



Scottish ReTM

Term Insurance Update

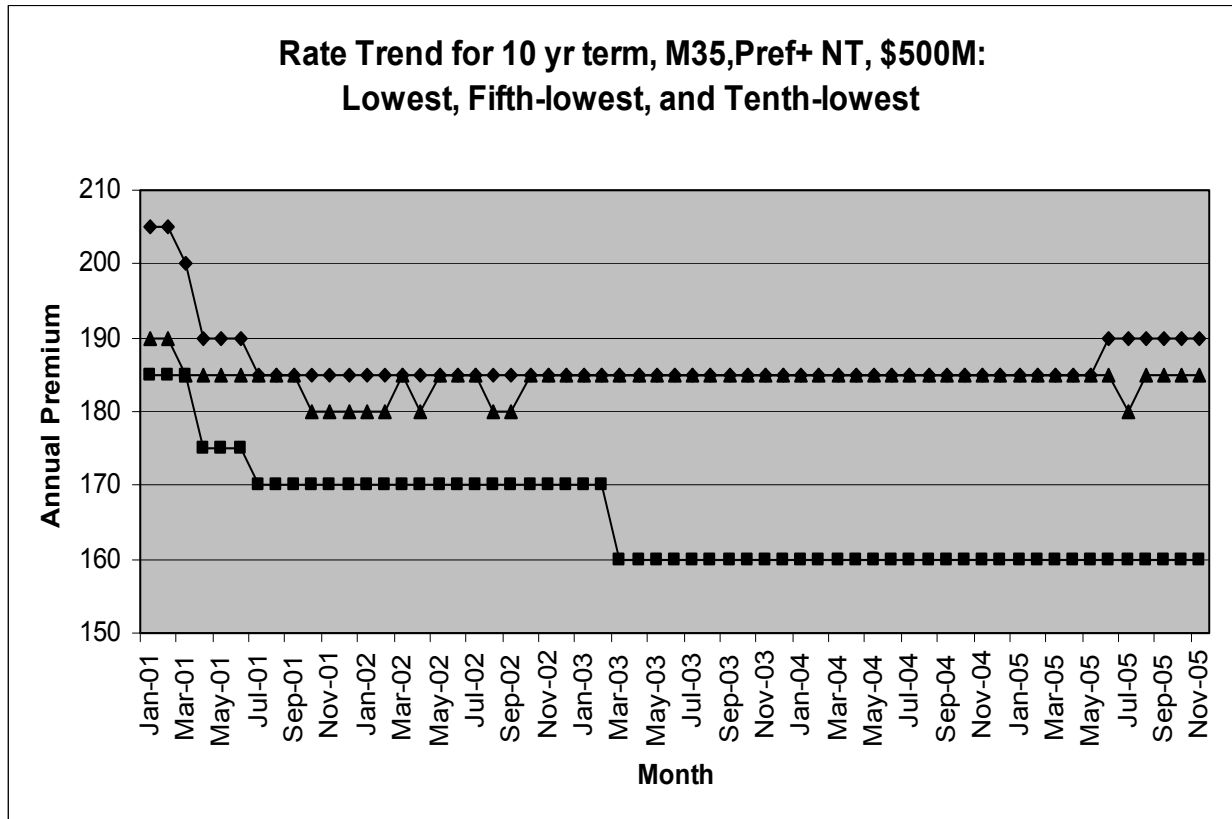
Dan Johnston
Actuaries' Club of the Southwest – Fall Meeting
November 10, 2005

Are people still buying term insurance?

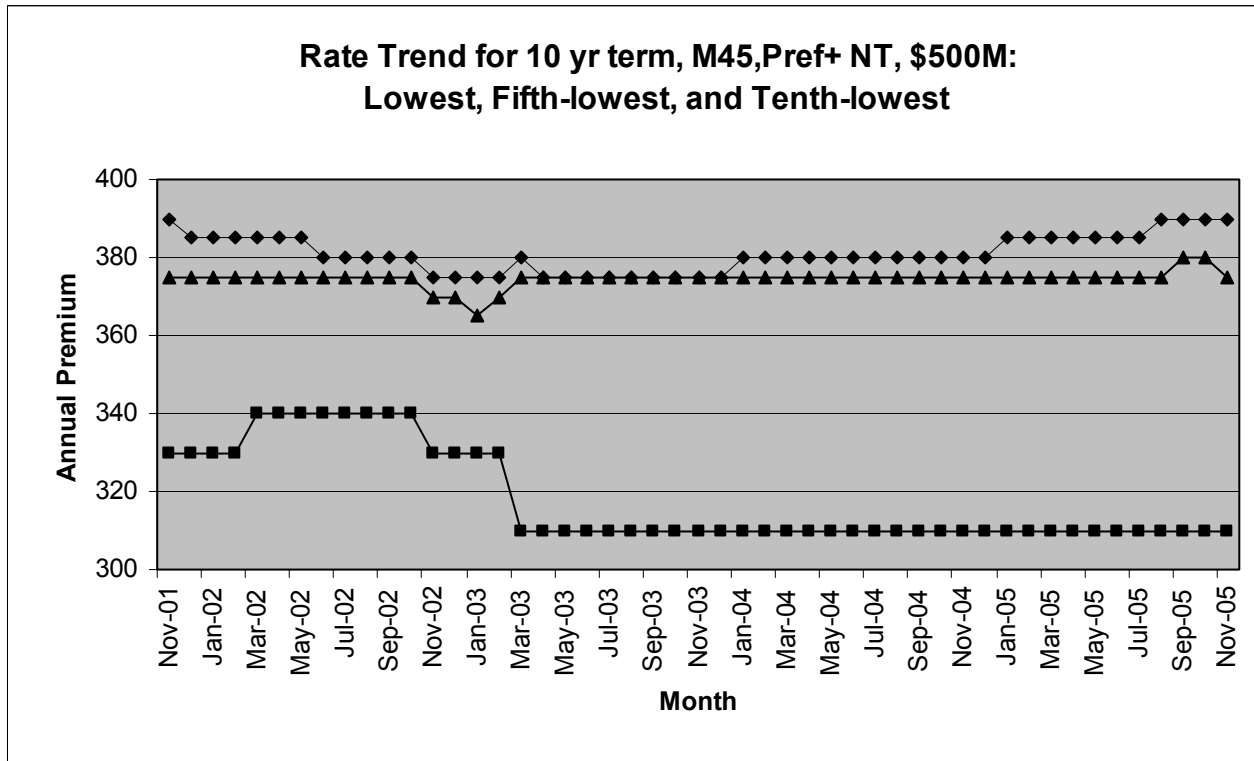
- 2004 total US term sales of \$1.3 trillion
- 5% increase over 2003
- Level term accounts for upwards of 90% of all term business written
- Decreasing term, term additions, etc., account for remainder
- 20-year term continues to be biggest seller, 30-year term becoming more popular
- Since 1992, households owning only term has increased from 20% to 36% in 2004; at same time, households owning only perm decreased from 58% to 41%

Sources: AM Best, LIMRA

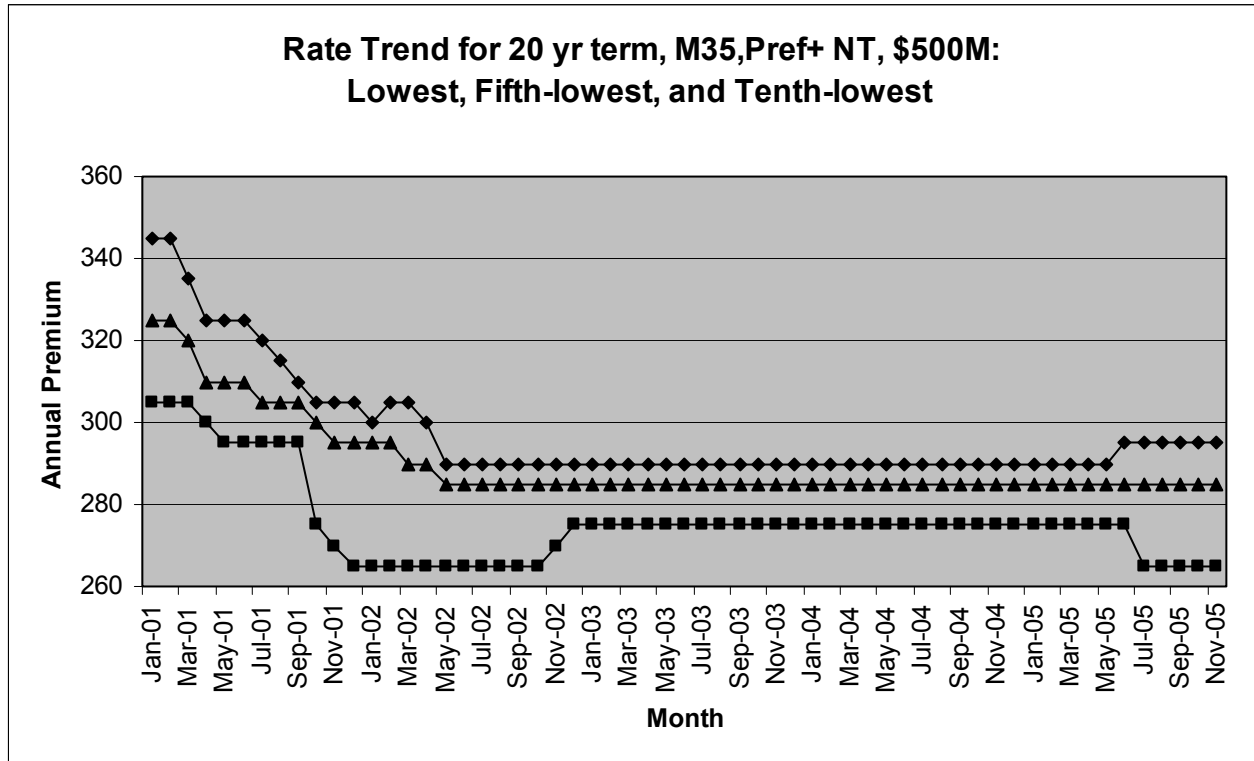
What are rates doing?



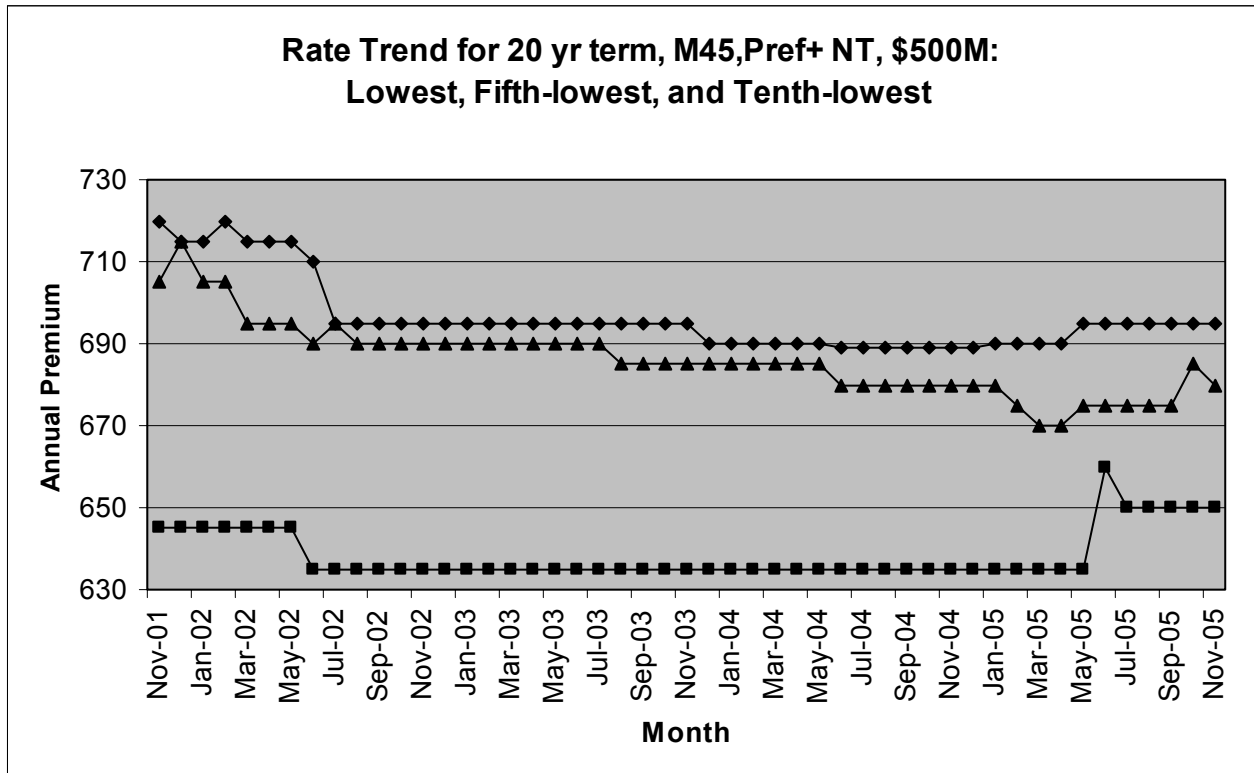
What are rates doing?



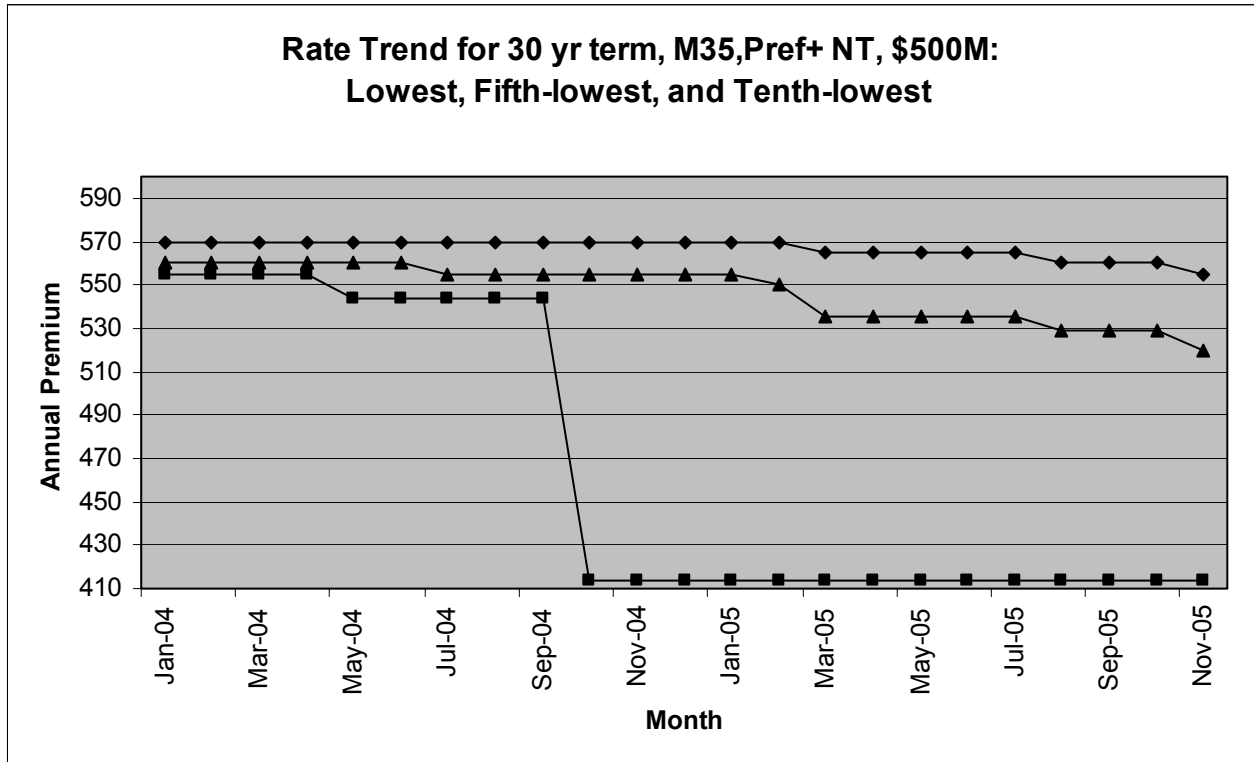
What are rates doing?



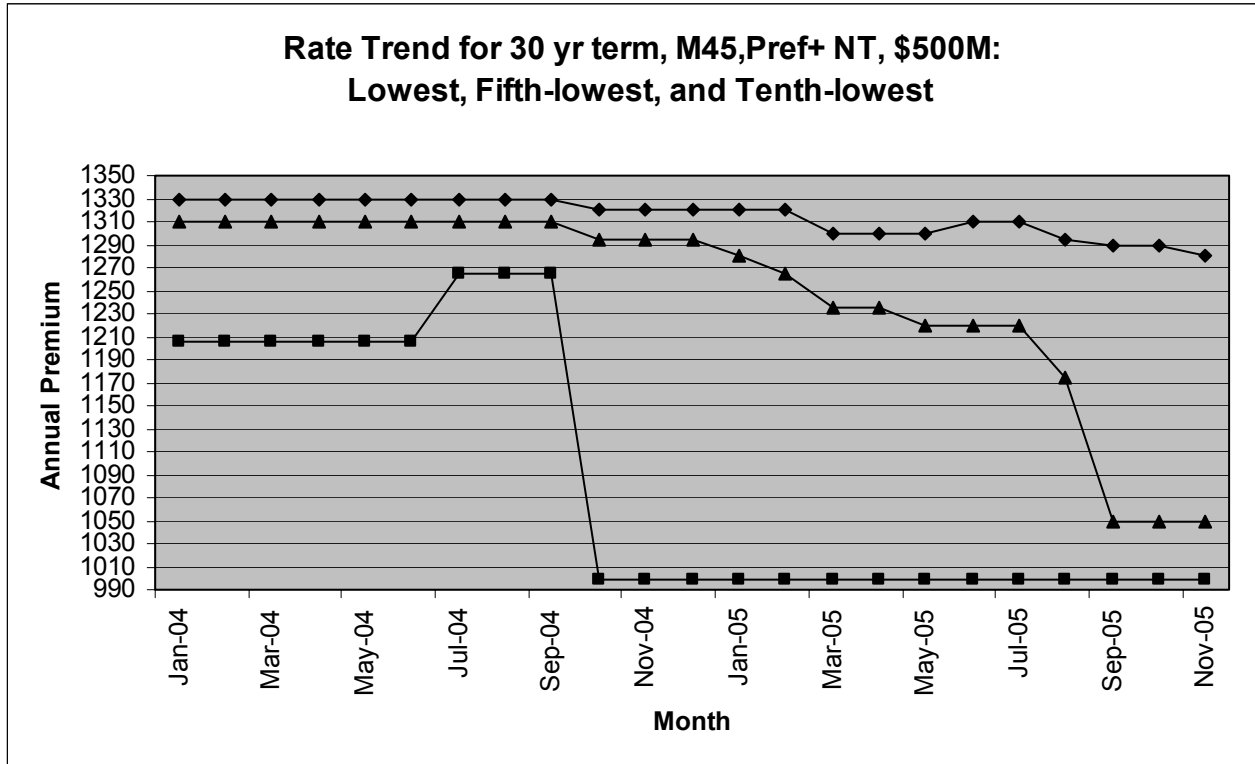
What are rates doing?



What are rates doing?



What are rates doing?



Source: Howell Pugh, FSA "Term Trends"

Any new product initiatives?

- Return of Premium
- Base Plan or Rider
- Reaction to mortality concerns/rate pressures/thinner margins?
- Higher premiums = higher commissions = happy sales force
- Lower out-year lapses means better mortality?

Underwriting practices

- Tightening of preferred exceptions – many companies keeping exception log
- Increasing frequency of reinsurance underwriting audits
- Underwriting judgment or pure business exception?
- Trend towards fewer APS's -- rise of teleunderwriting
- Table shaving programs going the way of the dinosaurs

Miscellaneous

- Reinsurance market continues to harden
- Limits on maximum issue age
- Reserves – lower 2001 CSO mortality somewhat offset by lower statutory interest rates
- XXX reserve strain reduced – no silver bullet!
- Cost of funding reserves (LOC costs, securitization, et al) has risen
- Risk classes – little move away from industry standard of 3-4 nontobacco and 2 tobacco classes

Trends in Insurance Securitization

- As capital market investors get a deeper understanding of insurance risks, the insurance business will get increasingly transformed
 - Instead of accumulating assets and liabilities, companies will develop blocks and sell them to investors through non-recourse structures
 - Securitization will become increasingly possible for more complex risks (terrorism, longevity)
 - Securitization structures will develop to be more regulatory and accounting friendly with lower transaction costs
 - There will be a robust secondary market in life insurance policies and the policies will be more efficiently aggregated and securitized – reinsurers can pool and sell or retain the various risks – mortality, lapse, credit, market, etc.
 - Reinsurers need to adapt their business models to embrace securitization tools or risk being disintermediated

Orkney Holdings Series A Floating Rate Insured Notes

- \$850 million in ultimate excess reserve relief
 - Notes priced at 3-month Libor + 53bps
 - Per annum all-in-cost to Scottish is approximately 85bps
 - Covers all XXX business issued by SRE prior to January 1, 2004
 - Associated with a defined book of business (can be repeated with additional blocks)
 - Bankruptcy remote
- Maturity
 - 30 years
- Accounting Treatment
 - Full non-recourse
 - Consolidated on balance sheet
- Rating Agency Treatment
 - Treated as off-balance sheet, excluded from both operational and financial leverage calculations
 - Notes - S&P “AAA”, Moody’s “Aaa” based on MBIA
 - Orkney Re Financial Strength - S&P “A-”, Moody’s “A1”, AM Best “A-”



Scottish ReTM

Older Age Mortality
November 10, 2005

*Chris Shanahan, FSA, MAAA
Senior Vice President – Mortality Research
Scottish Re*

Older Issue Ages Increasing Relevant

- Elderly population is growing
 - In past century, 65+ group has grown 3x the amount of those < 65
 - 1 in 7 current Americans are elderly
 - 85+ is fastest growing segment of the population
- Large premium dollars at stake

Representative Target Premiums -- Males -- \$500,000 Policy

Issue Age	35	45	55	65	75	80
Premium	\$2,970	\$4,625	\$7,120	\$11,900	\$21,375	\$31,680

Underwriting the Elderly

- Underwriting at older ages is very challenging
 - Complex medical records
 - Severe pressure to place due to very large premium dollars
 - Multiple philosophies on how to 'approach' the older age
- 3 Philosophies
 - Standard means 'normal'. At these ages, 'normal' is to have impairments. Thus, OK to be impaired and be standard.
 - Standard means 'without impairment'. Thus impaired should be rated/declined.
 - Existing impairments don't tell the whole story. Need to look at function as well. Rate/decline poor function.
- Critical to success is aligning pricing assumptions with underwriting philosophy

Elderly Underwriting – A Different Paradigm

- Some key risk factors at core ages lose value – even reverse
 - Height/Weight – obesity less an issue in elderly; beware too low
 - Cholesterol < 160 = dramatic mortality increase
 - Traditional preferred criteria not efficient to stratify risk
- New risk factors increasingly important
 - Serum albumin
- Focus on function
 - Key issue is frailty
 - ◆ The next ‘event’ is around the corner – will the individual survive?
 - Frailty highly correlated with function
 - ◆ Cognitive ability
 - ◆ Activities of daily living

The Relative Cost of Mortality per 1000 of Risk

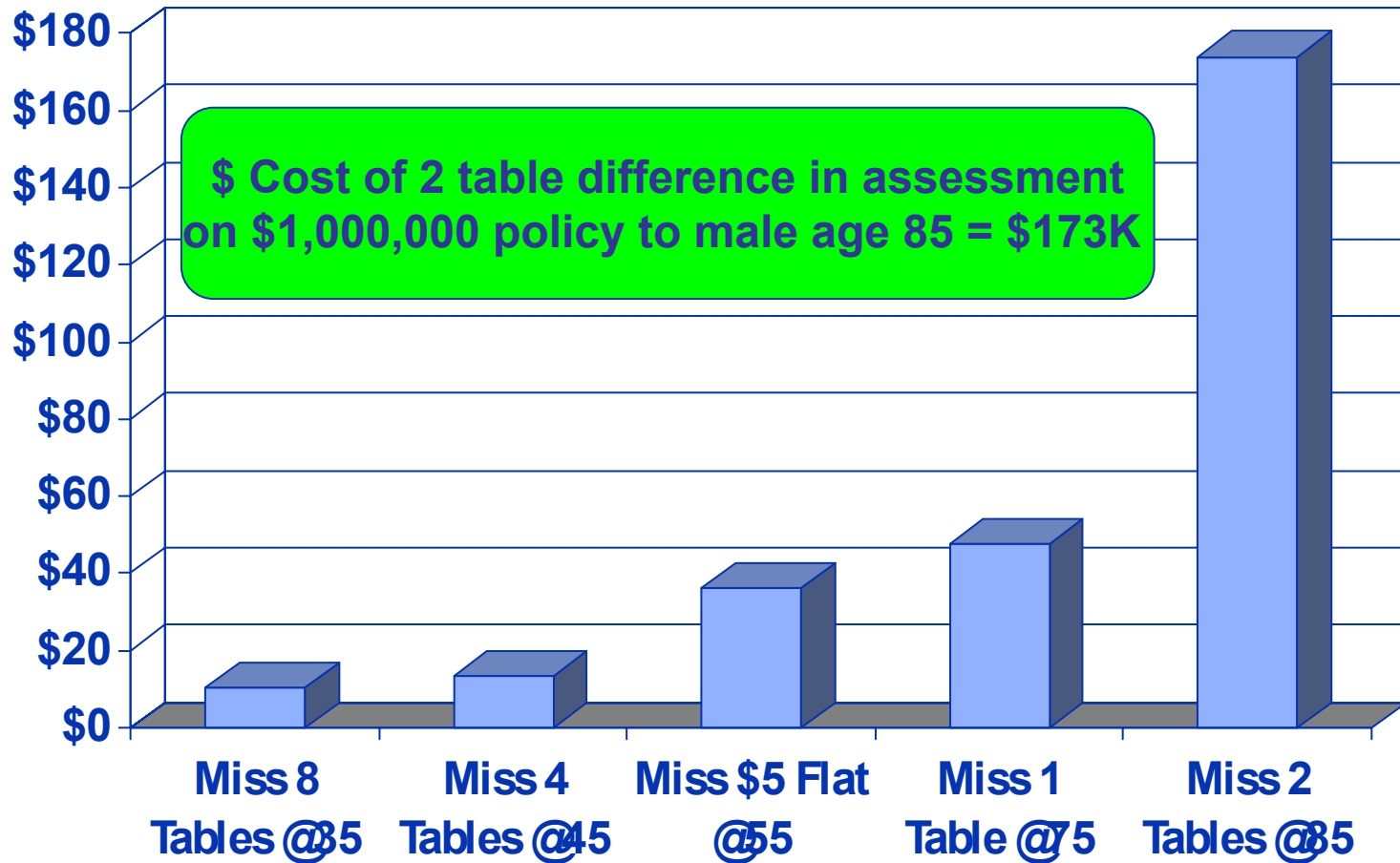
Issue Age	Face Dist.	PV Mortality
25	8%	\$ 2.99
35	15%	\$ 5.23
45	20%	\$ 13.32
55	25%	\$ 36.95
65	20%	\$ 91.48
75	10%	\$ 189.96
85	2%	\$ 347.77
Total	100%	\$ 57.17

30 Year PV @ 8% interest, 4% lapse

1/3 of Face = over 3/4 of Mortality

- Mortality obviously increases with age
- The present value of mortality at older issue ages is many times that at younger ages
- This dynamic can allow a small relative proportion of a portfolio to overwhelm the overall results.

Cost of Risk Misassessment in Present Value \$'s



Importance of Accurate Assessments on Profitability

Issue Age	Face Dist.	PV Mortality	% of Mortality	PV Cost of 1 Table
25	8%	\$ 2.99	0.4%	\$ 0.75
35	15%	\$ 5.23	1.4%	\$ 1.31
45	20%	\$ 13.32	4.7%	\$ 3.33
55	25%	\$ 36.95	16.2%	\$ 9.24
65	20%	\$ 91.48	32.0%	\$ 22.87
75	10%	\$ 189.96	33.2%	\$ 47.49
85	2%	\$ 347.77	12.2%	\$ 86.94
Total	100%	\$ 57.17	100.0%	

30 Year PV @ 8% interest, 4% lapse

1/3 of Face = over 3/4 of Mortality

- Accurate assessments of older issue ages critical to block mortality results
- A scenario to consider
 - 1:5 cases over issue age 60 mis-assessed by 2 classes (50%)
 - ◆ Preferred vs. Standard
 - ◆ Standard vs. Table B
- Cost to block mortality results
 - Affected ages off 10%
 - ◆ 20% x 50%
 - Block off by 7-8%
 - ◆ 10% x 75% of overall claims

Also Critical to Set Pricing Assumptions Accurately

- Given significant impact of older ages, also critical to set accurate assumptions
- Important to align assumptions to underwriting philosophy
- Until recently, a lack of insured lives data at the highest issue ages
 - Data availability is increasing
 - ◆ Older ages do generate claims quickly!
 - Fewer data sources for insured high attained age experience
 - ◆ But what's available paints a consistent picture

Applying Industry Tables

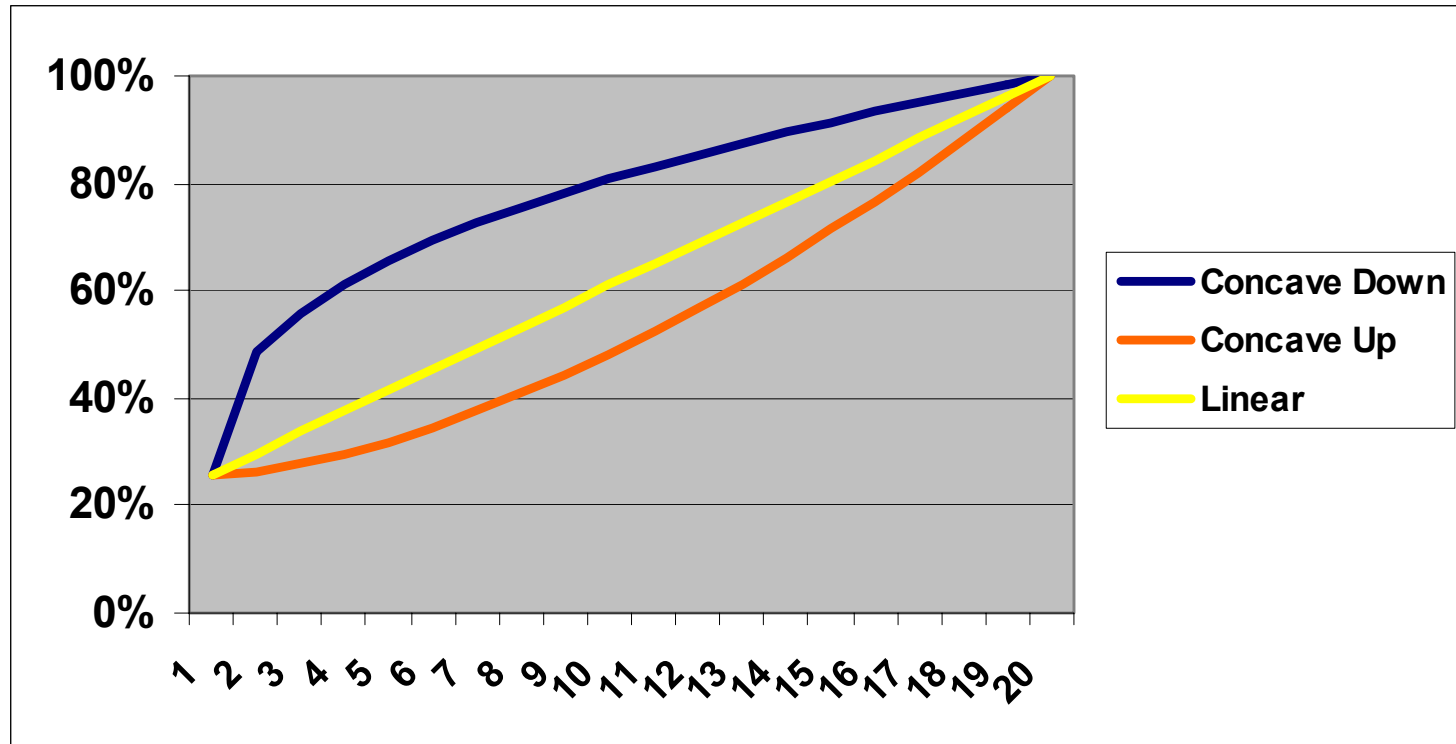
- Common to apply industry tables
 - Usually some discount to historical experience
 - Frequently based upon some A/E experience
 - Common to apply generally level discounts
- Discount generated by
 - Improvement since exposure period
 - ◆ Has [redacted] er
 - ◆ [redacted]
 - Changes in U/W practice (blood testing, etc.)
 - ◆ [redacted] over select period (quickly at oldest ages)
 - ◆ [redacted]
 - Cohort issues in tables result in [redacted] g effects

Select Period and Grading

- Generally accepted that discount for underwriting grades off
 - Over what period?
 - What is shape of the grading?
- Most industry data supports 25-30 years of selectness at core ages
 - Data supports shorter select period at older issue ages
 - Health status of the 70+ cohort changes rapidly
 - Traditional underwriting not effective at long term risk stratification
 - Issue Age 75: 10-15 year select period?
 - Issue Age 85: 5-10 year select period?

Select Period and Grading

- Shape of select factors at least as important as length of period



Slope in Older Issue Ages

- Four specific set of data on issue ages > 70
- Very significant early duration differences as one would expect
- Differences grade together quickly
- Rapidly increasing & of 7580 Manu table

Durations	Better Scottish	Worse Scottish	SOA/ Manu	Add'l Client
1-5	34%	40%	27%	32%
6-10	47%	44%	44%	43%
11+	50%	55%	49%	53%

Ultimate Mortality

- Ultimate mortality key to where you grade to
- Significant impact on overall magnitude and PV dynamics
- In theory, should not vary much from case to case

<i>Males</i>	1000qx Att. Age 90	% of VBT Ultimate	1000qx Att. Age 100	% of VBT Ultimate
VBT Composite Ultimate	172.250	100.0%	324.530	100.0%
1990-95 Basic Ultimate	163.710	95.0%	312.840	96.4%
2000 U.S. Population	169.600	98.5%	298.000	91.8%
86-92 Canada CIA Basic Ultimate	176.780	102.6%	390.000	120.2%
Survivors Federal Ees 1990-2000	181.880	105.6%	341.360	105.2%
RP2000 Healthy Annuitants	183.408	106.5%	344.556	106.2%
Ret. Fed. Employees 1990-2000	181.490	105.4%	366.740	113.0%
'94 US MGDB	180.886	105.0%	375.228	115.6%

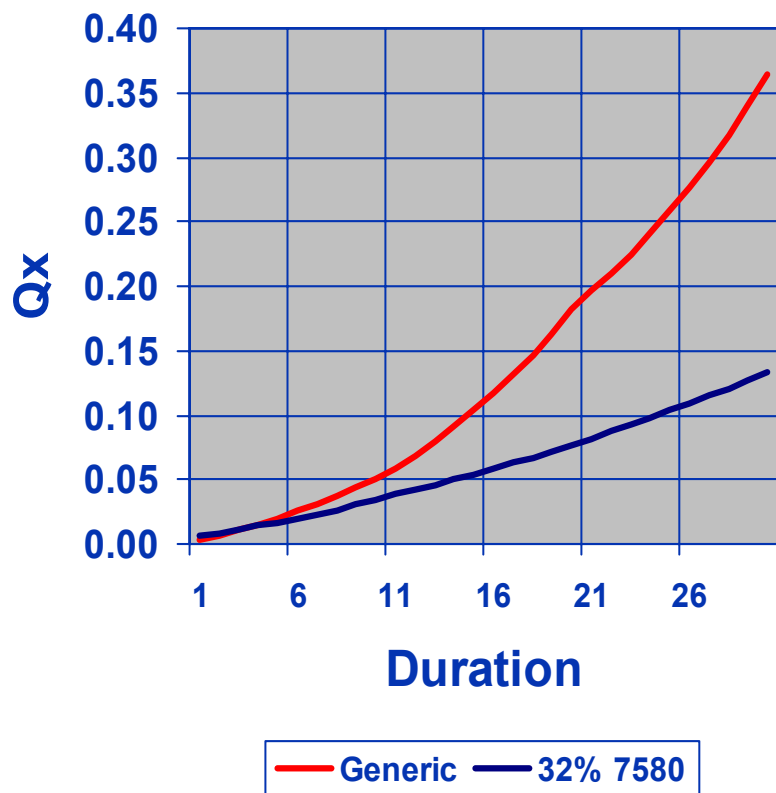
Ultimate Mortality

- Ultimate mortality key to where you grade to
- Significant impact on overall magnitude and PV dynamics
- In theory, should not vary much from case to case

<i>Males</i>	1000qx Att. Age 90	% of VBT <i>Ultimate</i>	1000qx Att. Age 100	% of VBT <i>Ultimate</i>
VBT Composite Ultimate	172.250	100.0%	324.530	100.0%
1990-95 Basic Ultimate	163.710	95.0%	312.840	96.4%
2000 U.S. Population	169.600	98.5%	298.000	91.8%
86-92 Canada CIA Basic Ultimate	176.780	102.6%	390.000	120.2%
Survivors Federal Ees 1990-2000	181.880	105.6%	341.360	105.2%
RP2000 Healthy Annuitants	183.408	106.5%	344.556	106.2%
Ret. Fed. Employees 1990-2000	181.490	105.4%	366.740	113.0%
'94 US MGDB	180.886	105.0%	375.228	115.6%
32% of 1975-80 Basic Ultimate	58.435	33.9%	103.334	31.8%

Comparing 2 Approaches

Male NS Issue Age 75



- “Generic” Assumption
 - Duration 1= 15% of 7580
 - 20 Year Select (concave)
 - Grading to 78% VBT ultimate
- PV difference of \$40/1000
 - Each \$100 MM of Risk= \$4MM mortality shortfall
- If ages 60+ off by 20%
 - Overall mortality off by 15% based upon illustrative age distribution

Questions



Christopher.shanahan@scottishre.com

Dan.johnston@scottishre.com