



Term / UL Experience (Mortality, Lapse, Conversion, Anti-selection)

Actuaries' Club of the Southwest
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Agenda

- Term Conversions
- Post-Level Term Lapse & Mortality Experience
- UL Older Age Business

Term Conversions

- I. **Definitions & variations**
- II. **Reinsurance pricing methods**
- III. **Conversion pricing considerations**
- IV. **Relevance to the direct writer**

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Definitions

- **Option to convert gives the policyholder the right to change from one policy type to another without requiring proof of insurability**
- **Conversion option variations**
 - Conversion period
 - Maximum age
 - Plans available
- **Focus on conversion from term to permanent plan**

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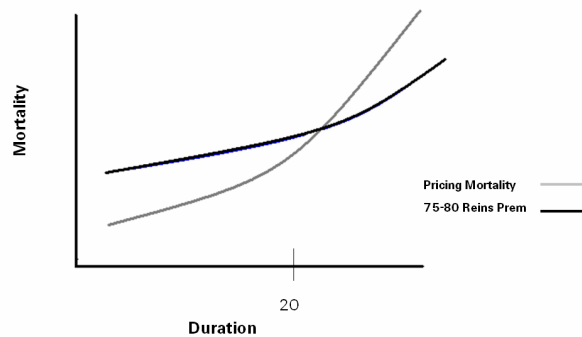
Reinsurance Pricing Methods

- Conversion load approach – Load converters only
 - Flat 0-25% load applied to point-in-scale rates
 - Graded loading
 - 2-3 segments w/ increased load at each
 - Theoretically correct, but hard to administer
 - Lack of credible late duration data to support
- Spread the cost approach
 - “Bake” cost into price for portfolio with a conversion option
 - Could cause mismatched inforce
 - Incorrect conversion rate = incorrect price

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Why Load At All?

- Cost of option to convert (antiselection)
 - Tendency for increased antiselection as end of conversion period nears
- Potential for slope mismatch



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Conversion Pricing Considerations

- Conversion rates
 - Incentive programs to push conversions
 - Knowledge of conversion option (% that Know)
 - Definition of conversions
 - Plan available for conversion
- Antiselective mortality assumption
- Post-conversion lapse rates

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Conversion Rates

- Extra decrement
 - Segment from lapses
 - Extract converters from term pool, move into conversion inforce
- Ideally should be experience-based
- Experience available for Swiss Re's preliminary model
 - 2006-07 Multicompany Study
 - 12 - 13 durations of conversion data
 - Multiple segmenting loses credibility
 - Study used for
 - Initial conversion rate
 - Validation for assumed conversion rates

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Conversion Rates Continued

- Vary by duration
 - Agent-induced conversions
 - Antiselective behavior of policyholders
- Vary by age & term plan
 - Chronic conditions vary by age
 - Shorter term length gives less time for health to deteriorate

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Conversion Incentive Programs

- Agent/policyholder
- Incorporated into observed conversion rates
- Influence policyholder's knowledge of conversion options

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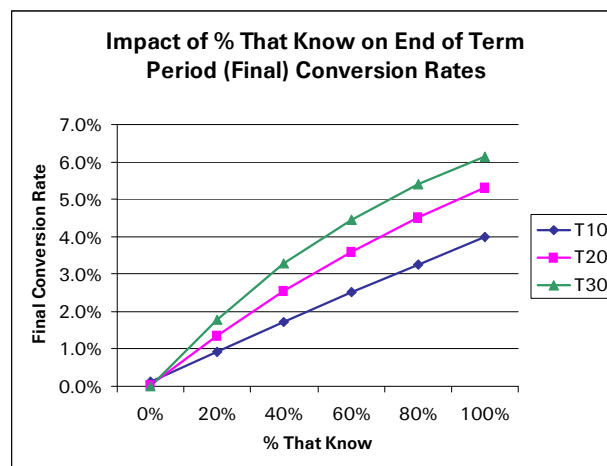
Percent That Know

- Knowledge of conversion option
 - Percent that know has significant impact on conversion rates
 - Assumed < 100% know about their option
 - Implied % that know could be understated
 - Past & current conversion definitions differ
 - Secondary market continues to grow
 - Consumers become more knowledgeable
 - Expect future % that know to increase
 - Incentive programs increase this assumption

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Swiss Re Preliminary Model: Percent That Know

- Higher the % that know → the higher the end of period conversion rate



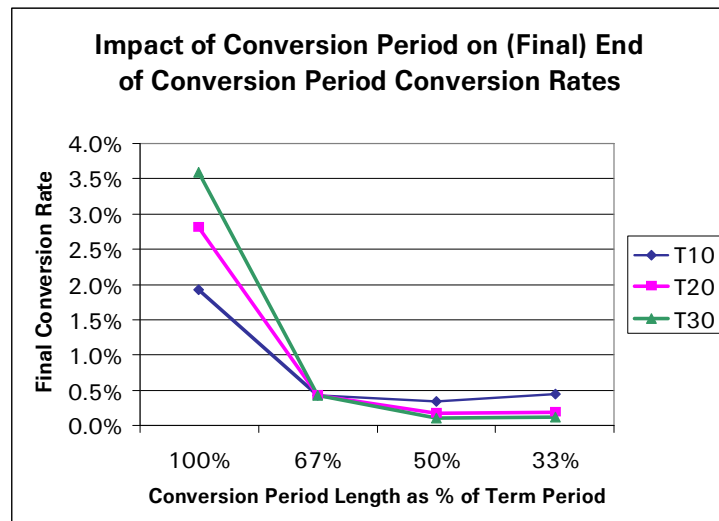
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Conversion Definitions

- Definition of conversions
 - Length of conversion period & maximum age impact conversion rates & post-conversion mortality
 - Shorter the conversion period
 - Less time to develop more conditions
 - Less motivation for antiselection
 - Lower aggregate conversion rate
- Short conversion period reduces antiselection and results in less excess mortality

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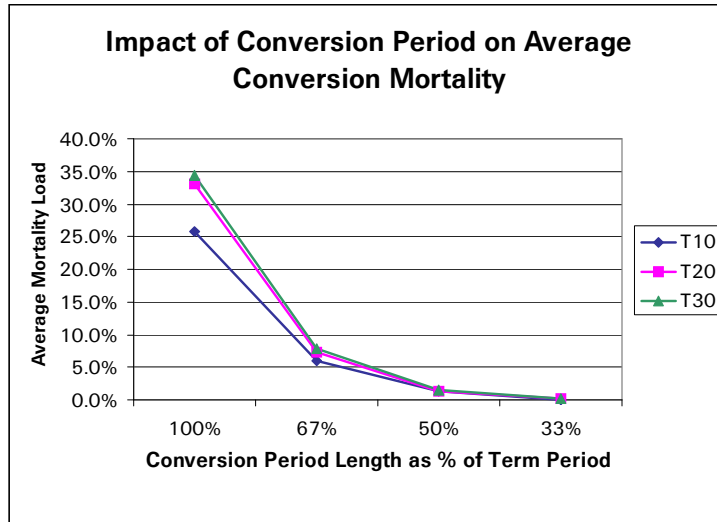
Swiss Re Preliminary Model: Conversion Period



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Swiss Re Preliminary Model: Conversion Period



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Antiselective Mortality Assumption

- Antiselection possible due to onset of chronic disease since underwriting
- Prevalence of chronic disease population data was used to develop excess mortality assumption
- Adjusted population data to reflect u/w insured lives

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Antiselective Mortality Assumption Continued

- Number of conditions at time 0 is irrelevant – assumed properly priced at time of underwriting
- Concerned with conditions developed after underwriting – incentive to select against insurer
- Modeled chronic conditions for each duration
- Excess mortality
 - Assigned by duration and by number of chronic conditions developed since underwriting
 - Varies by attained age
 - Not linear as chronic conditions are added

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Post Conversion Lapse Rates

- Impacted by type of permanent plan
 - Lapses vary widely by product
 - Specific product unknown at time of term issue
- Assume antiselective converters lapse rates < 100% of non-antiselective converters
- Post-conversion model is sensitive to both pieces of lapse assumption

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Relevance to the Direct Writer

- Consider issues discussed
- Administrative systems - tracking term to perm
 - Better long term data – connect the dots
 - Share data with reinsurers

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Conversion Wrap-Up

- Importance of conversion definition
 - Secondary markets may exploit
- Conversion rates and mortality loads are sensitive to assumptions
- Assumptions must be reviewed as new data becomes available

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U.S. Post Level Term Experience

- I. Lapse Rate Development
- II. Experience Cohort
- III. Lapse Results
- IV. Mortality Results

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Lapse Rate Development

- Actuarial Method:
 - assumes a full year of exposure for all policies in force at the start of the year
 - leads to an assumption that all lapses occur at the end of the year; thus, the lapse rate is simply lapses divided by beginning exposure
 - understates the lapse rate for the duration immediately following the end of the level paying period
- Treatment of term conversions
 - where conversions can be identified (majority of the time), they are not counted as lapses and exposure are terminated at conversion

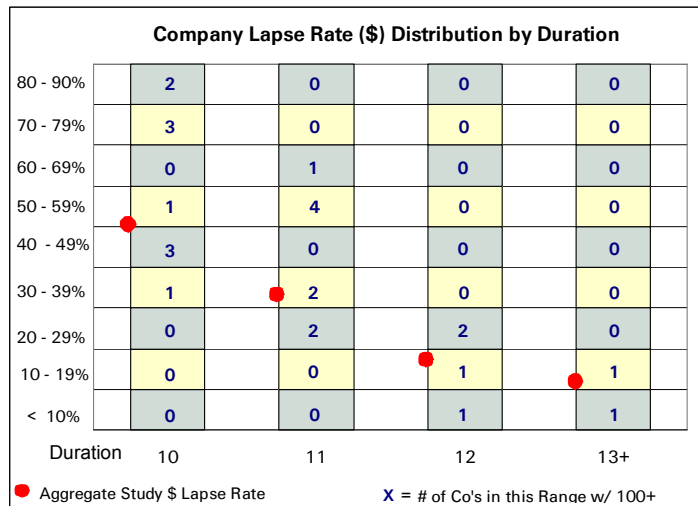
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Experience Cohort

- The 2001-2006 Post Level Term Experience Cohort:
 - 10 companies
 - calendar years of 2001 – 2006
 - issue years 1990-1999
 - T10 policies only
 - over 160,000 policies
 - over \$37 billion face
 - almost 108,000 lapses

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2001-2006 Lapse Experience Results - by Duration (with Company Distributions)



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2001-2006 Lapse Experience Results - by Policy Duration

- Elevated lapses in post-level period

Duration	# of Lapses	Lapse % \$	Lapse % #
10	78,884	51.7%	49.2%
11	20,175	33.6%	29.4%
12	4,897	17.8%	15.3%
13+	4,011	12.9%	11.1%

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2001-2006 Lapse Experience Results - by Issue Amount Band

- Lapse rates are higher for larger policies.

Duration	<\$500k Amt	\$500K+ Amt
10	46.1%	57.1%
11	29.3%	39.3%
12	15.8%	21.3%
13+	11.8%	15.4%

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2001-2006 Lapse Experience Results - by UW Class

- Post-level lapse rates are higher for preferred classes.

Duration	Preferred NT	Standard NT	Tob
10	52.8%	48.0%	48.2%
11	34.0%	32.6%	30.8%
12	18.4%	15.0%	14.2%
13+	13.4%	9.5%	11.5%

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2001-2006 Lapse Experience Results - by Issue Age

- Lapse rates increase as the issue age increases.

Duration	<30	30-49	50+
10	32.4%	49.5%	65.0%
11	26.1%	33.7%	37.0%
12	13.2%	17.8%	22.7%
13+	8.5%	13.2%	16.8%

- 3 of 15 companies in SOA Survey varied post-level premium lapse assumption by issue age

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2001-2006 Lapse Experience Results - by Gender

- Male lapse rates are higher than female.

Duration	Male	Female
10	54.6%	42.1%
11	35.5%	28.4%
12	19.0%	15.0%
13+	13.6%	11.4%

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2001-2006 Lapse Experience Results - Other Observations

- Shock year lapse rates for a 10-year plan vary widely by company
 - ranging from 38% to 86%
- Four year cumulative lapse rates (beginning with the shock year) for a 10-year plan also vary widely by company
 - ranging from 65% to 95%

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2001-2006 Lapse Experience Results

- Other Observations

- Shock year lapse rates are sensitive to the premium payment mode
 - monthly mode has the lowest shock year rates
- Shock year lapse rates are also very sensitive to the relationship of the ultimate post level premium amount(s) and the premium charged during the level premium period
 - generally, lapse rates increase the greater the ultimate post level premium exceeds the level premium

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2001-2006 Mortality Experience Results

- The 2001-2006 Post Level Mortality Experience
 - Study contained 575 claims for durations 11+
 - Analysis compared ratios of actual / expected (A/E) relative to SOA 75/80 for post-level premium durations to A/E for durations 8-10
 - A/E based on policy face amounts
 - Primarily one company with credible experience
 - That company's shock lapse rates were materially lower (circa 75%) of shock lapses for all other companies combined

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2001-2006 Mortality Experience Results

- Combined Durations 8-10 for comparison
 - Ratio by Amount fairly consistent by duration

Duration	# of Claims	Ratio by \$	Ratio by #
8-10	1,444		
11	252	161%	151%
12	151	155%	174%
13+	172	156%	148%

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2001-2006 Mortality Experience Results - Observations

- The 2001-2006 Post Level Mortality Experience Observations:

- Overall ratio is slightly higher by amount

By Number	By Amount
155%	158%

- Ratio increases by amount group

<\$500k	\$500k+
141%	182%

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2001-2006 Mortality Experience Results - Observations

- Ratio increases for preferred business

Standard	Preferred
147%	167%

- Ratio increases by age group

<50	50+
156%	178%

- No difference in ratio by gender even though materially lower post-level premium lapses for females

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Conclusions - Post Level Lapse

■ Post Level Lapse Rate Conclusions:

- Shock lapse rates vary widely by company
- Generally, lapse rates increase the greater the ultimate post level premium exceeds the level premium
- Companies should analyze their own experience to determine where they fall within the range and whether these same conclusions apply to them

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Conclusions – Post Level Mortality

■ Post Level Mortality Conclusions:

- Generally, mortality increases the greater the shock lapses, which appear to be correlated to the premium increases
- Exception: males experienced higher shock lapses but similar mortality ratios relative to females
- Primarily based on one company; until more experience emerges, companies should be cautious when estimating post level profits

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UL Older Age Business

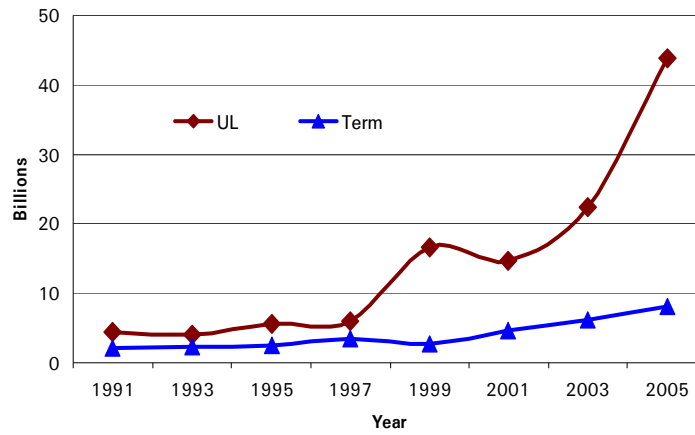
- I. Market Growth and Challenges
- II. Select Mortality Older Age Experience
- III. Ultimate Mortality Older Age Experience
- IV. Conclusions

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Growth in Older Age Market

U.S. Term and UL sales to individuals age 65+



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Source: LIMRA

Challenge: Insurance Product Pricing

- Market: direct and reinsurance rates often imply extraordinary future experience
- Market: The secondary market for life insurance policies will exploit product design guarantees ("soft spots") and present additional lapse and mortality risk

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Select Mortality Experience

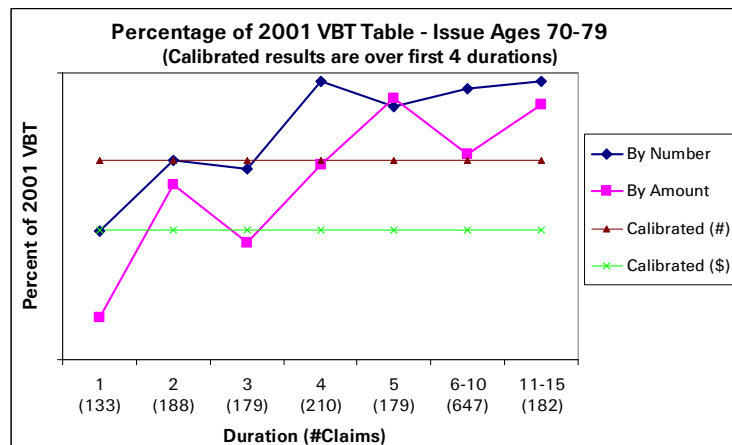
2006-2007 Swiss Re Multicompany Study

- 39 Companies
- Policies \$100,000+, capped at \$5 MM, standard issues
- 1990+ issues, but experience only for 1998+
- Claims dampened so no company contributes more than 8% of results
- Over 2,000 claims issue ages 70+
- Results indicate that the mortality slope is much steeper than the 2001 Valuation Basic Table at the older issue ages

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Select Mortality Experience Data Results

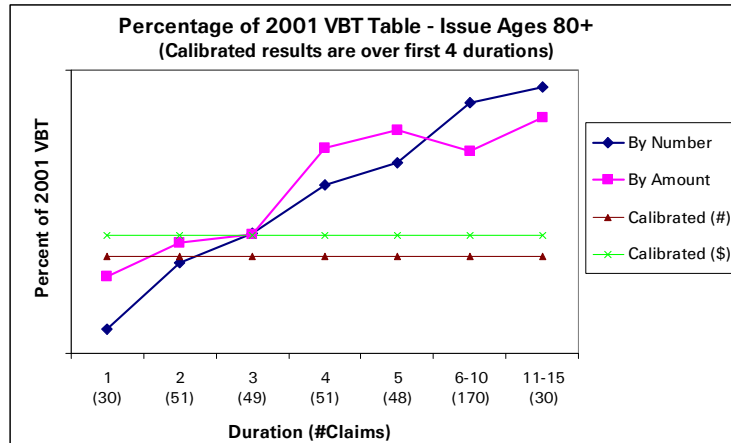
2006-2007 Swiss Re Multicompany Study



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Select Mortality Experience Data Results

2006-2007 Swiss Re Multicompany Study



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Ultimate Mortality

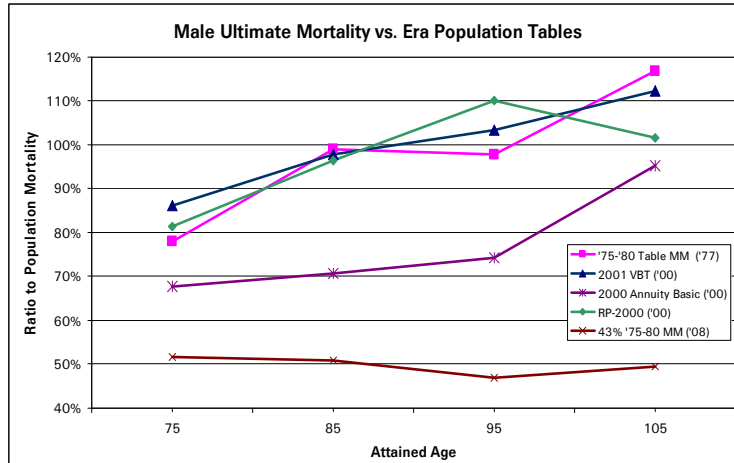
Ultimate Older Age Mortality

- Compared several industry sources against population mortality
- Used era based population mortality when comparing to industry data
- Results consistently converged with population mortality at the older attained ages

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Industry Table Benchmarks

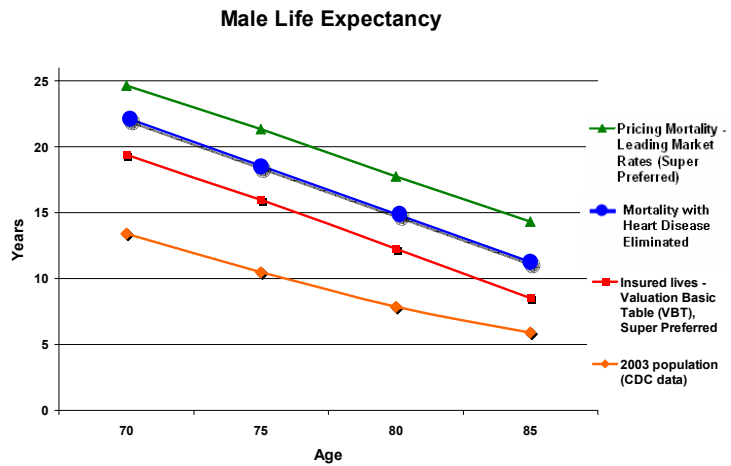


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Taking it a Step Further ...

Leading market rates indicate that heart disease, the number one cause of death, could be eliminated and deficiencies would still exist!



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UL Older Age Summary

■ Conclusion

- There appears to be a disconnect between emerging older age experience and pricing mortality
- The growing secondary market for life insurance policies will exploit "soft spots".

■ What can you do?

- Older issue age specific underwriting
- Account for the mortality curve and low lapsation of certain products
- Monitor the business closely

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Questions?

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