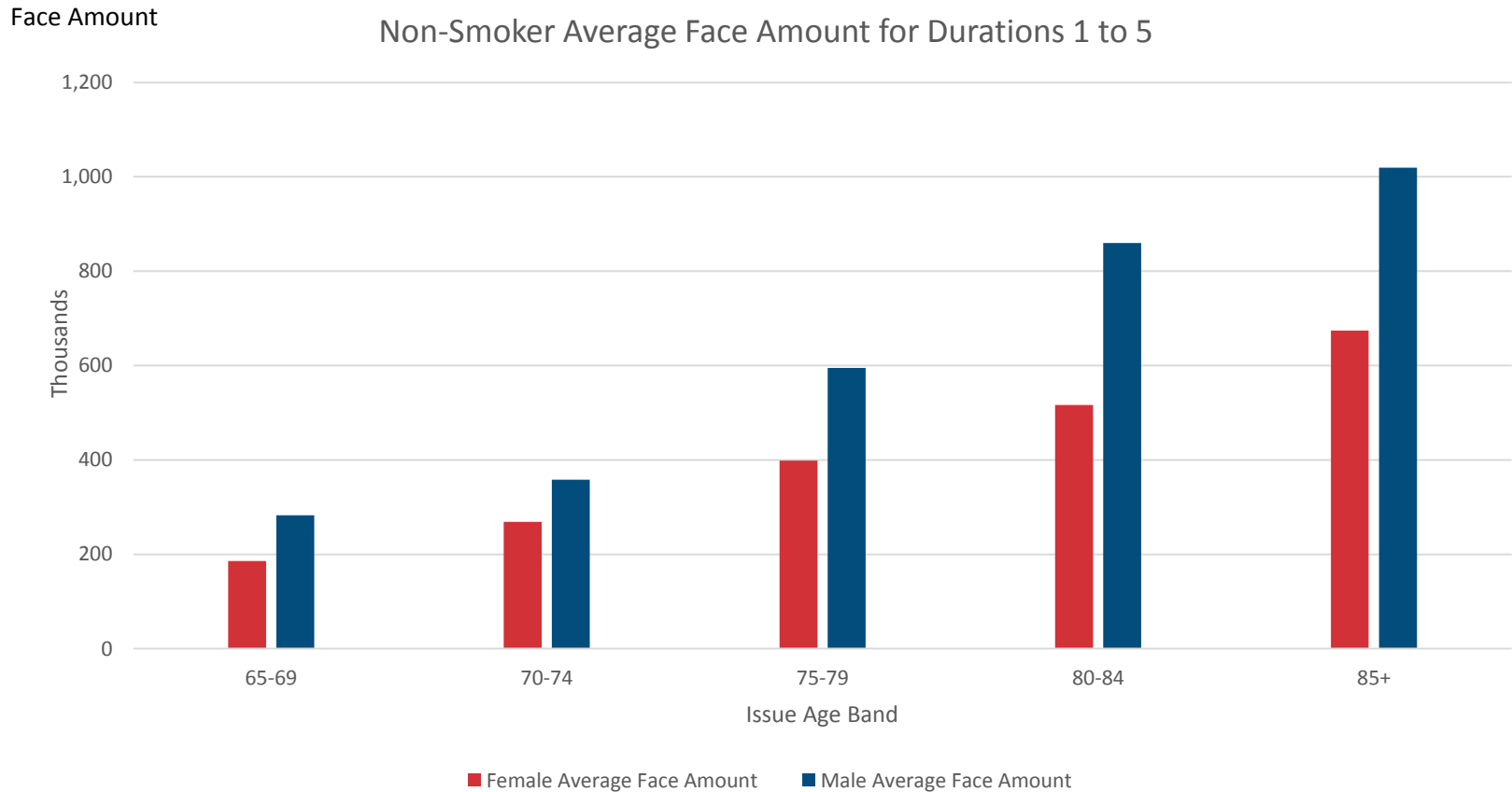


Plan Distribution by Duration

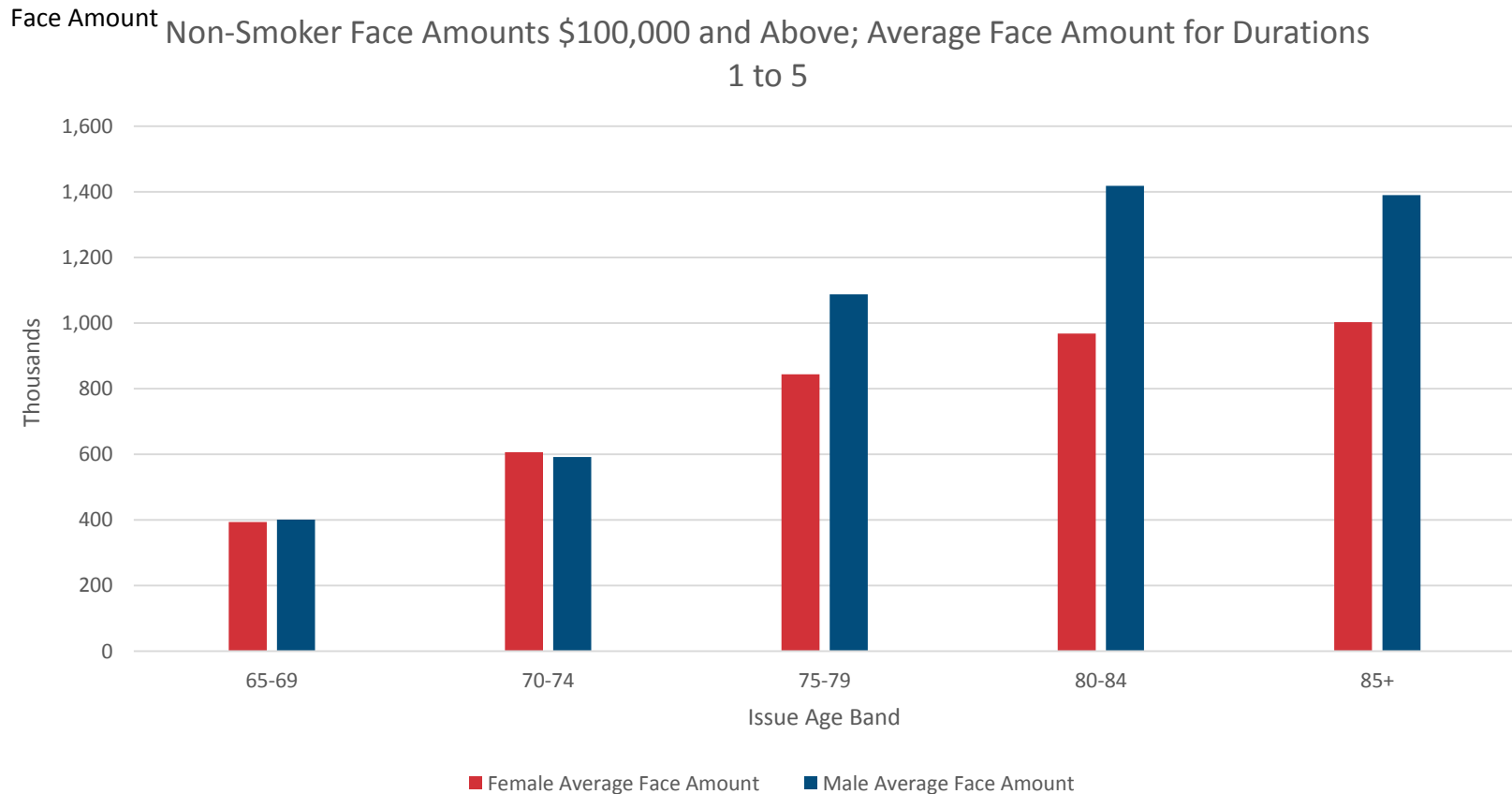
(Issue Ages 65+)



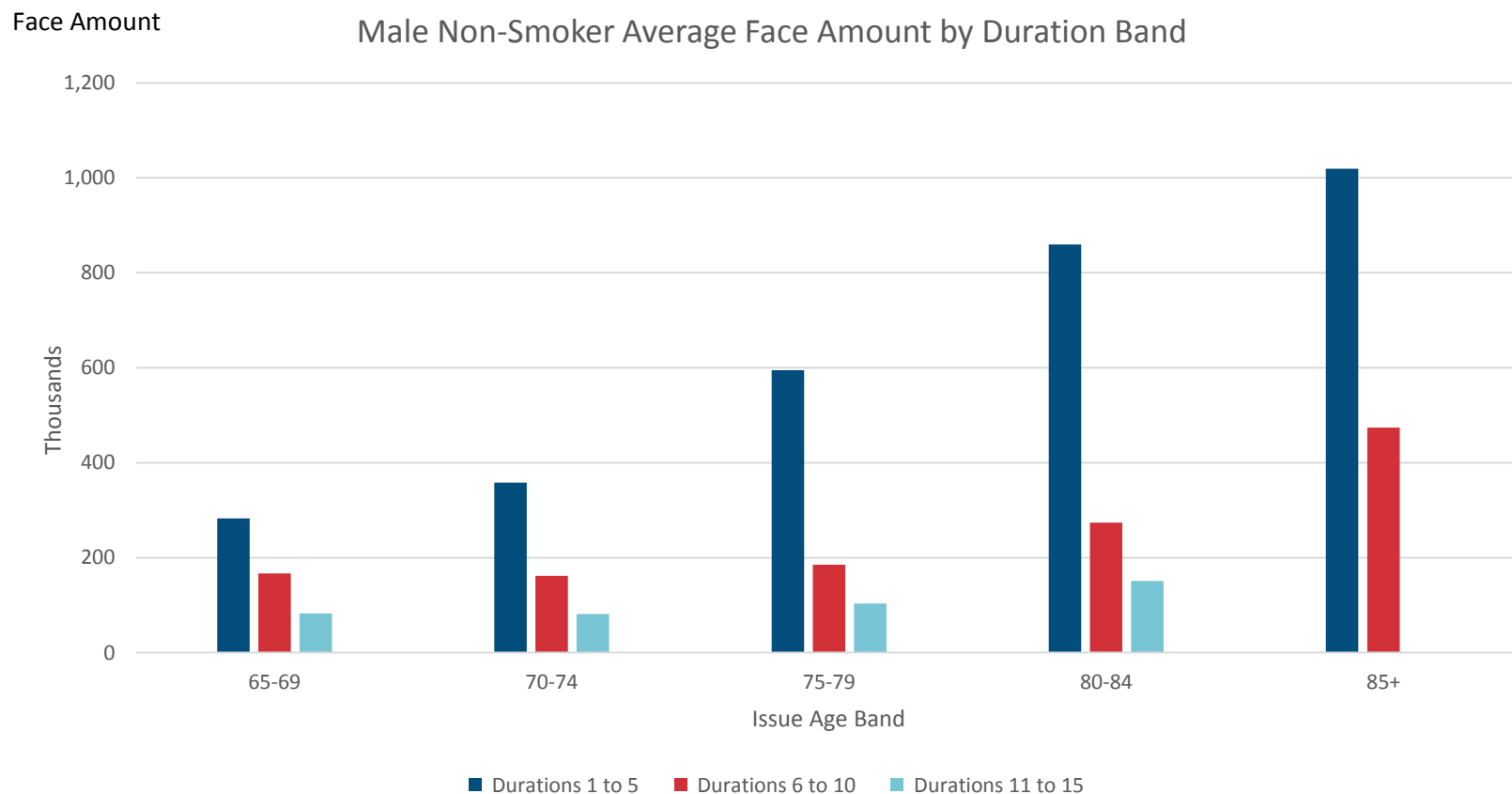
Average Non-Smoker Policy Size by Gender



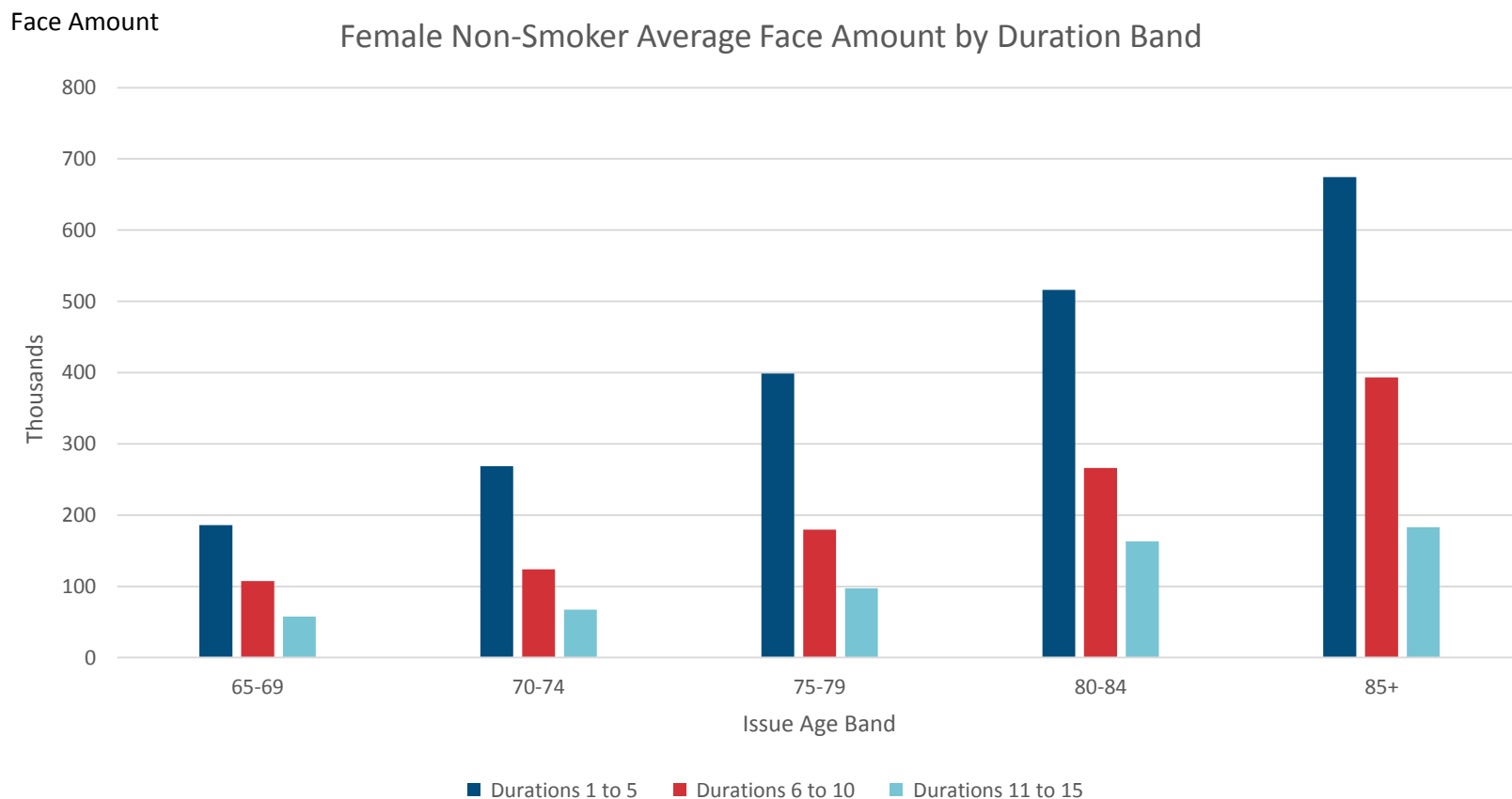
Average Policy Size: High Face Amount Non-Smoker Policies



Average Policy Size: Male Non-Smoker



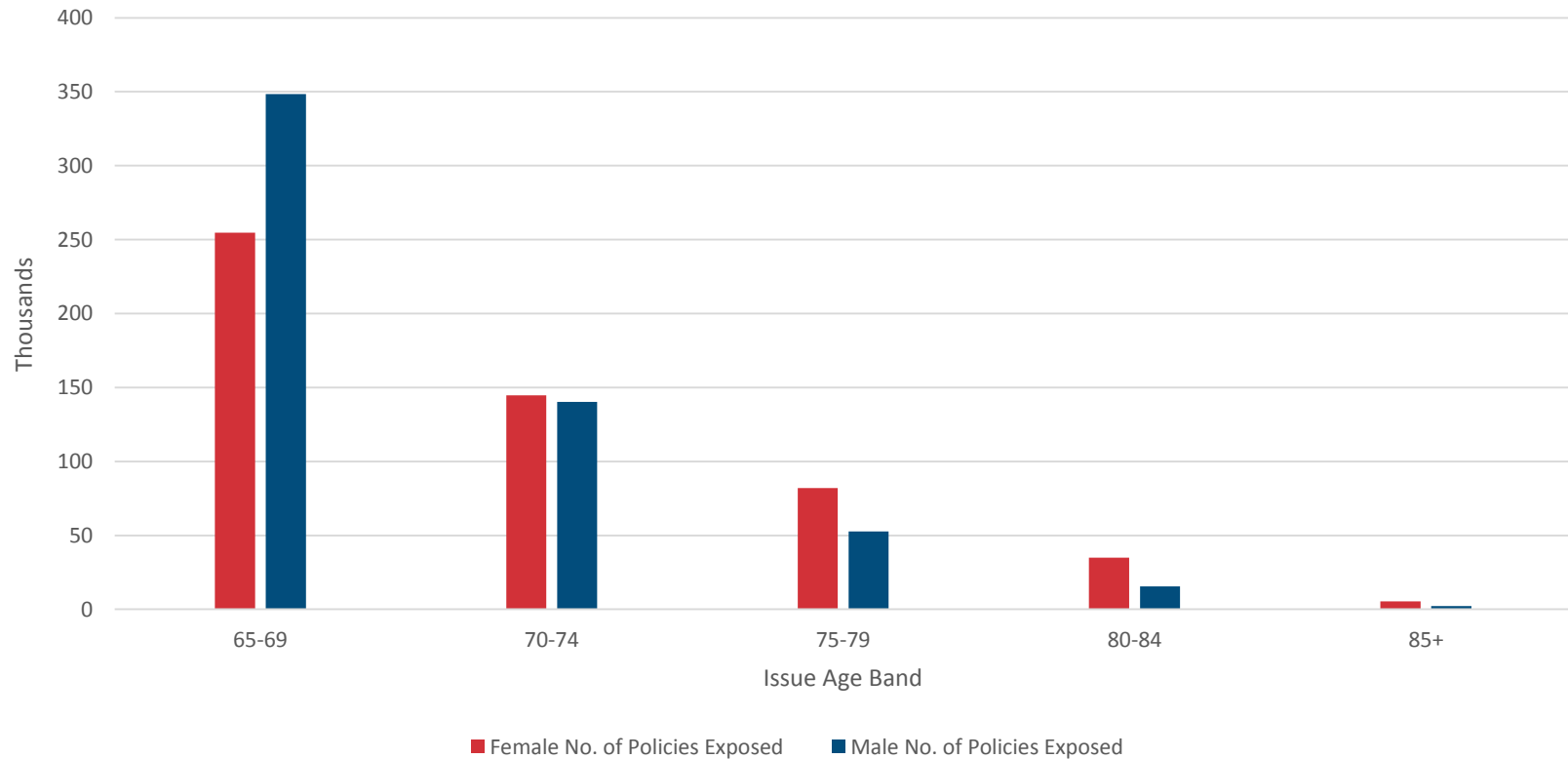
Average Policy Size: Female Non-Smoker



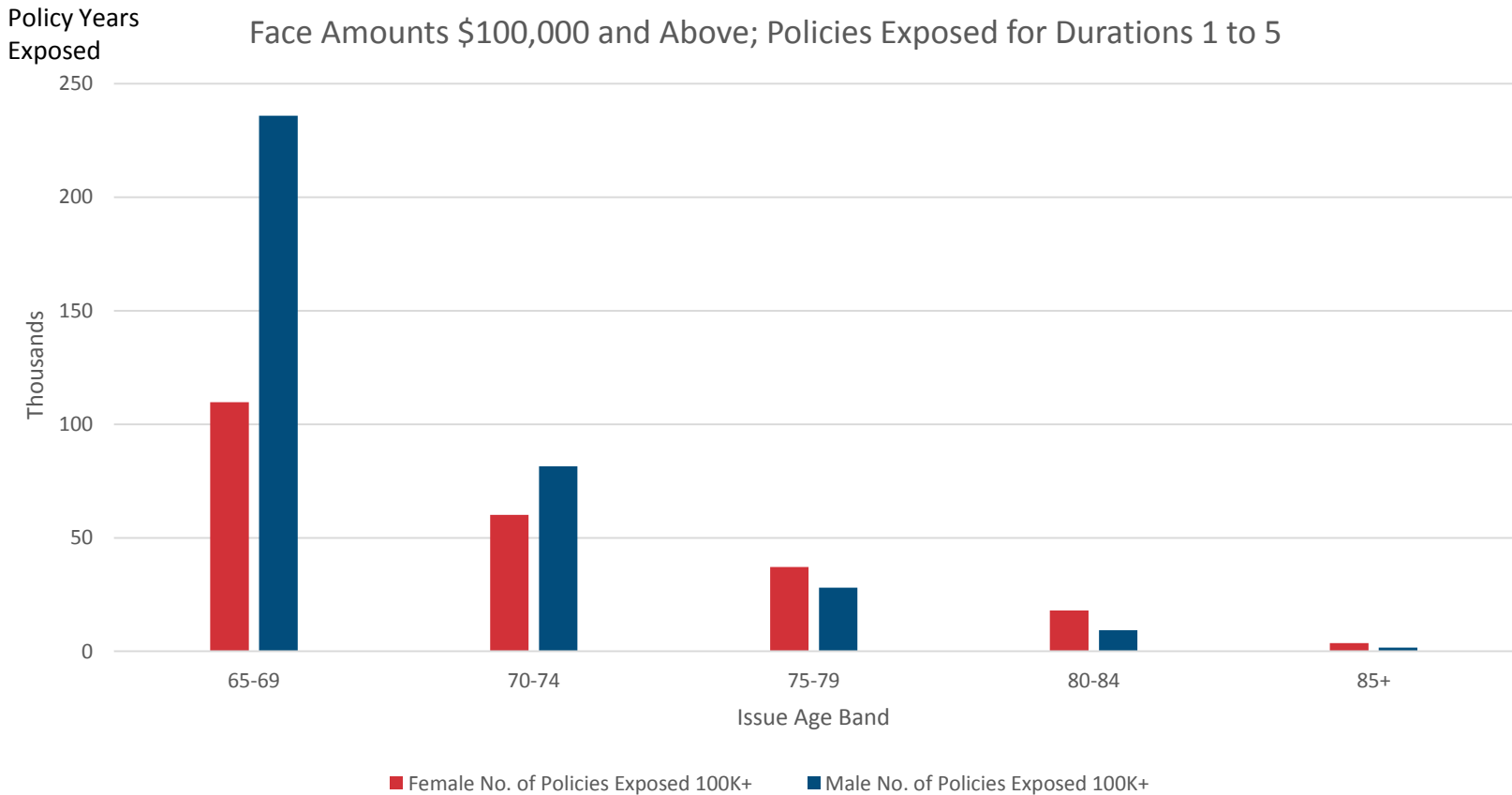
Number of Policies by Gender

Policy Years Exposed

Non-Smoker Policies Exposed for Durations 1 to 5



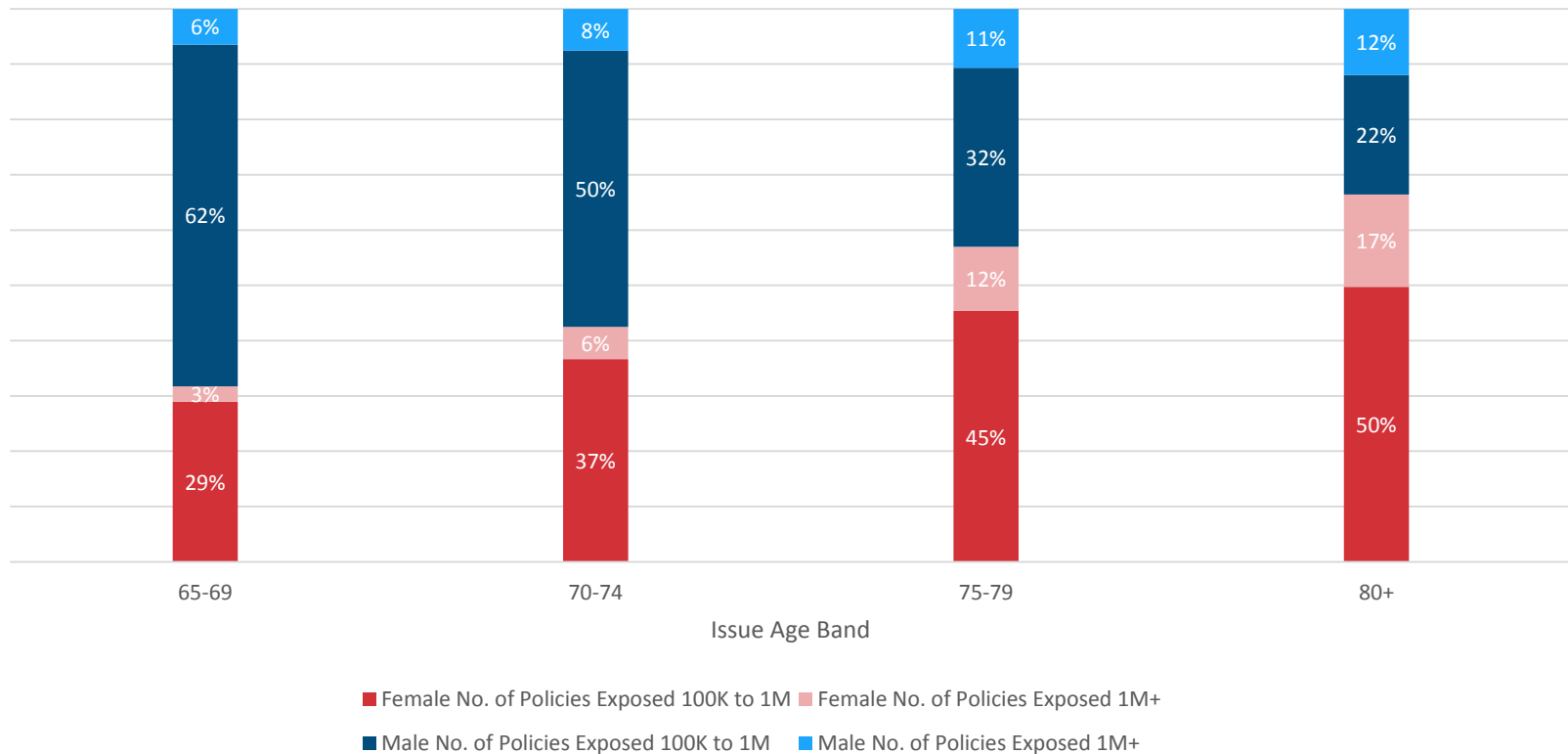
Number of Policies: High Face Amount Non-Smoker Policies



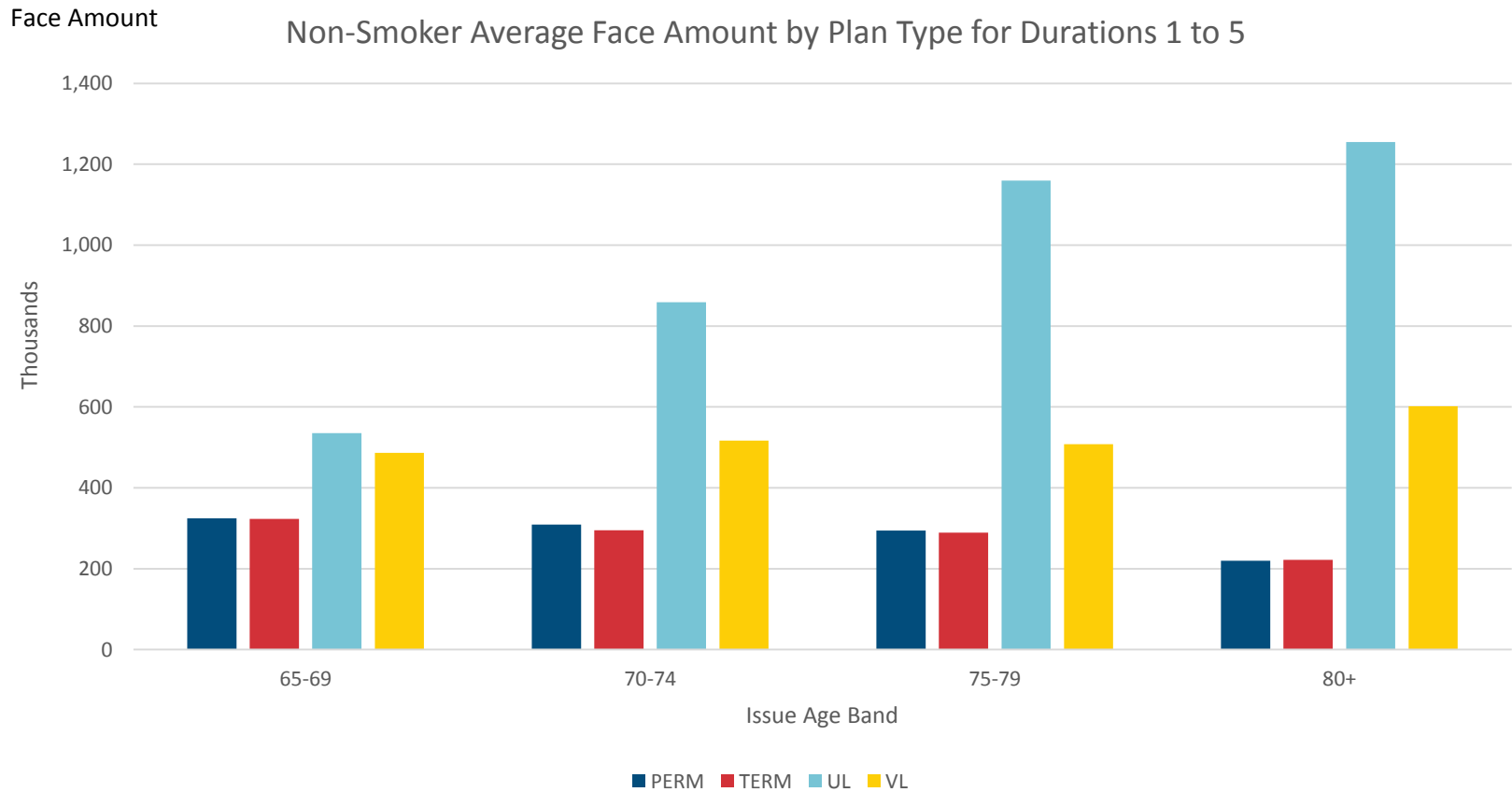
Percent of Policies Exposed by Gender

High Face Amount Non-Smoker Policies

Face Amounts \$100,000 and Above; Percentage Policies Exposed for Durations 1 to 5



Average Policy Size by Plan



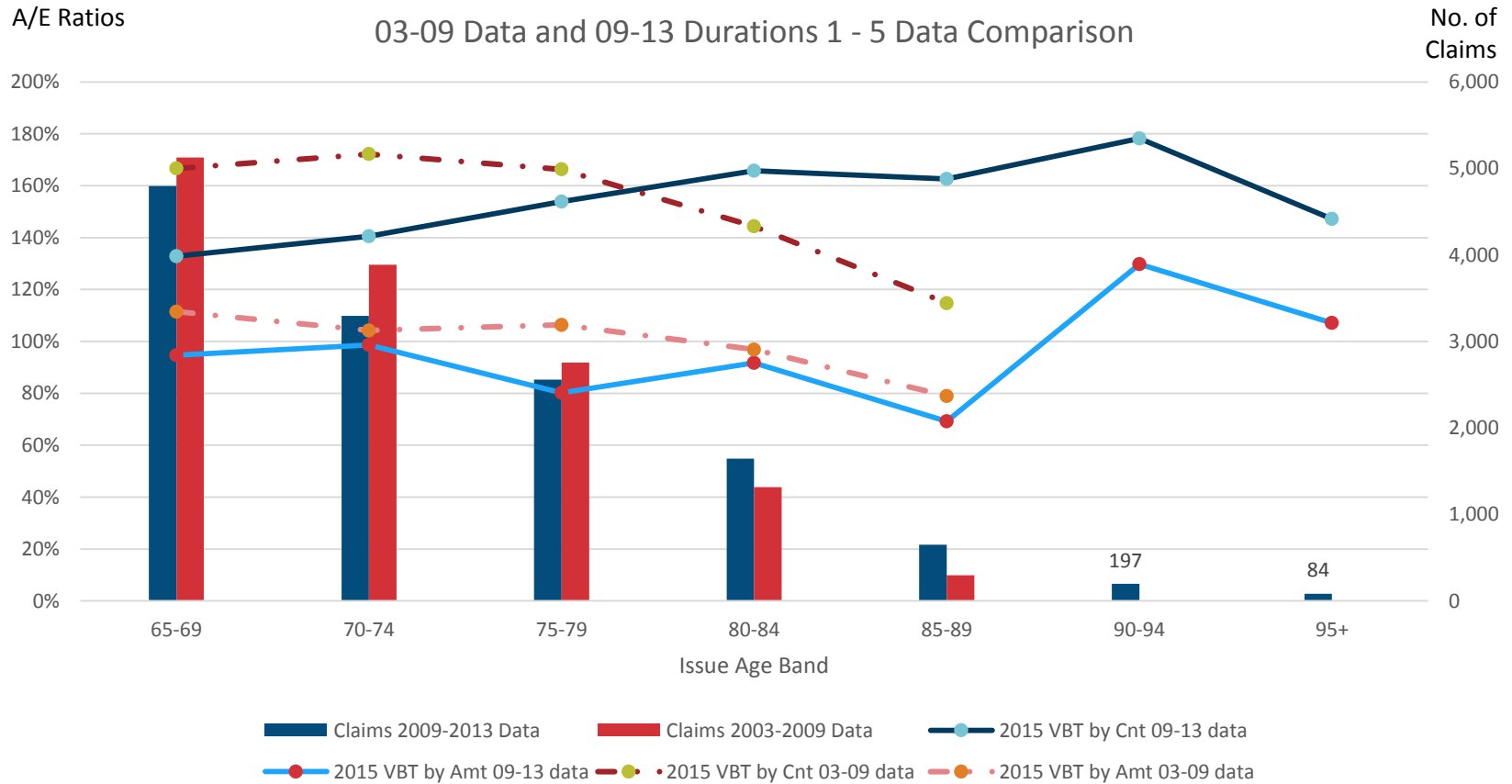
Observations

- Significant increase in policy size for older issue ages
- More extensive underwriting for higher policy sizes and issue ages may be a significant driver of the observed decreases in A/E ratios as issue age increases
- Possible widow effects
- Universal Life has higher average face amount compared to other plan types

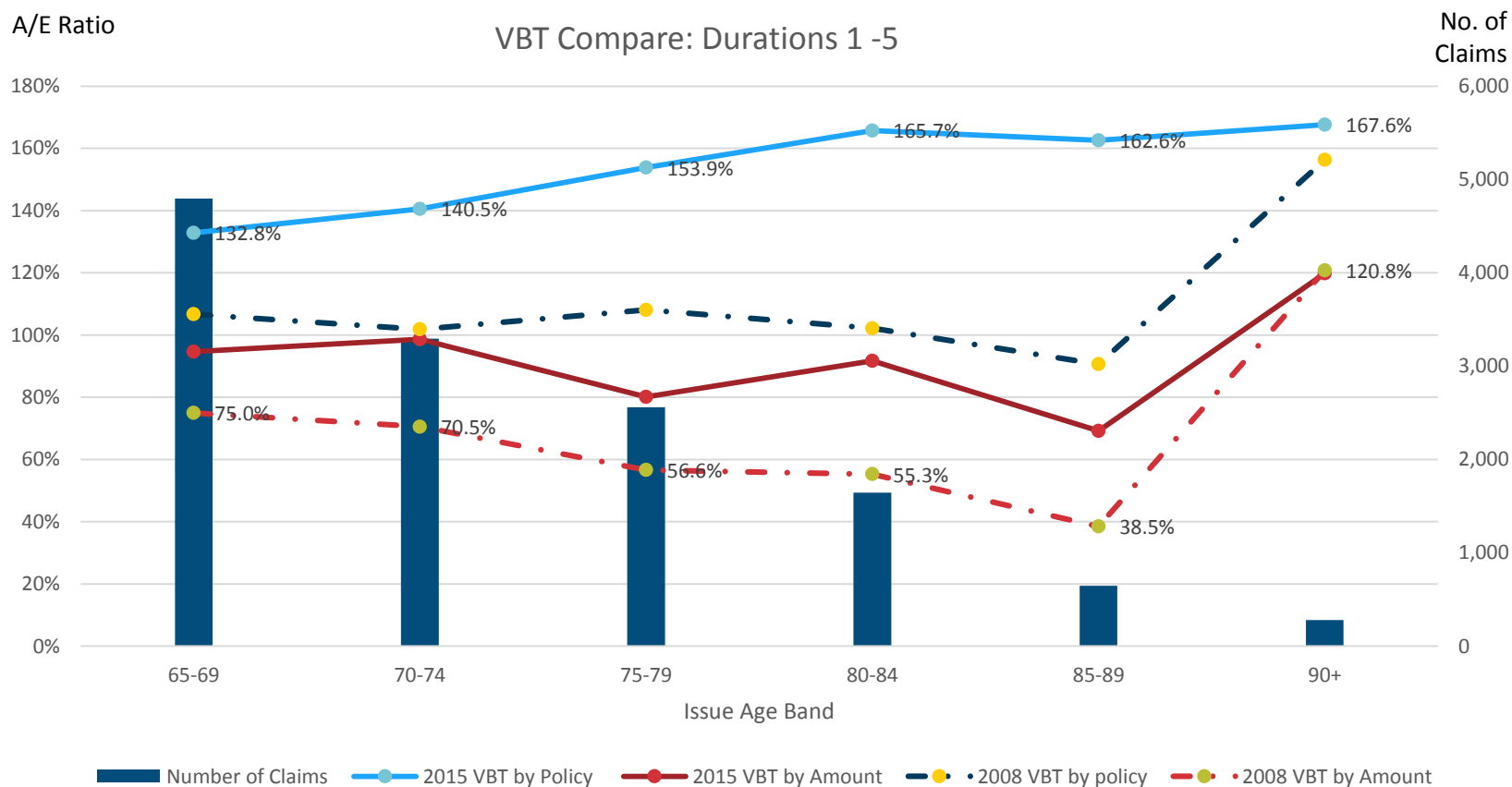
Older Age 2009-13 Data



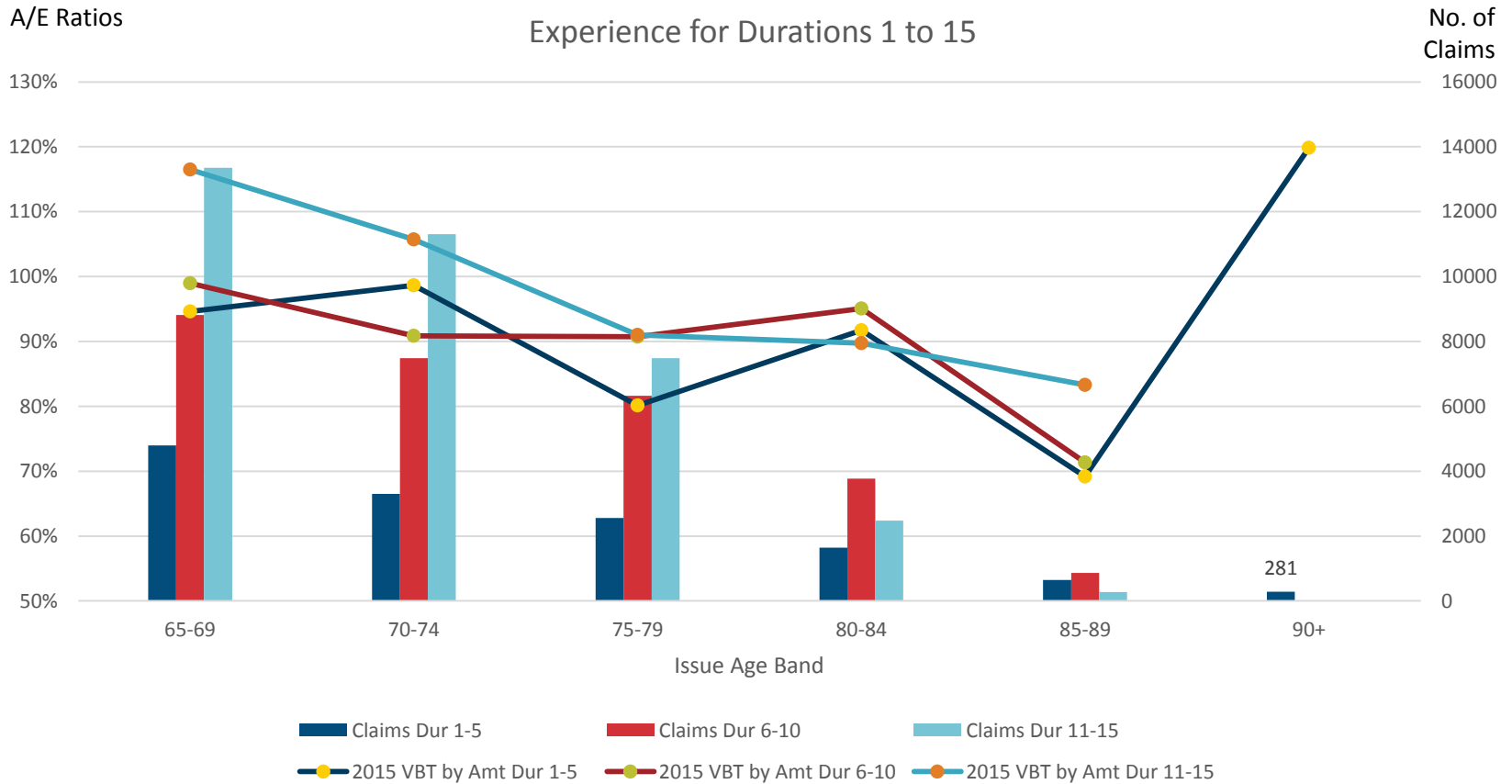
2002-09 Study and 2009-13 Study



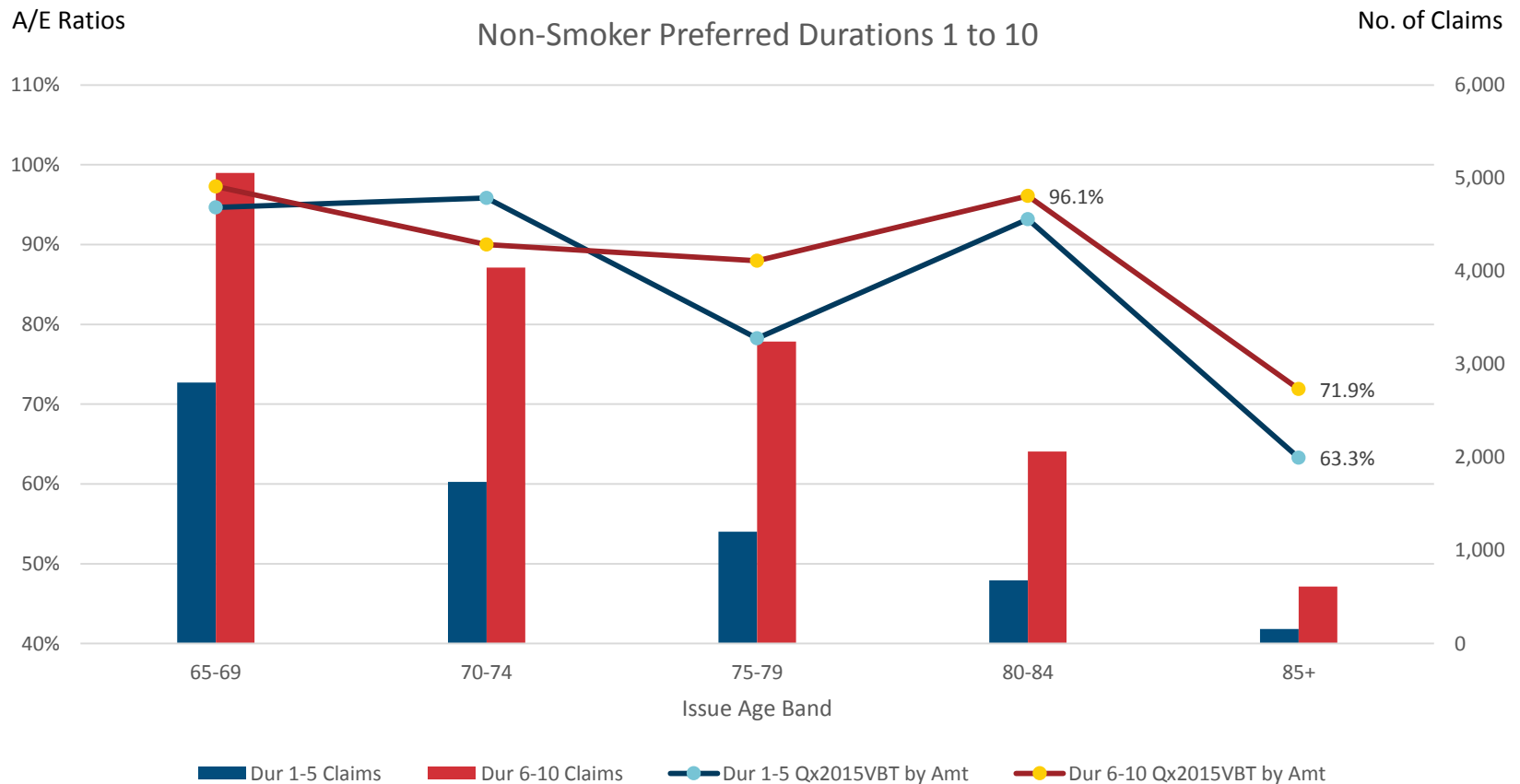
2009-13 Study Mortality Durations 1 to 5



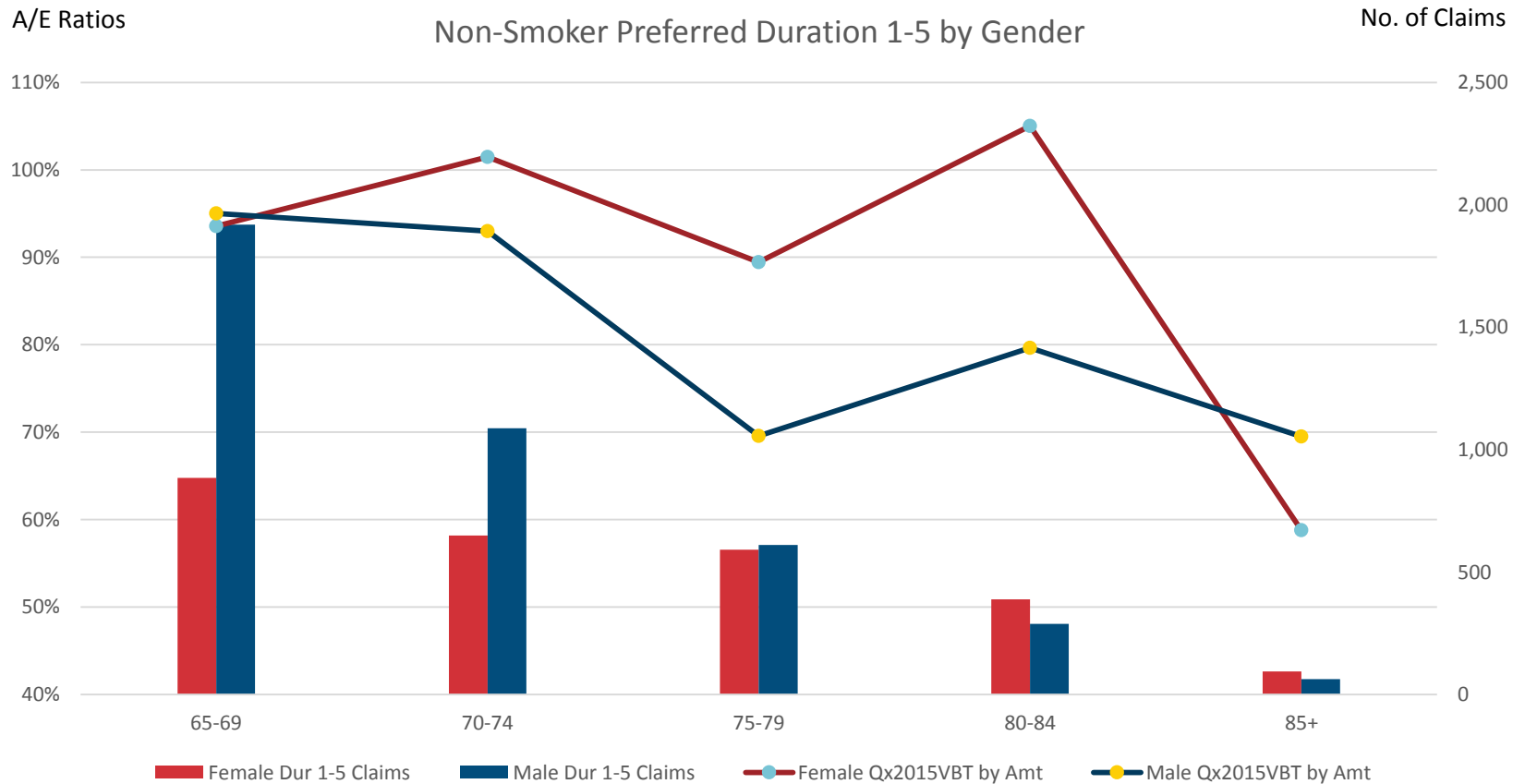
Mortality by Duration



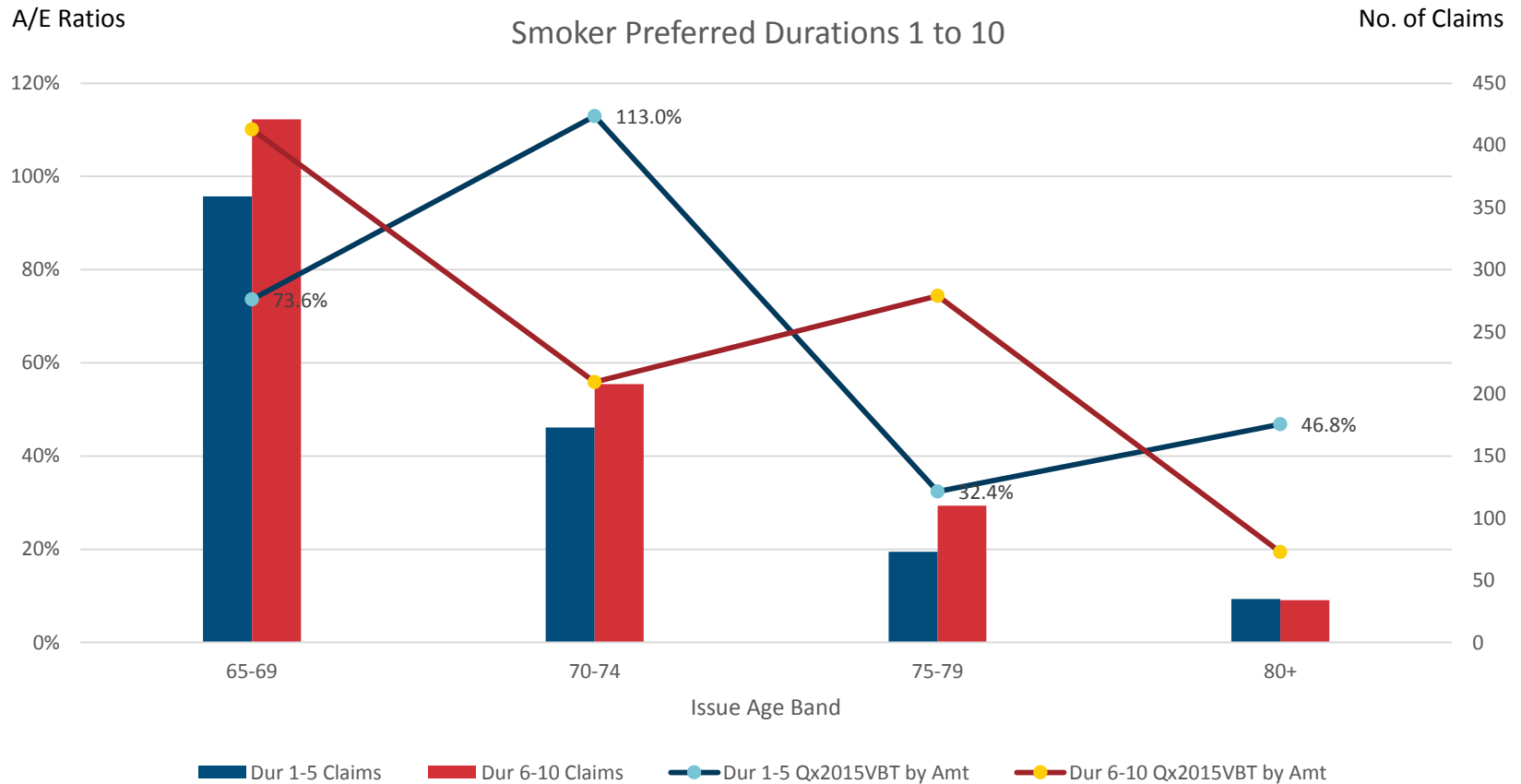
Nonsmoker Preferred Experience



Nonsmoker Preferred by Gender

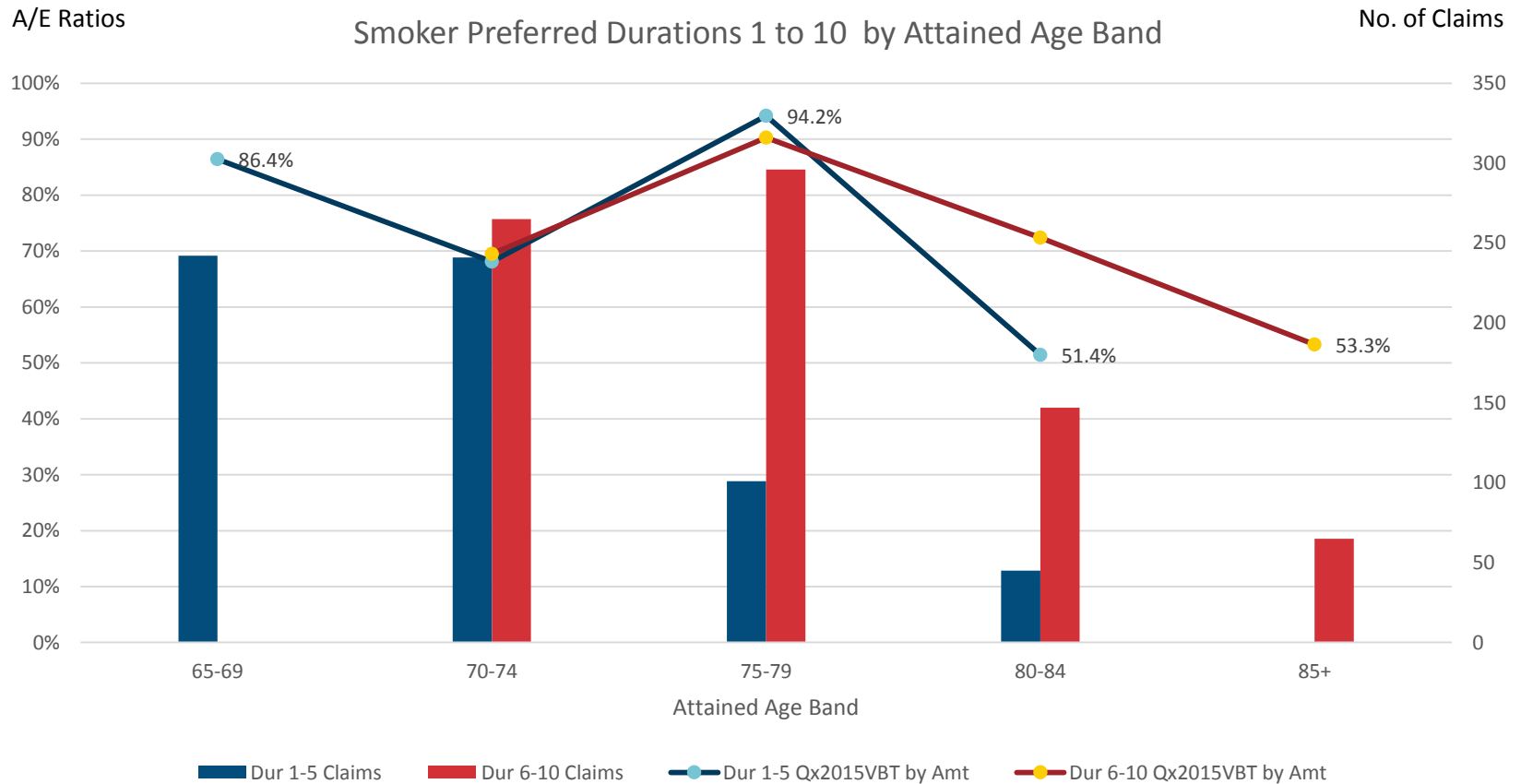


Smoker Preferred Experience

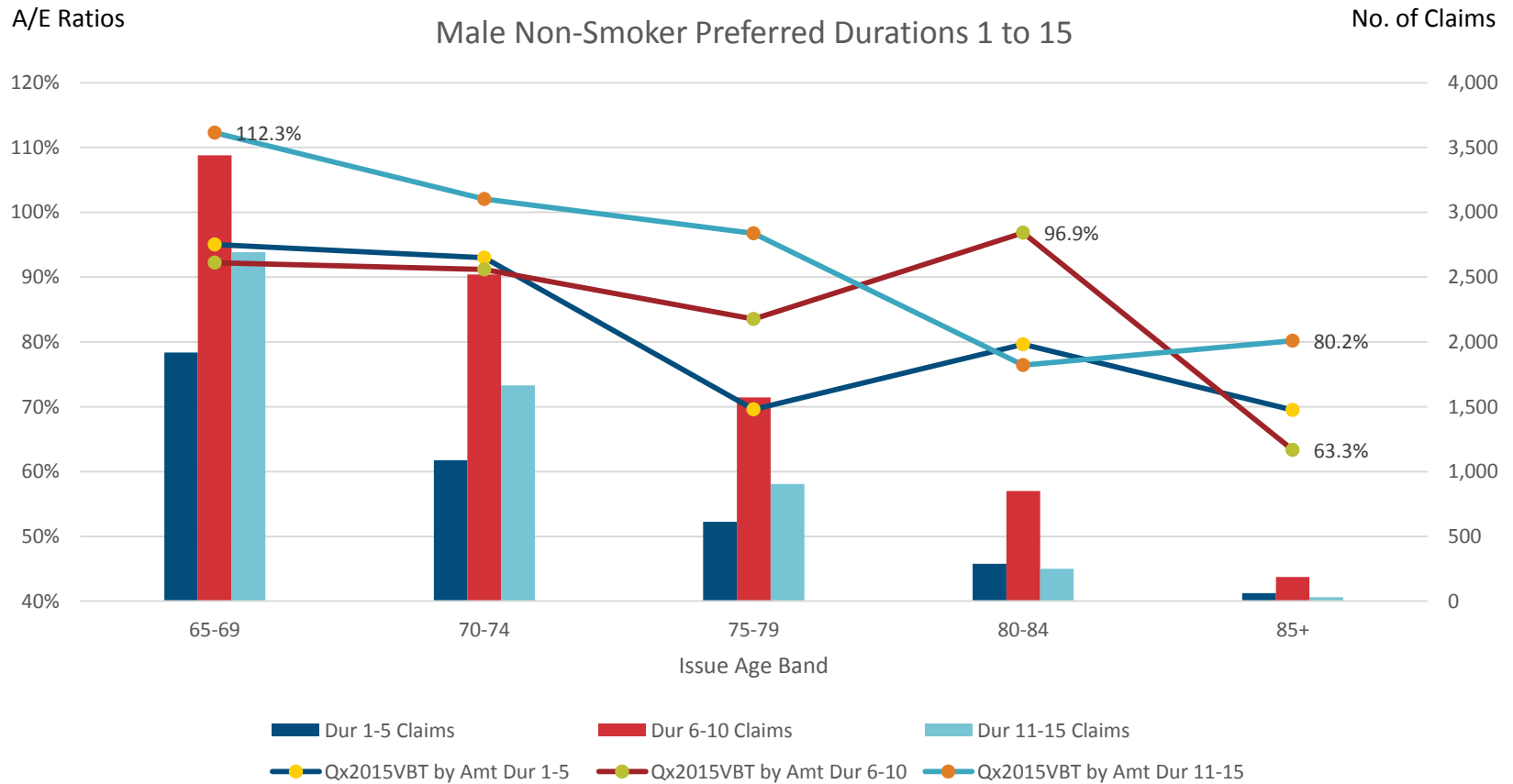


Smoker Preferred Experience by Attained Age

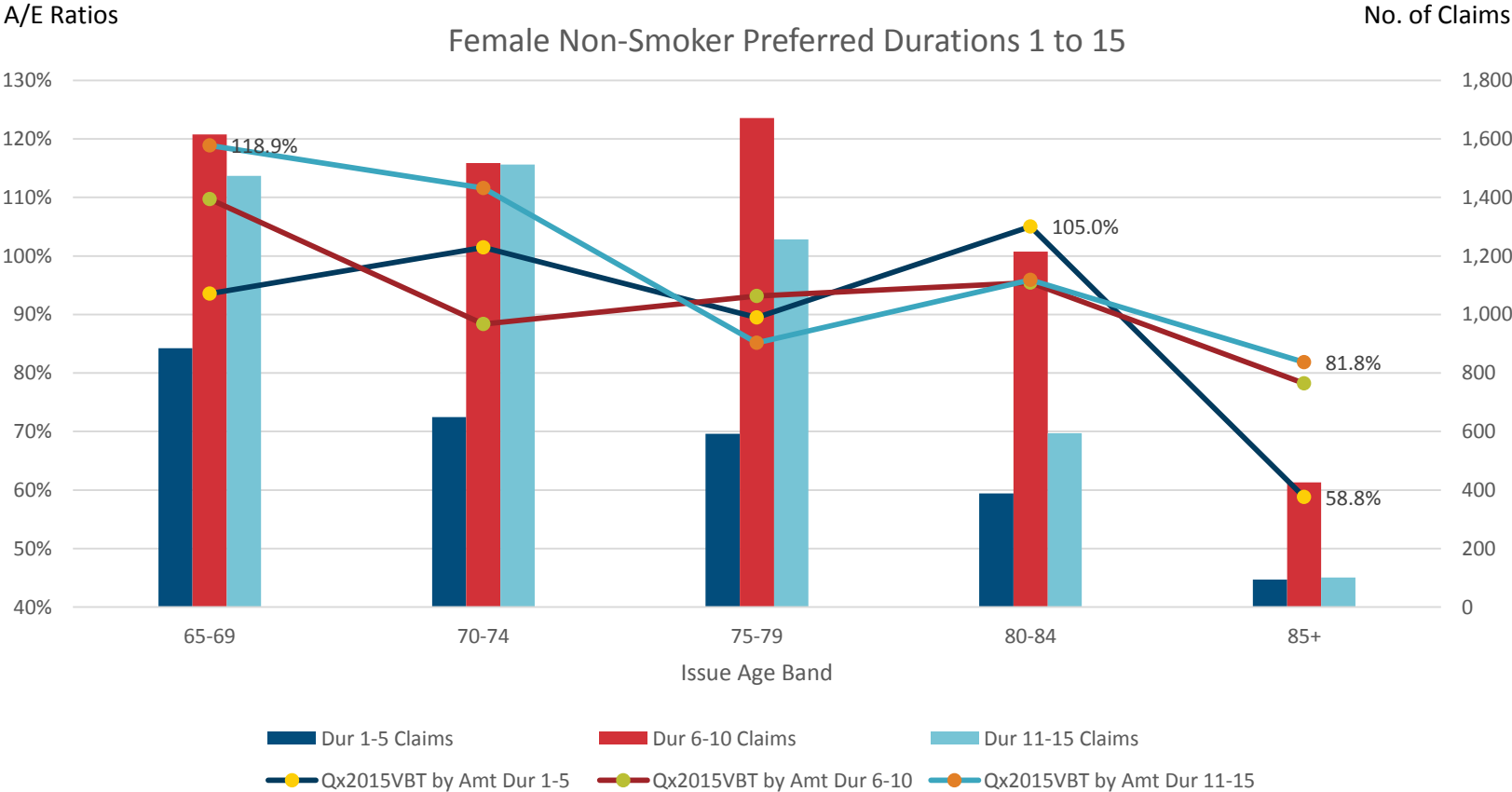
(Issue Ages 65+)



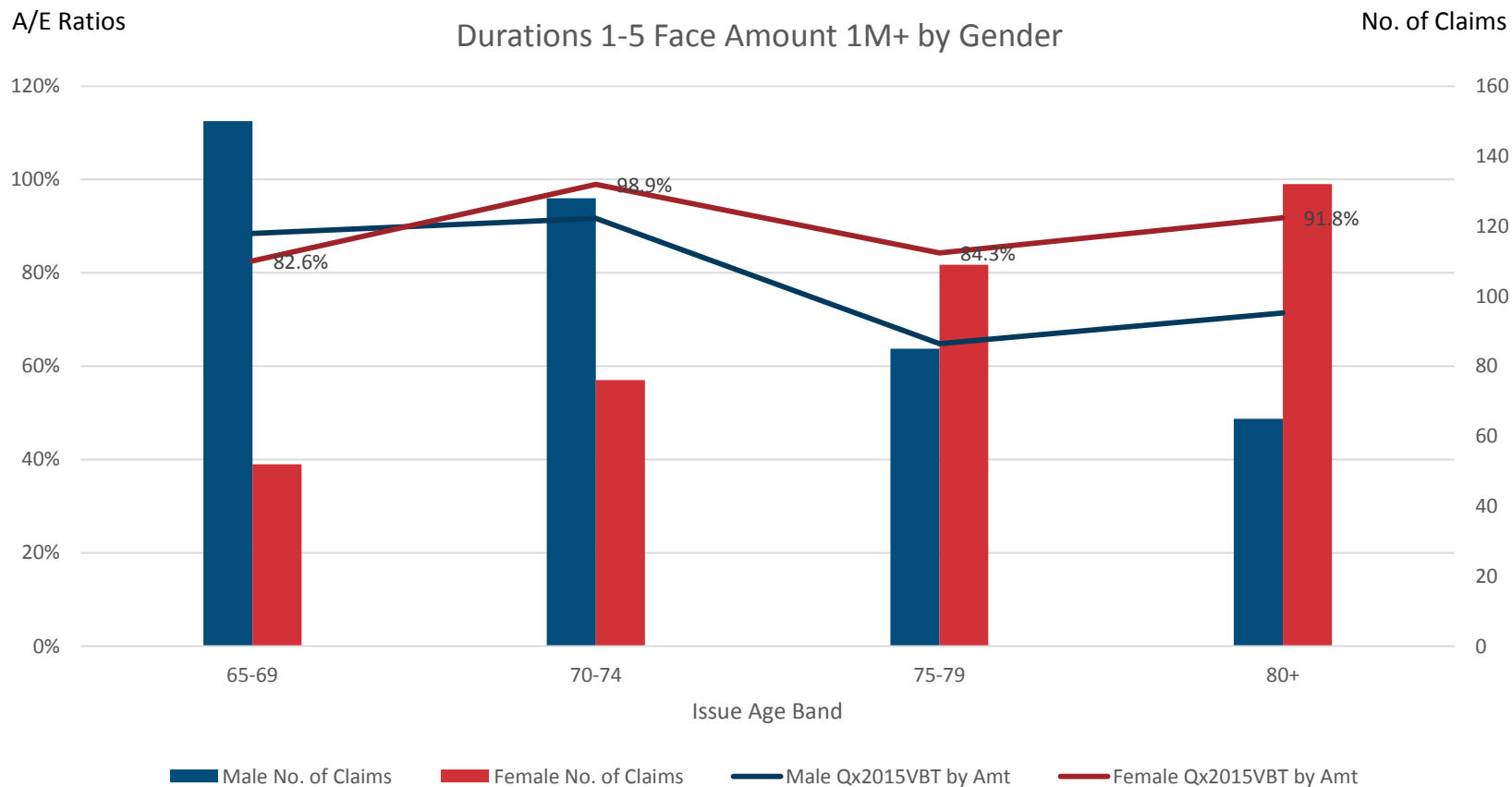
Preferred Male Non-Smoker Experience



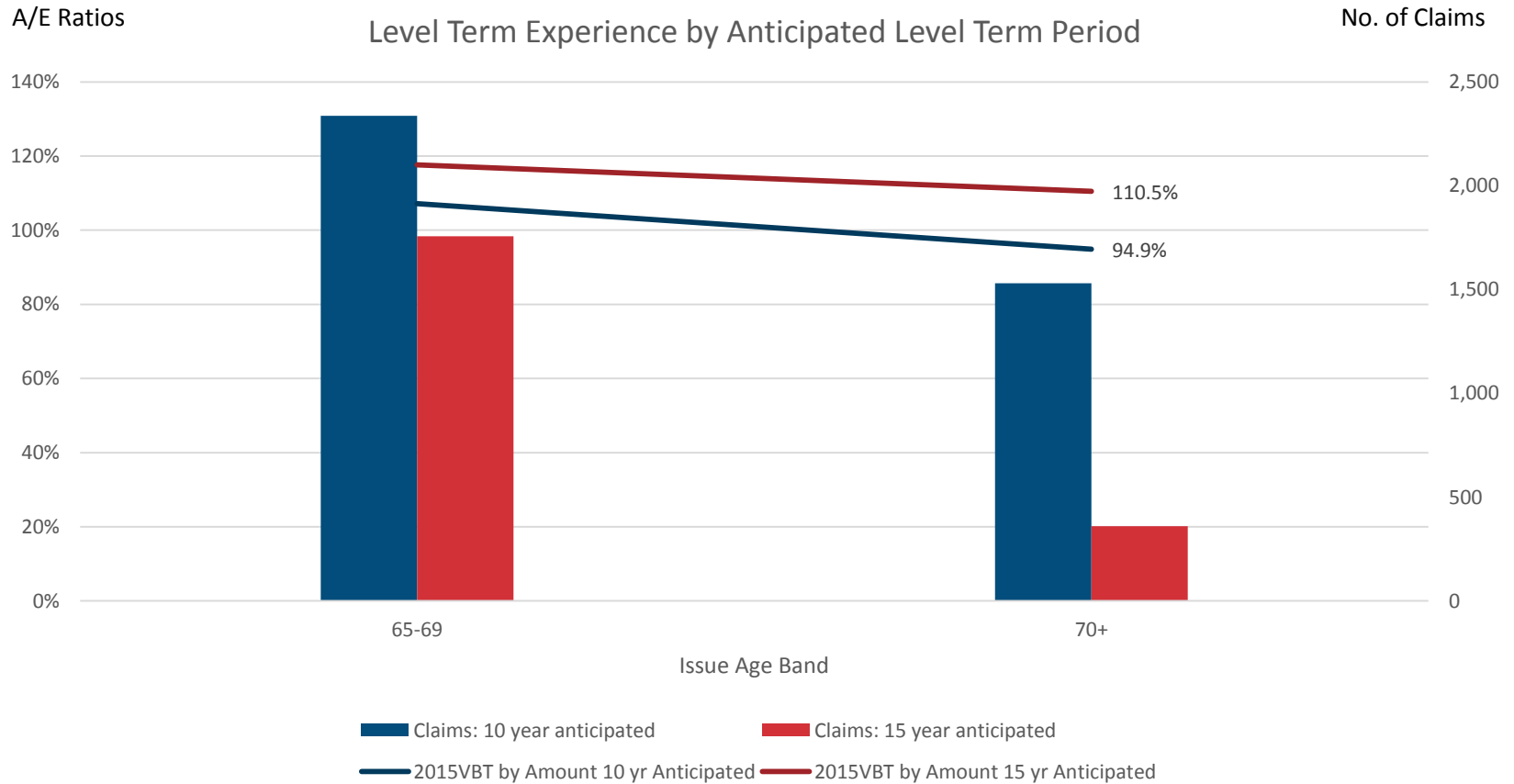
Preferred Female Non-Smoker Experience



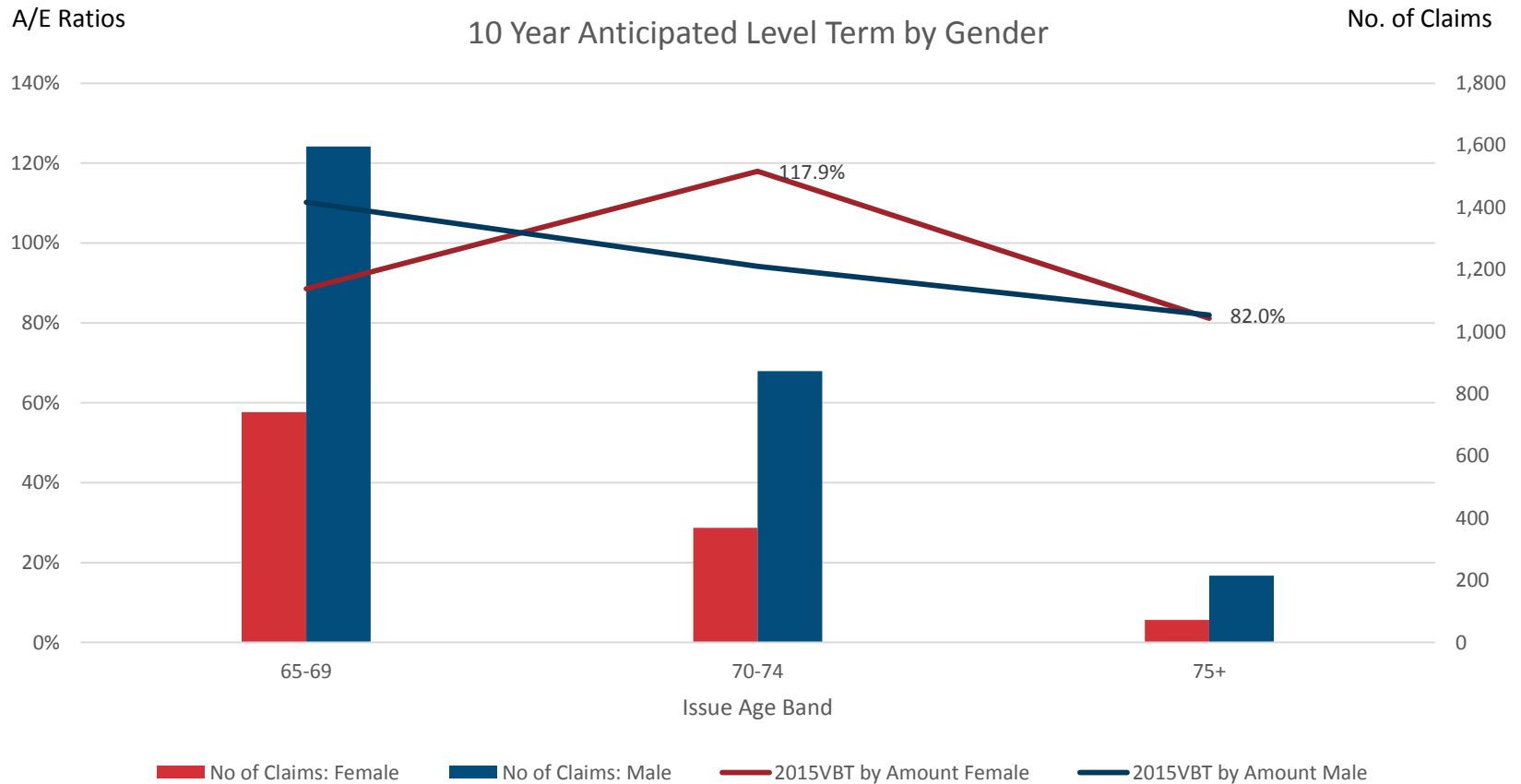
High Face Amount Mortality by Gender



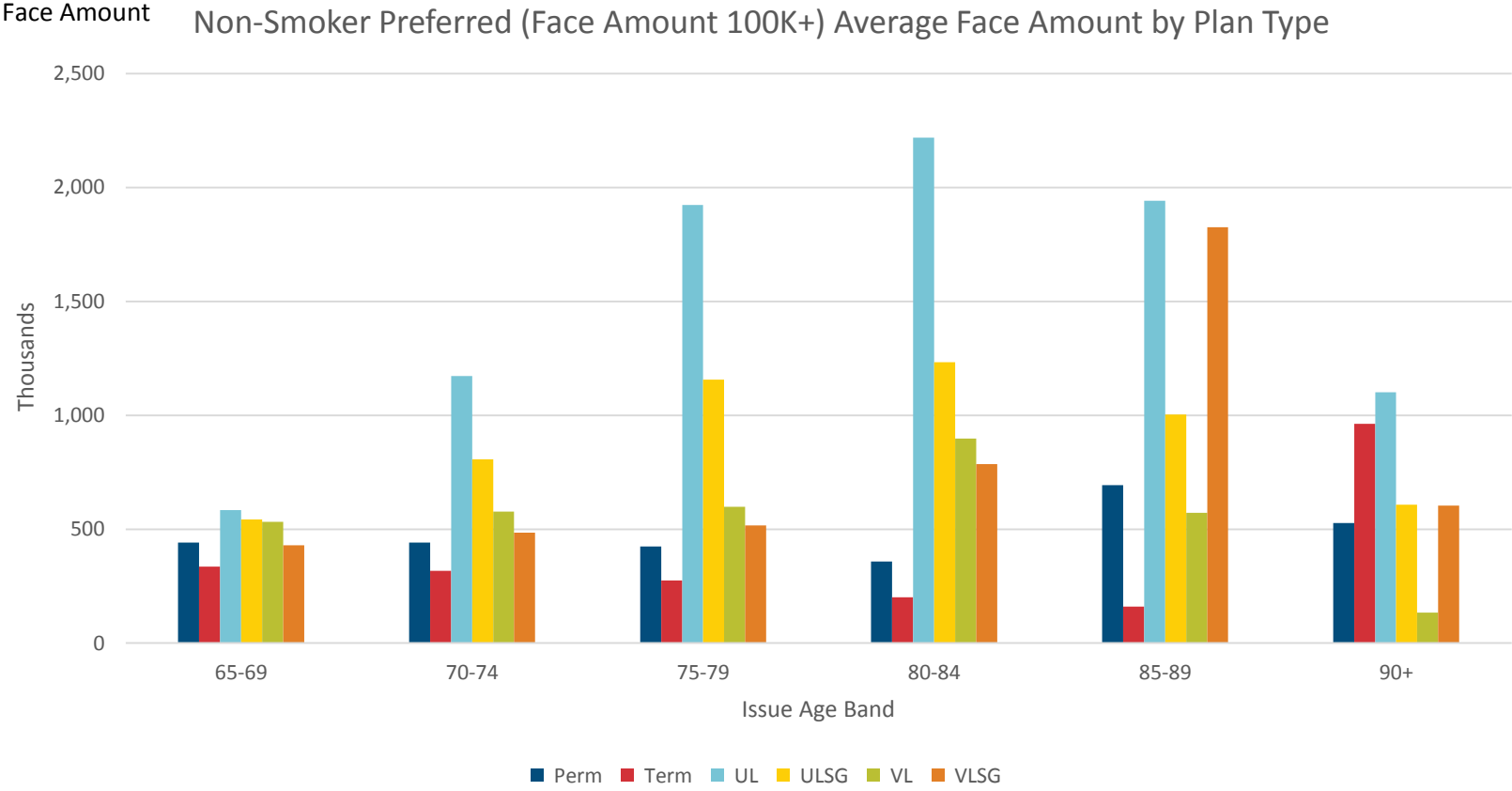
Level Term Experience



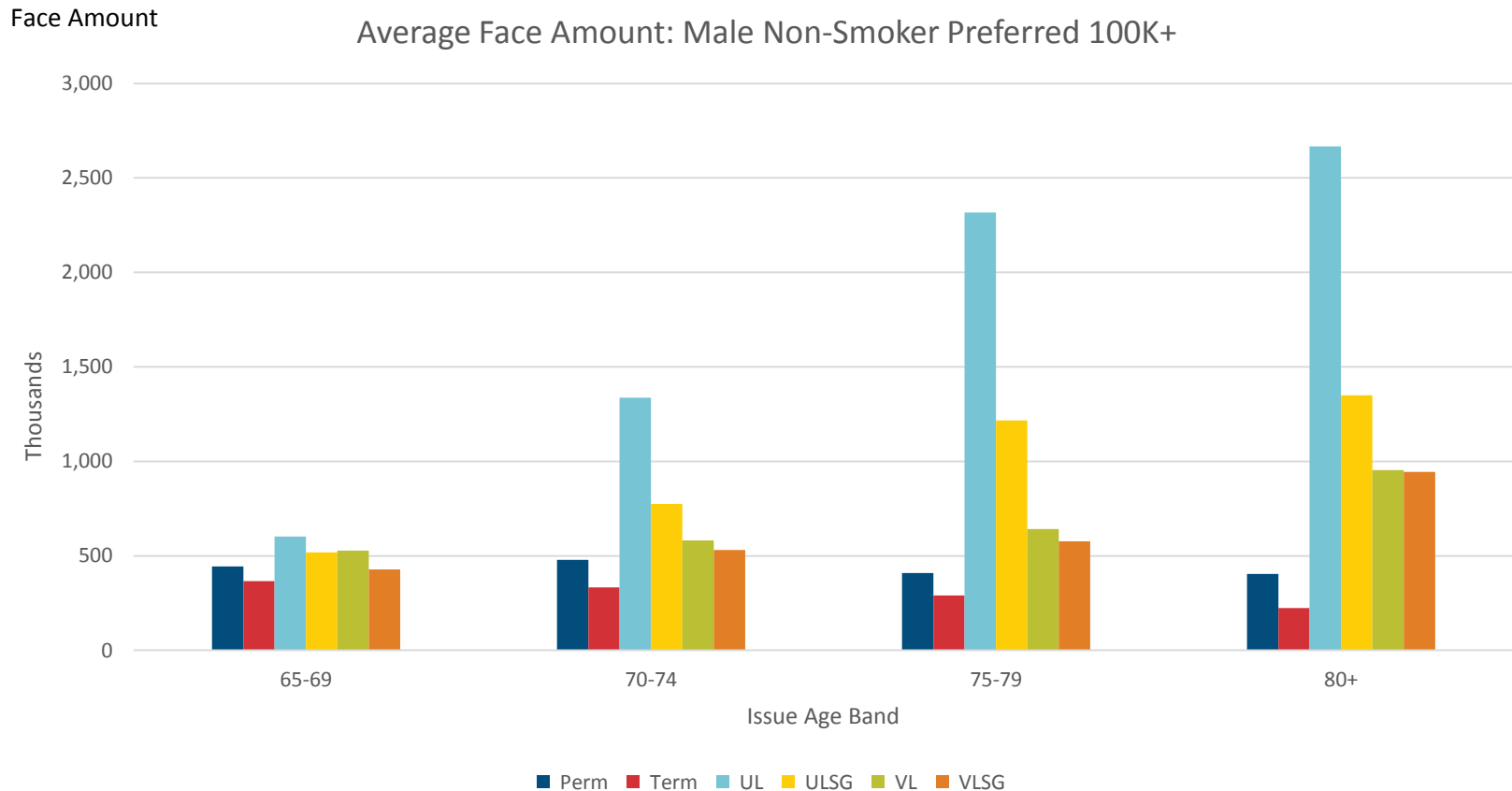
10 Year Anticipated Level Term by Gender



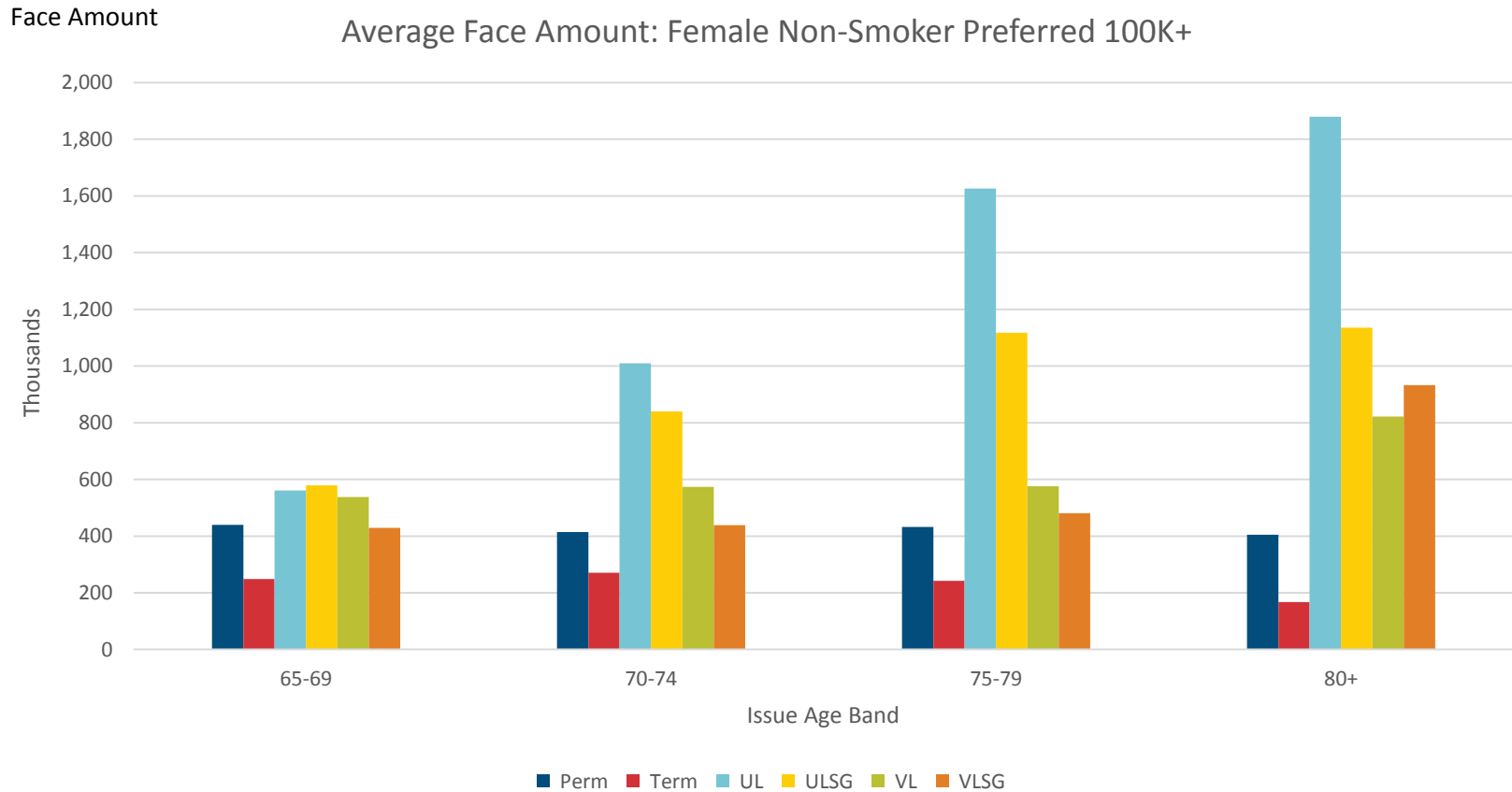
Average Non-Smoker Preferred Face Amount



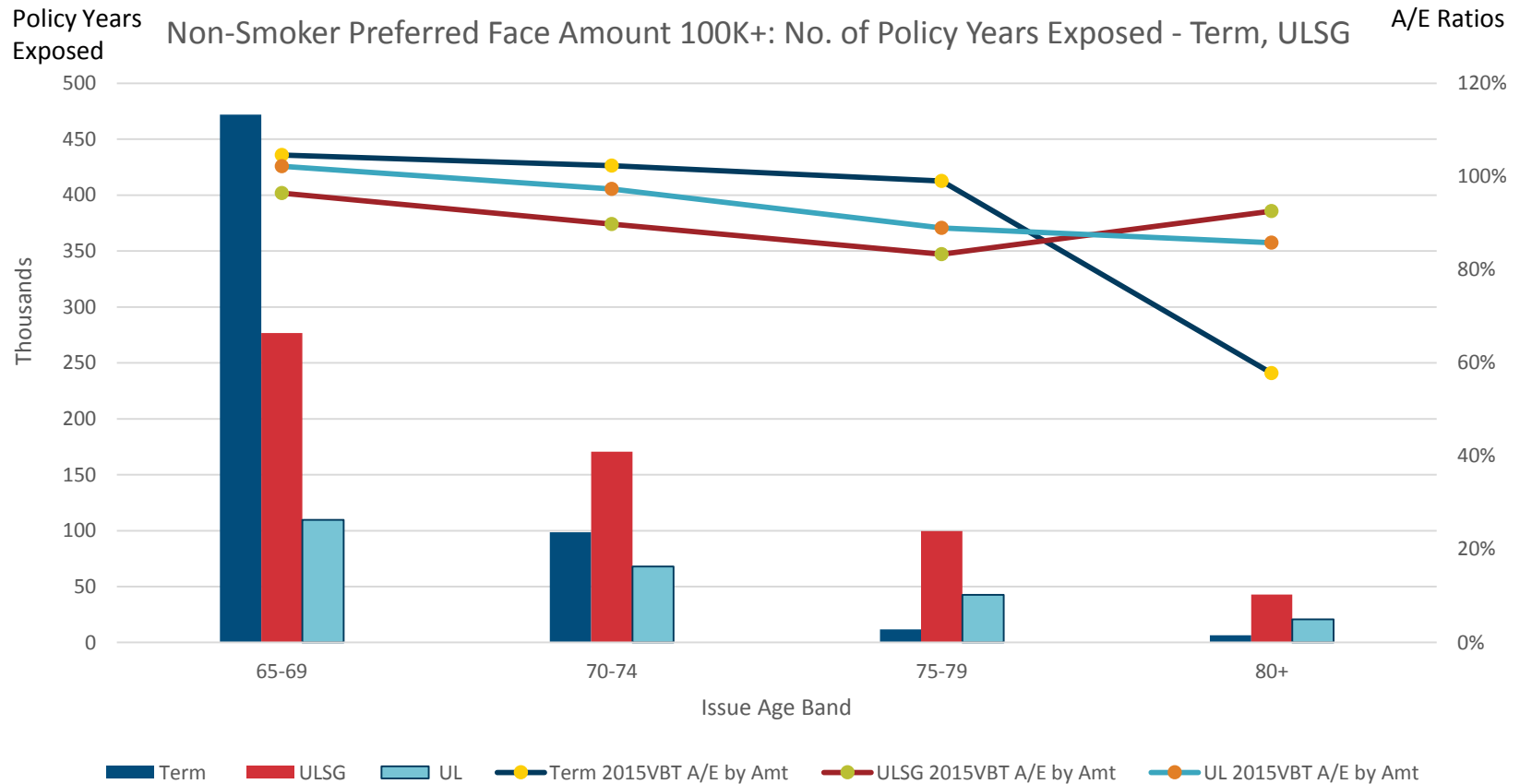
Average Male Non-Smoker Preferred Face Amount



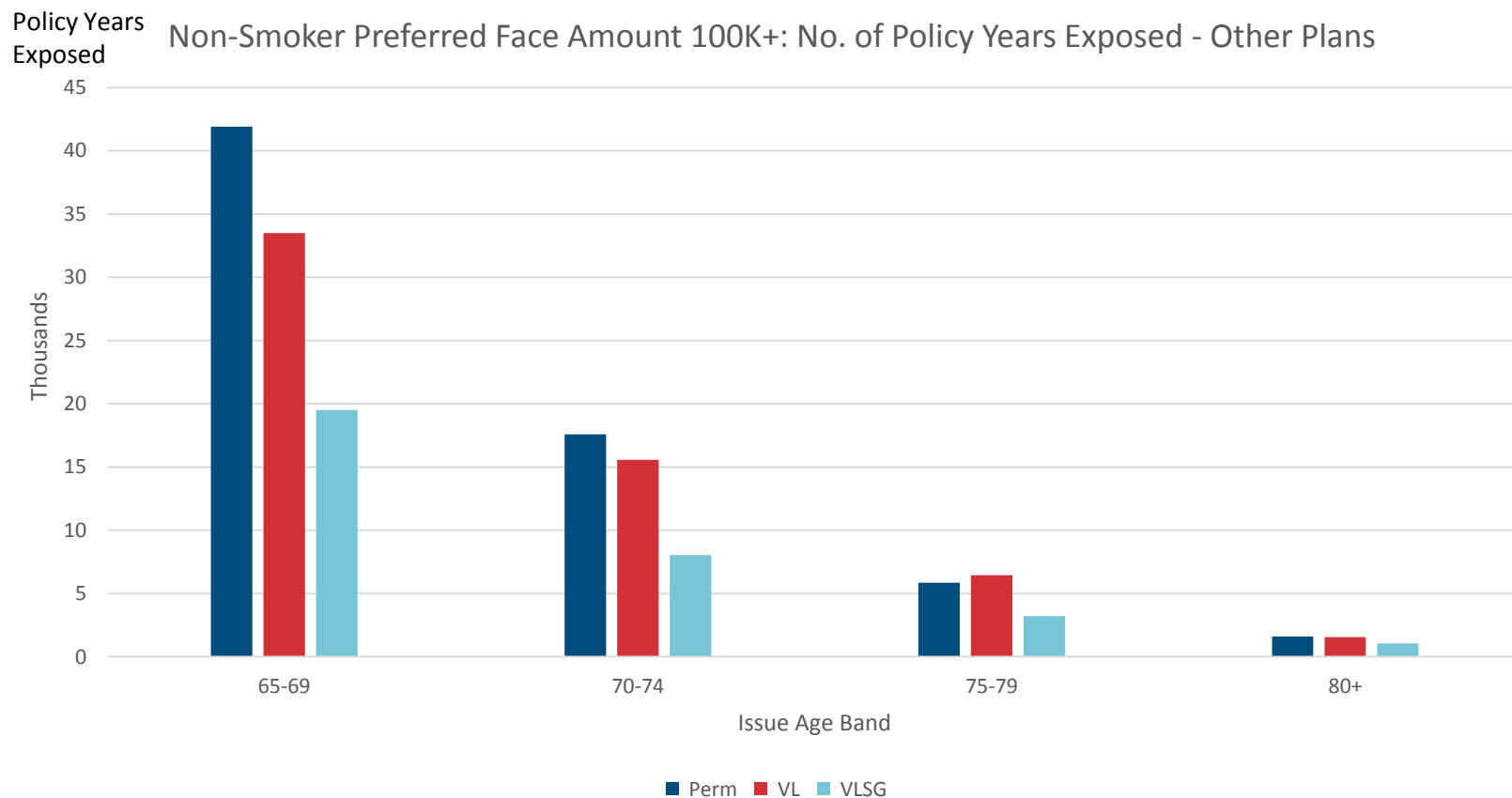
Average Female Non-Smoker Preferred Face Amount



Non-Smoker Preferred Term, UL, and ULSG



Non-Smoker Preferred Other Plan Types



Observation

- Similar results as earlier period data
- More data available for later durations
- 2015 VBT A/E by Amount is closer to 100% for older issue ages compared to 2008 VBT
- Most high face amount policies issued in preferred class structures
- Universal Life has highest average face amount
- Increase in demand for secondary guarantees

Older Age: 2009-13 Data 2015VBT Select Period Analysis

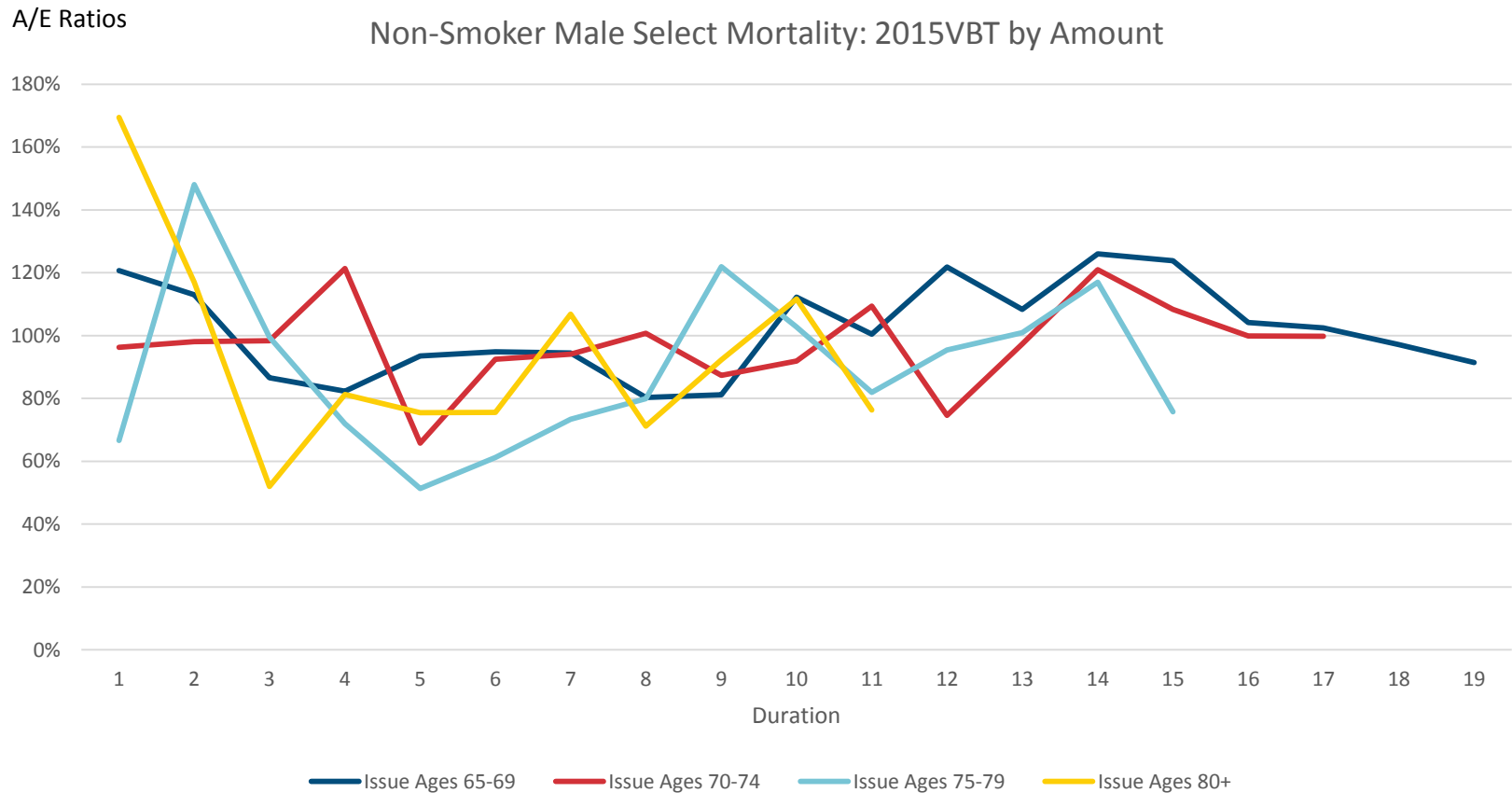


Select Periods for 2015 VBT

Issue Age	MALE	FEMALE	Issue Age	MALE	FEMALE
0-17	0	0	79	12	12
18-54	25	20	80-81	11	11
55	24	19	82	10	10
56-57	23	19	83	9	9
58-59	22	19	84-85	8	8
60-61	21	19	86	7	7
62-63	20	18	87	6	6
64-65	19	17	88-89	5	5
66-69	18	16	90	4	4
70-72	17	15	91	3	3
73-74	16	14	92-94	2	2
75	15	14	95	1	1
76	14	14	96+	0	0
77-78	13	13			

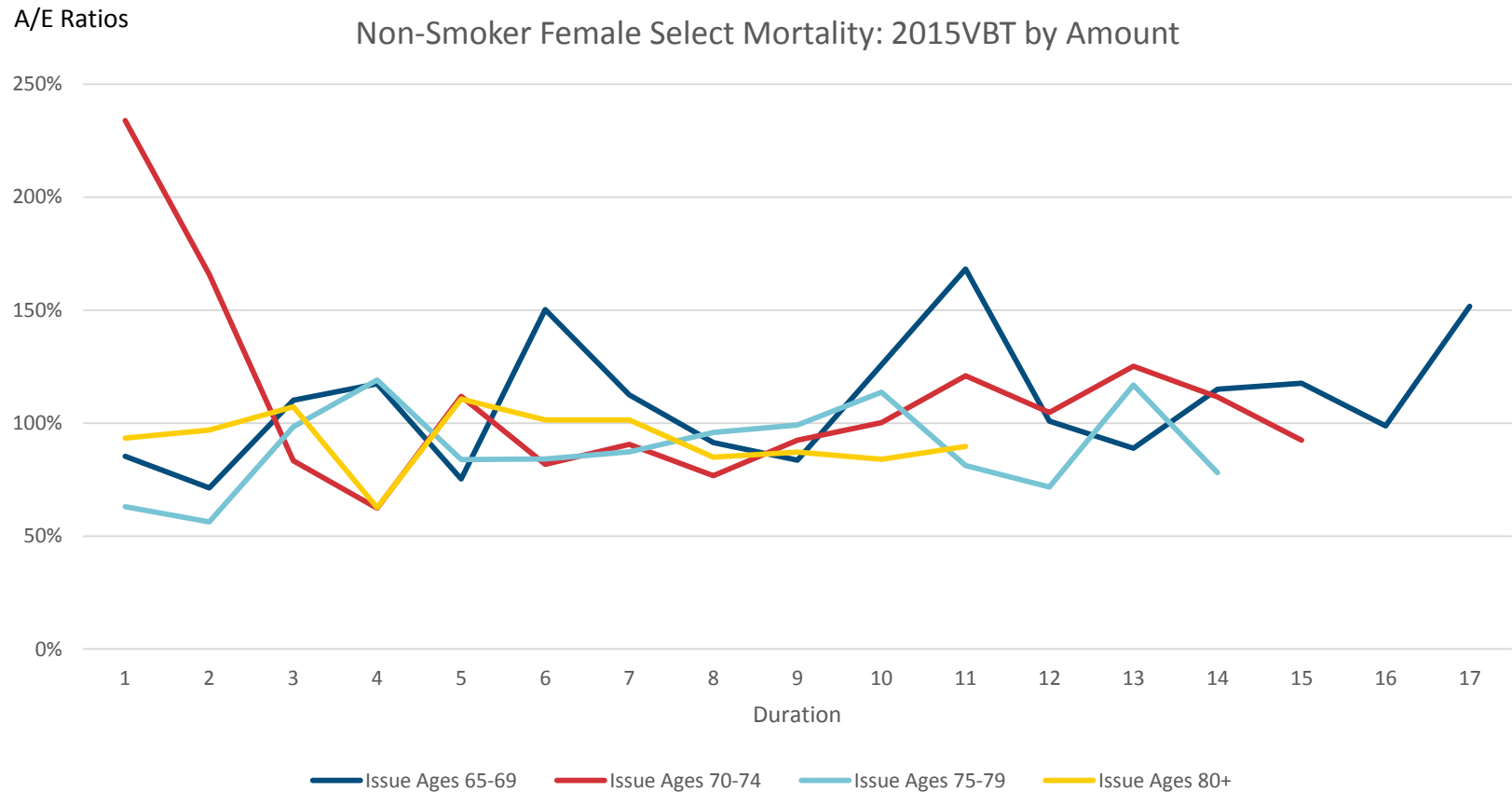
Male Non-Smoker Select Mortality

(Issue Ages 65+)



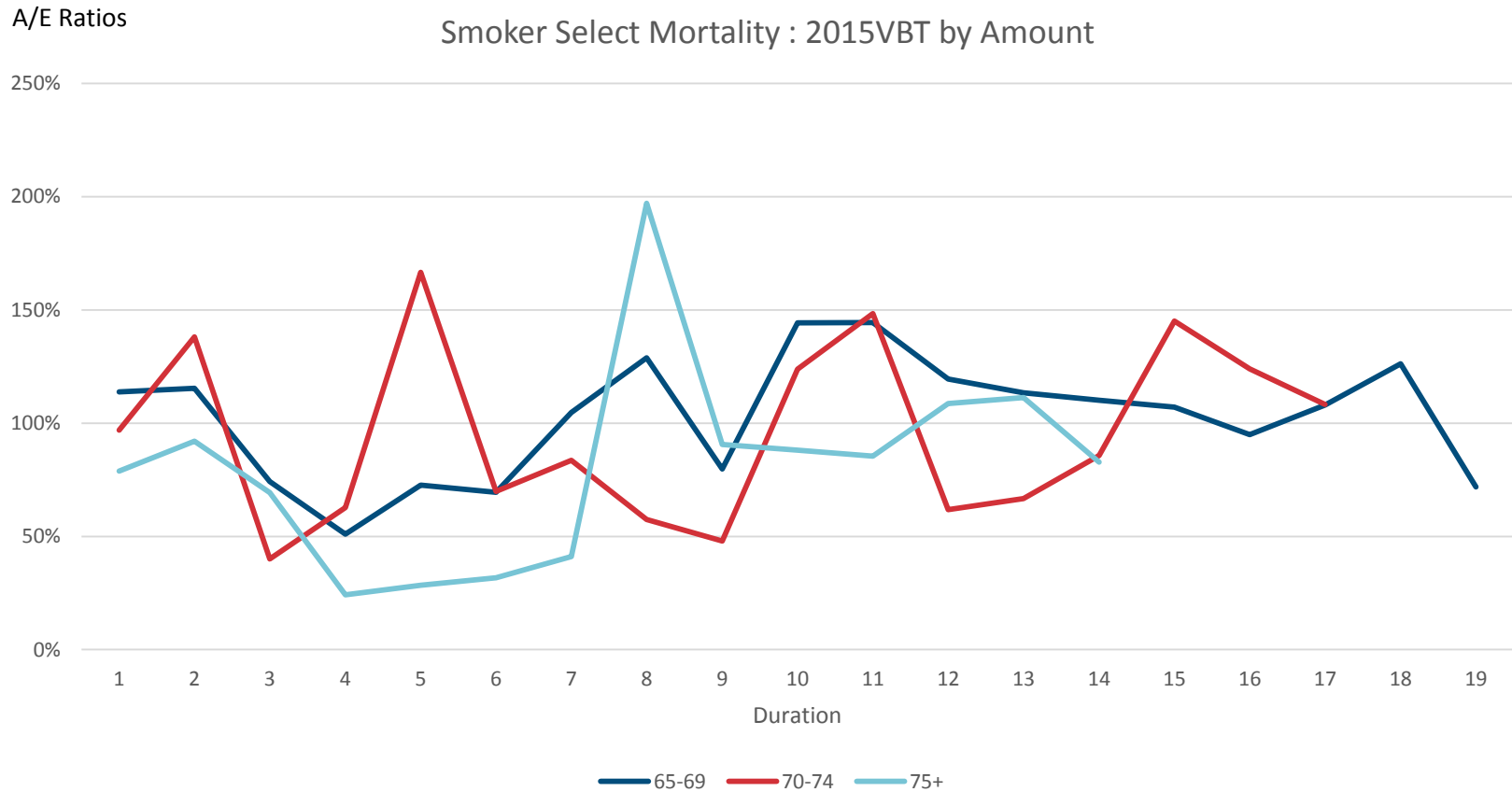
Female Non-Smoker Select Mortality

(Issue Ages 65+)

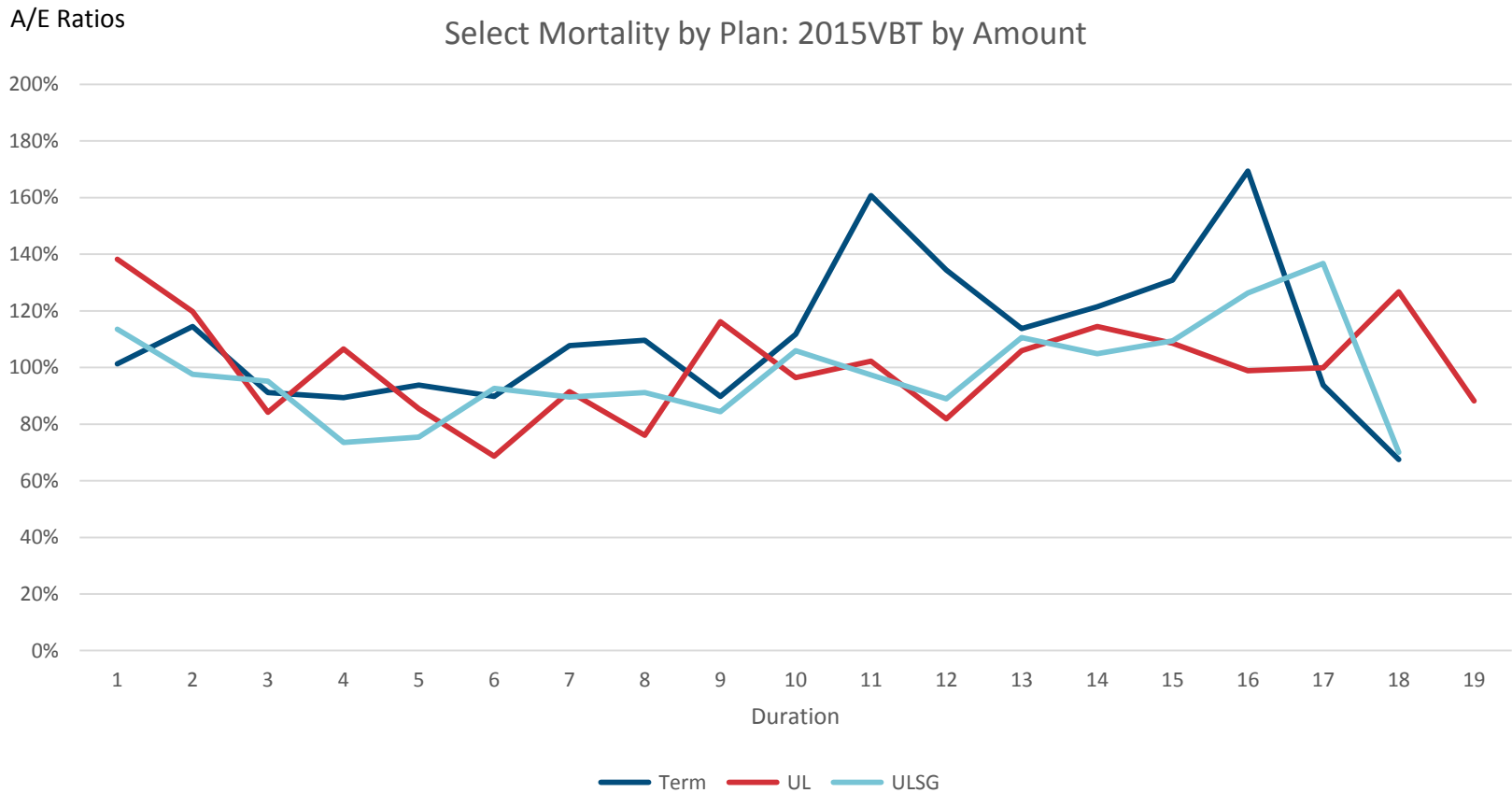


Smoker Select Mortality

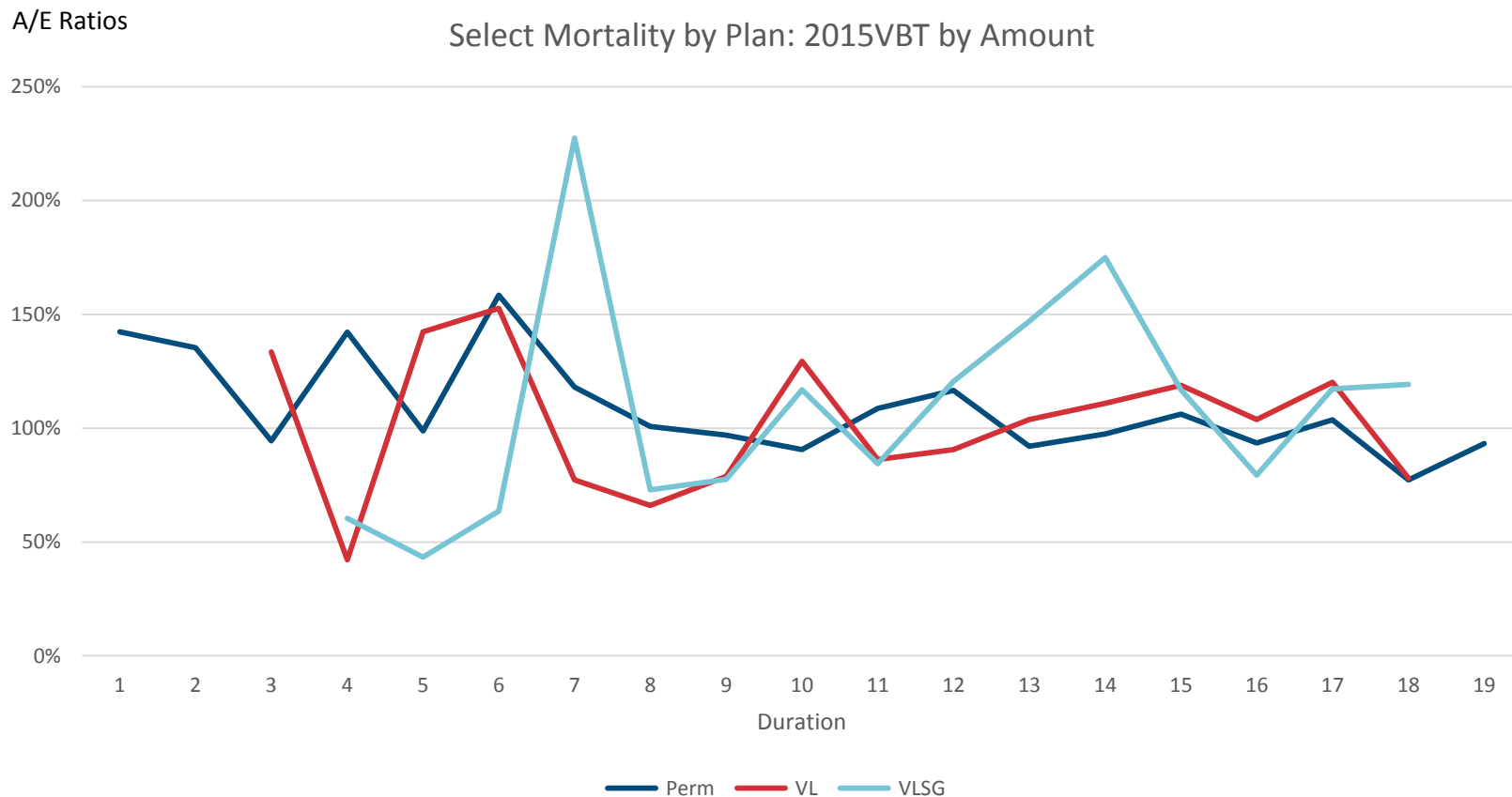
(Issue Ages 65+)



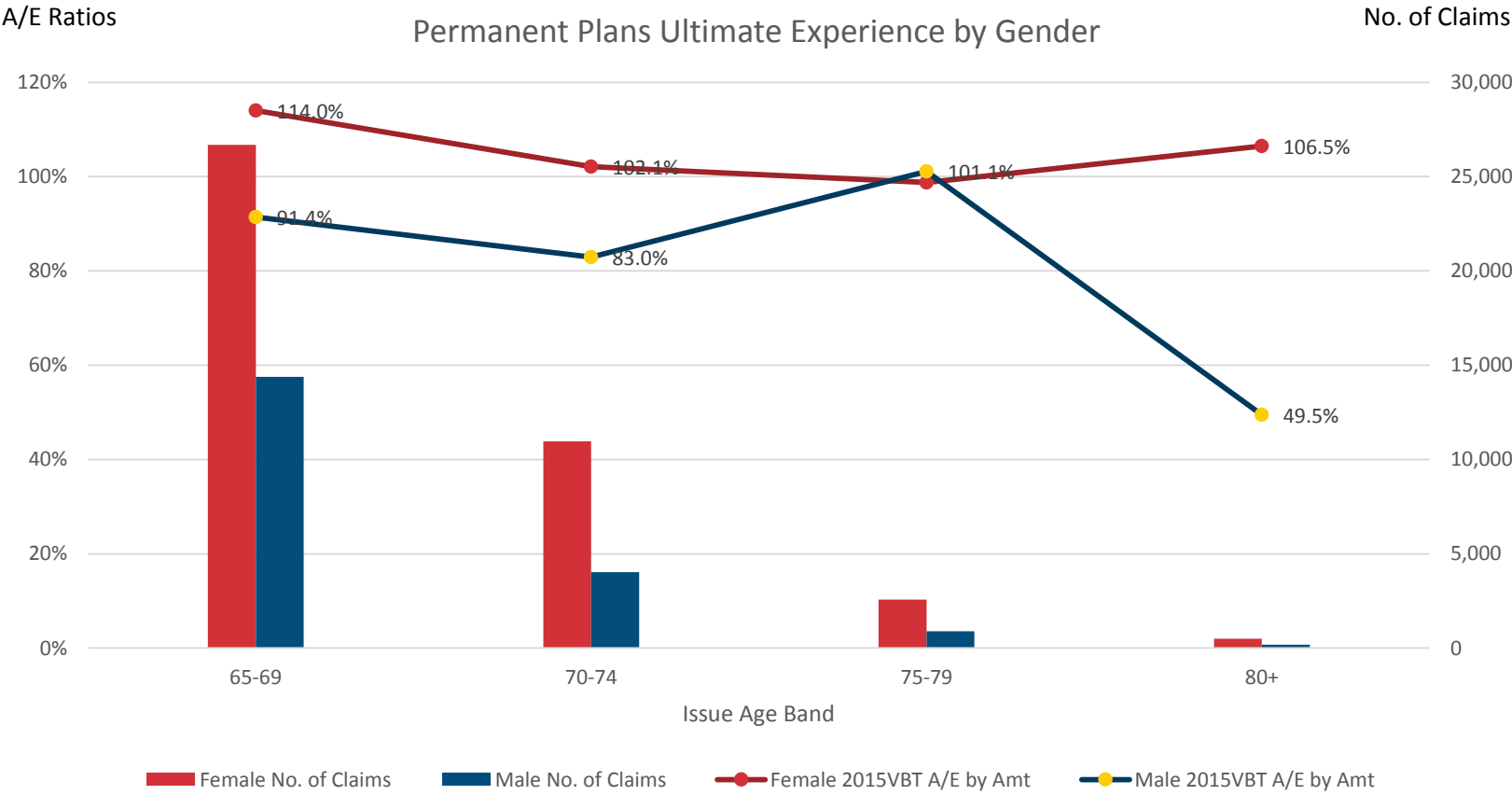
Select Mortality: Term, Universal Life, UL with Secondary Guarantees (Issue Ages 65+)



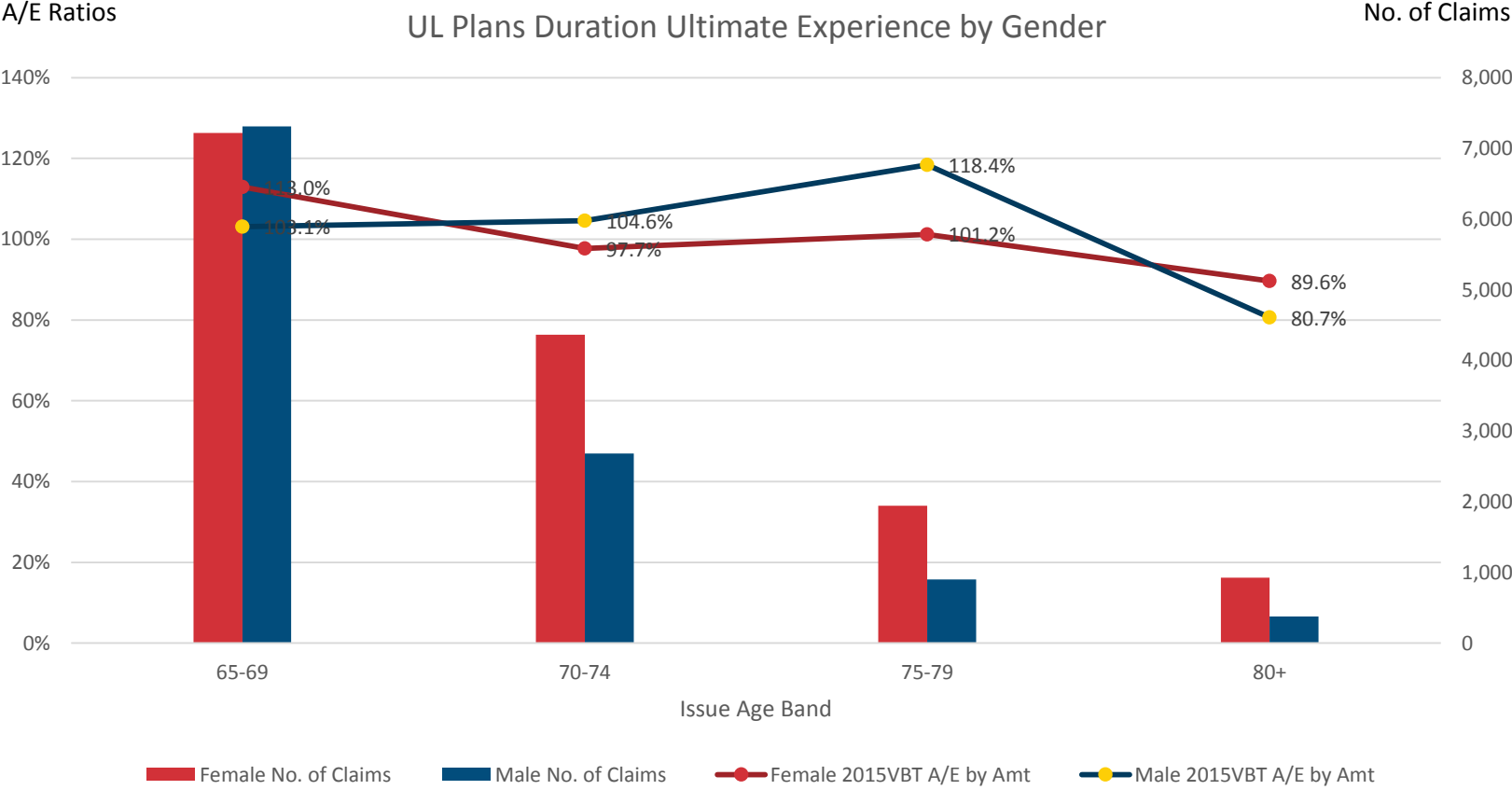
Select Mortality: Permanent, Variable Life, VL with Secondary Guarantees (Issue Ages 65+)



Permanent Plans: Ultimate Mortality



Universal Life: Ultimate Mortality



Observations

- Sparse data makes detailed analysis difficult, especially for durations beyond 10
- 2015 VBT reasonable fit to older age data
- Continued monitoring suggested for certain areas
 - Large vs. very large policies
 - Select to Ultimate transitions
 - Male vs. Female patterns