

SIMPLIFIED ISSUE & ACCELERATED UNDERWRITING MORTALITY UNDER VM-20

Joint American Academy of Actuaries Life Experience Committee
and Society of Actuaries Preferred Mortality Oversight Group

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Chairperson

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Agenda

- Initial LATF Charge
- Status of simplified issue (SI) table development
- Accelerated Underwriting (AUW)
- Challenges for SI and AUW in Valuation Manual (VM)
- Life Actuarial Task Force (LATF) Guidance Requested
- Joint Committee Recommendation



LATF Charge

- To develop new basic and valuation mortality tables for individual life insurance products issued using a “simplified issue” underwriting regime
- Similar charge for guaranteed issue and preneed discussed and addressed separately

Status of Simplified Issue Table Development



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Simplified Issue (SI) Study Data

- Data from calendar years 2005 - 2009
- 30 contributing companies
 - 26 companies with smoker/nonsmoker statuses
 - 18 companies with uni-smoke status
- 19 million policy years exposed
- 270,000 death claims
- \$490 billion exposed
- \$2.3 billion of claims



SI Data Limitations

- The majority of data collected is for composite or uni-smoke issues and lower face amounts
- Smoker/Nonsmoker distinct claims experience is much less robust and disparate across contributing companies
- Data for older ages also limited
- Data gathered by distribution method, target market, etc. but insufficient to study at this level of detail

Class	Exposure		Actual Claims	
	# Policies	Amount (\$m)	# Claims	Units (\$m)
NS	8,062,492	337,024.6	35,410	707.7
SM	2,391,923	71,441.5	16,348	256.2
Composite	8,376,350	83,638.2	220,919	1,337.3
Total	18,830,765	492,104.3	272,677	2,301.2

Source: Developed by members of the committee



SI Experience Relative to 2008 VBT Limited Underwriting (LU) Table Varied Considerably by Class

- The 2008 VBT LU table is the most recent industry table applicable for business issued with less than full underwriting
- The actual experience relative to this table (A/E Ratio) shows that neither the smoker select & ultimate or ultimate forms of this table are a good fit for the 2005-2009 data
- The 2008 VBT LU table has a 25 year select period versus the 2005-2009 experience that exhibited closer to a 10-year select period

A/E Ratio of 2005-2009 Experience
E = 2008 VBT LU Table

		2008 VBT LU Table Form	
Class	# Claims	S&U	U
NS	35,410	131%	86%
SM	16,348	119%	92%
Composite	220,919	178%	115%
Total	272,677	153%	101%

Source: Developed by members of the committee

S&U = Select and Ultimate
U = Ultimate



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SI Data Fell Into Four Main Segments

- Four main data segments:

Data Grouping	Issue Amounts	# Deaths	Average Issue Amount	
			By Band	All Face Amounts
1. Composite (uni-smoke)	< \$50,000	219,704	\$ 5,798	\$ 6,053
2. Composite (uni-smoke)	≥ \$50,000	1,215	\$52,216	
3. Nonsmoker/Smoker	< \$50,000	46,904	\$12,144	\$18,624
4. Nonsmoker/Smoker	≥ \$50,000	4,854	\$81,247	

- Composite status, amounts of \$50K and above showed much lower mortality than lower face amount composite-class policies but too few claims to be meaningful
- Only the first grouping (composite, <\$50k issue amount) had a sufficient number of deaths to construct a credible mortality table by age and duration



Source: Developed by members of the committee

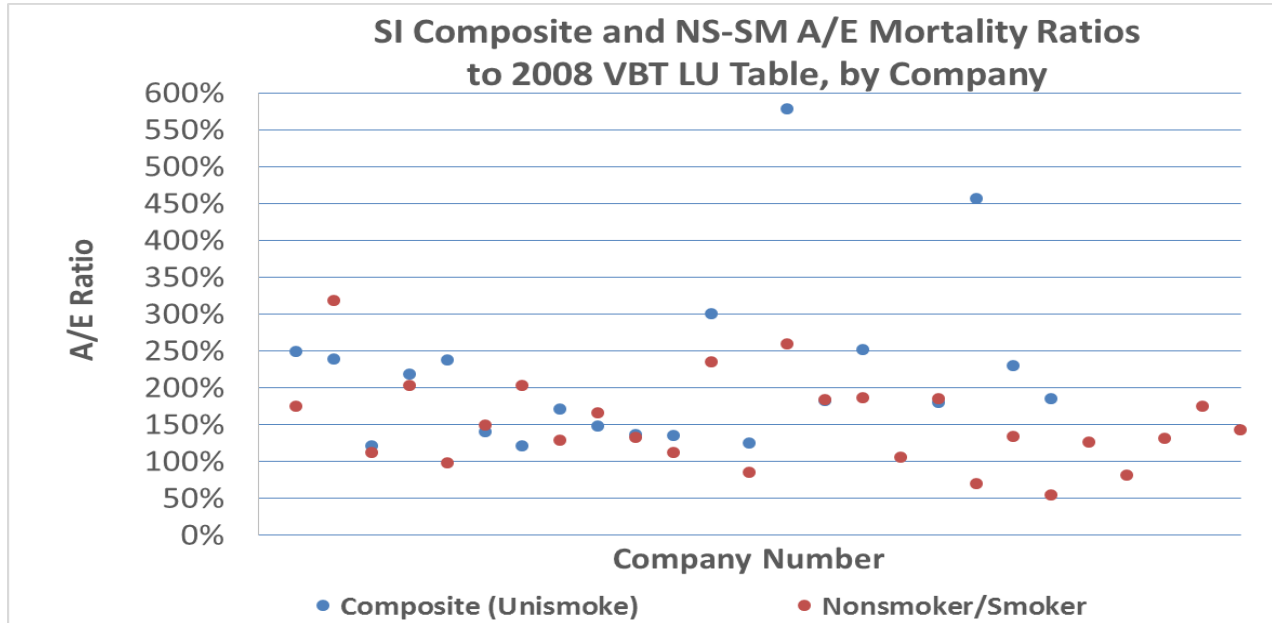


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Mortality Ratios Show Significant Variation Amongst Companies and by Rate Structure



Rate structure	# Companies
Total # contributors	30
SM/NS	26
Composite	21
Both SM/NS and Composite	17

One company with A/E in excess of 980% omitted from graph



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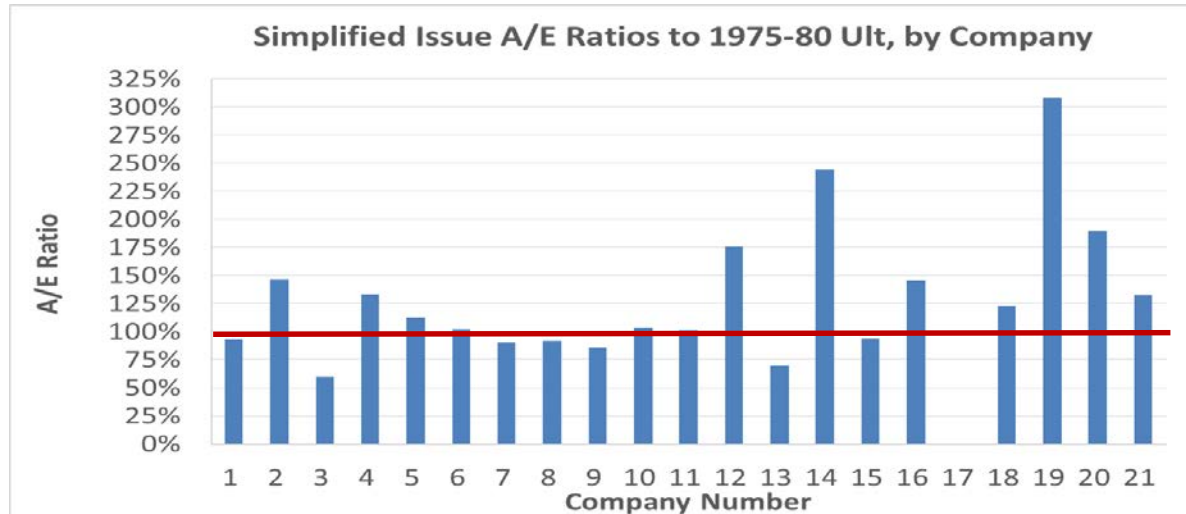
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Because fit to 2008 VBT LU Table Not Good for Composite Structure, Explored SOA 1975-80 as Underlying Table

- The SOA 1975-80 was the last significant industry table that did not distinguish between smoker and nonsmoker risks



SOA 1975-80 Basic Table Structure	A/E
Select & Ultimate	187%
Ultimate	104%

Company 17 data omitted from graph as A/E > 750%

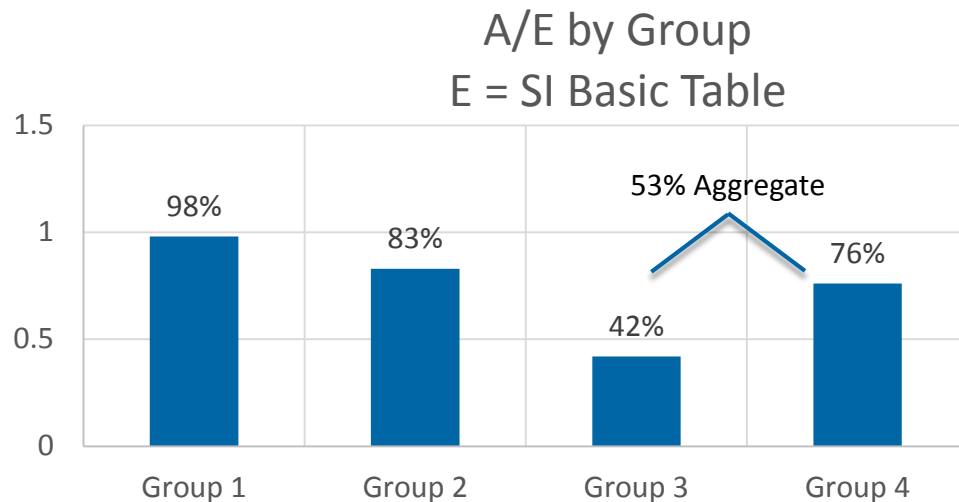


Development of SI Mortality Table

- A new SI mortality table was developed for **composite** status for amounts under \$50K:
 - ▣ Separate rates for males and females
 - ▣ Rates graduated in 5-year issue age groups
 - ▣ 10-year select and ultimate
 - ▣ Young ages had scant data
 - ▣ Core ages followed a pattern fairly consistent with the SOA 1975-80 Basic Mortality Table
 - ▣ Attained ages 97+ followed a pattern more consistent with 2015 VBT, grading to a rate of 0.5000 for attained ages 111+ (for basic table)
 - ▣ Interpolated quinquennial rates to obtain individual issue ages 0-100

Mortality Ratios by SI Segment

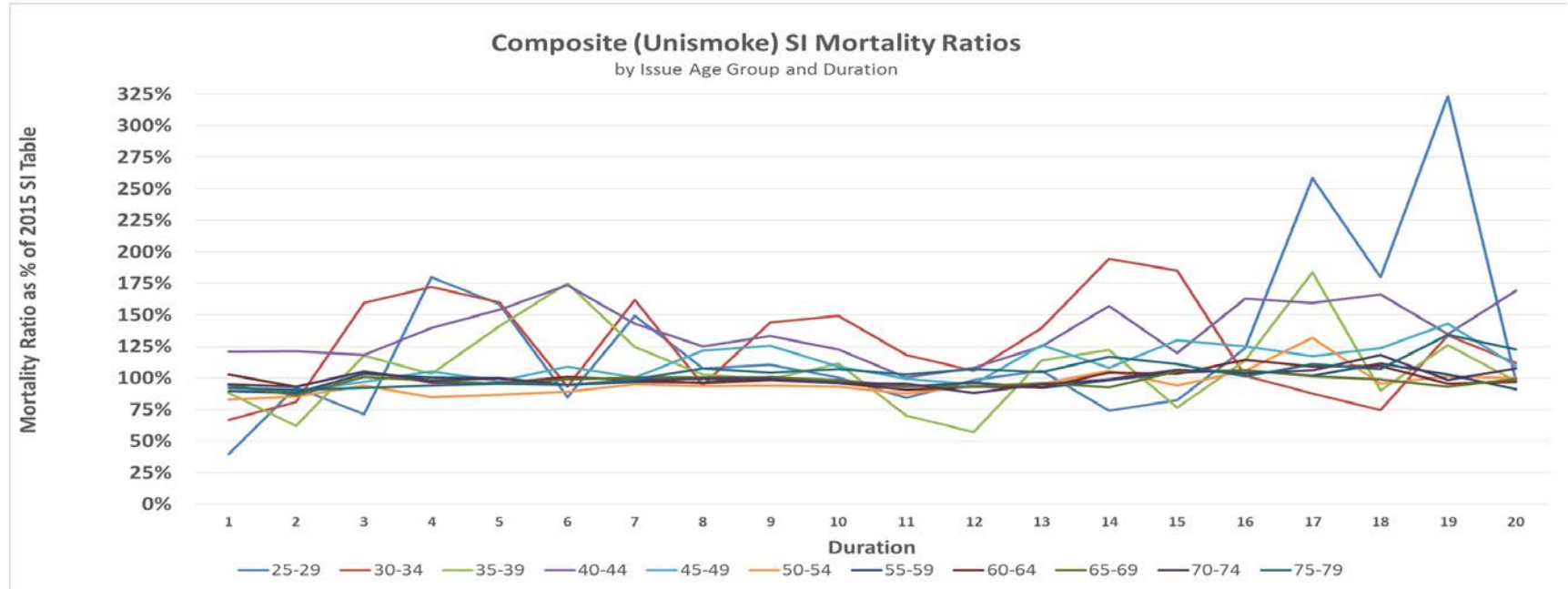
- The four SI Segments compared to the new SI table show significant variation
- The SI table was a reasonable fit for the business issued as uni-smoke mortality
- The SI table significantly overstated mortality issued on a smoker distinct basis



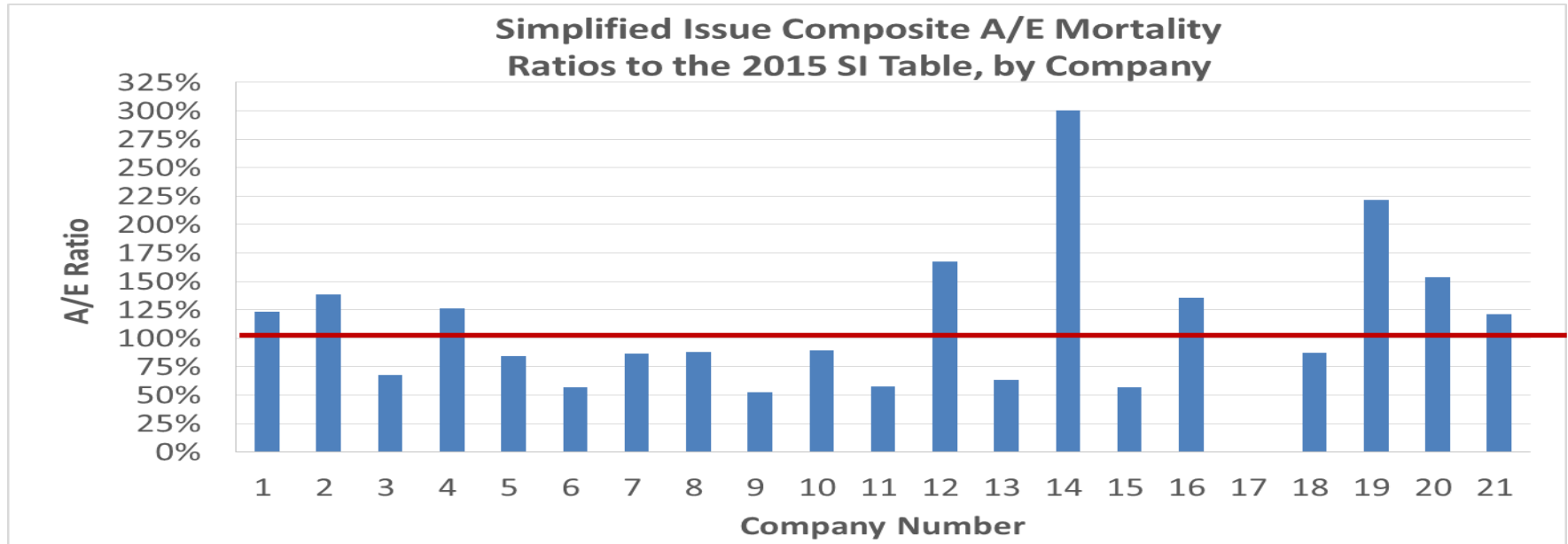
Group 1: Composite < \$50k
Group 2: Composite \geq \$50k
Group 3: Nonsmoker
Group 4: Smoker



A/E's for Composite Experience Are Consistent Across Age and Duration Relative to Composite SI Experience Table



Despite Good Overall Fit to the SI Table, the Mortality Ratios for SI Composite Risks Still Exhibit Variation Amongst Companies



One company with A/E in excess of 600% omitted from graph



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Coverage Level of New SI Table for Composite Business

- Despite the good overall fit for the SI composite business, the loads to enable coverage of 60% to 80% were significant due to variability of experience by company and across ages, genders

Coverage percent of Contributing Companies	Percentage of the SI Basic Table to Achieve Coverage Percent	Exposure Covered by Amount
60%	123%	86.2%
70%	135%	87.1%
80%	154%	97.9%

Mortality Ratios for Smoker Distinct

- The new SI Table has a significantly different shape and was not a good fit for the smoker distinct business
- Smoker distinct data was not robust enough to develop gender, age, and risk class differentiated mortality rates. Therefore, additional approaches and underlying tables were explored by the development team.
 - ▣ SOA 1975-80 Basic Table as underlying
 - ▣ Blended versions of the 2008 VBT LU Table



Mortality Ratios for Smoker Distinct

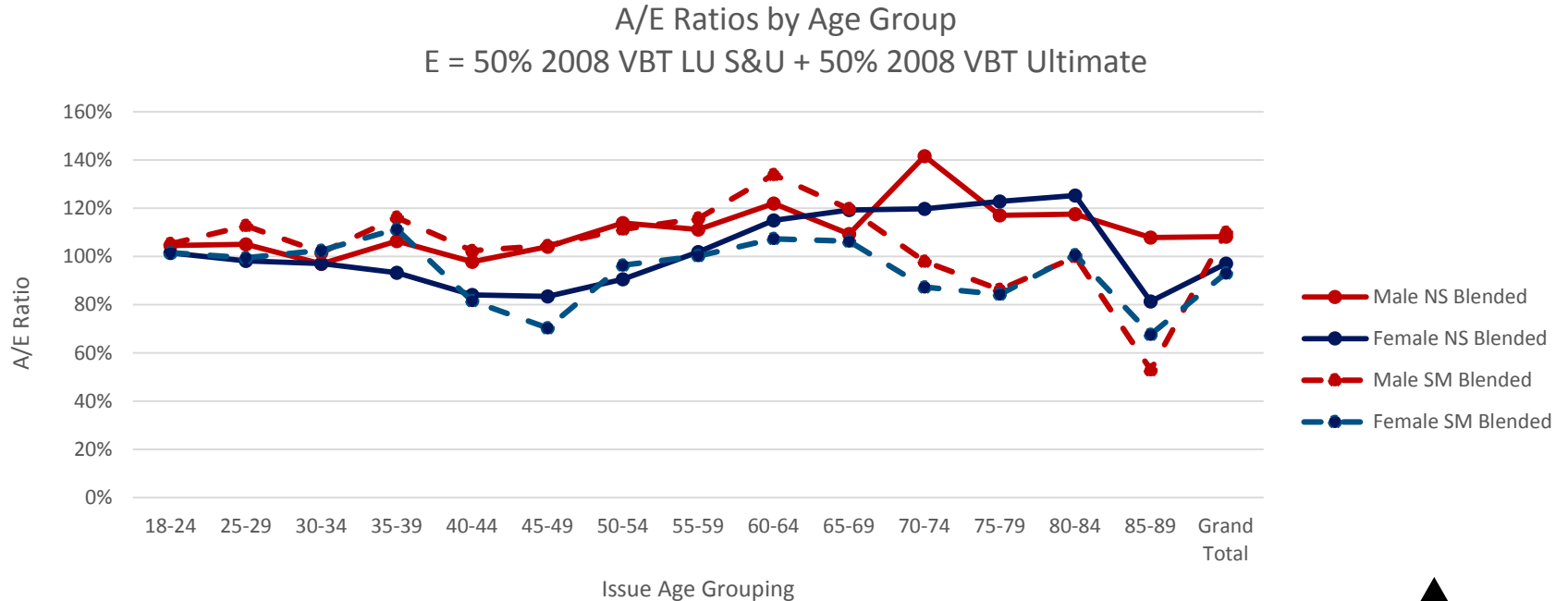
- Both tables produced more stable mortality ratios by issue age and duration for nonsmoker and smoker distinct business
- The 2008 VBT LU table resulted in less variability than the 1975-80 table
- Using a blend between the select & ultimate (S&U) and ultimate (U) forms resulted in a reasonable pattern of mortality for the smoker distinct business
- A 40% S&U 60% Ultimate blend resulted in most reasonable fit both in aggregate and across ages and durations

A/E Ratio of 2005-2009 Experience Across Select Expected Basis

Class	# Actual Death Claims	Expected Basis				
		2008 VBT LU S&U				1975-80 S&U
		100% S&U	50/50 Blend	40/60 Blend	100% U	
NS	35,410	131%	103%	99%	86%	96%
SM	16,348	119%	104%	101%	92%	180%
Total	51,758	128%	103%	100%	87%	123%

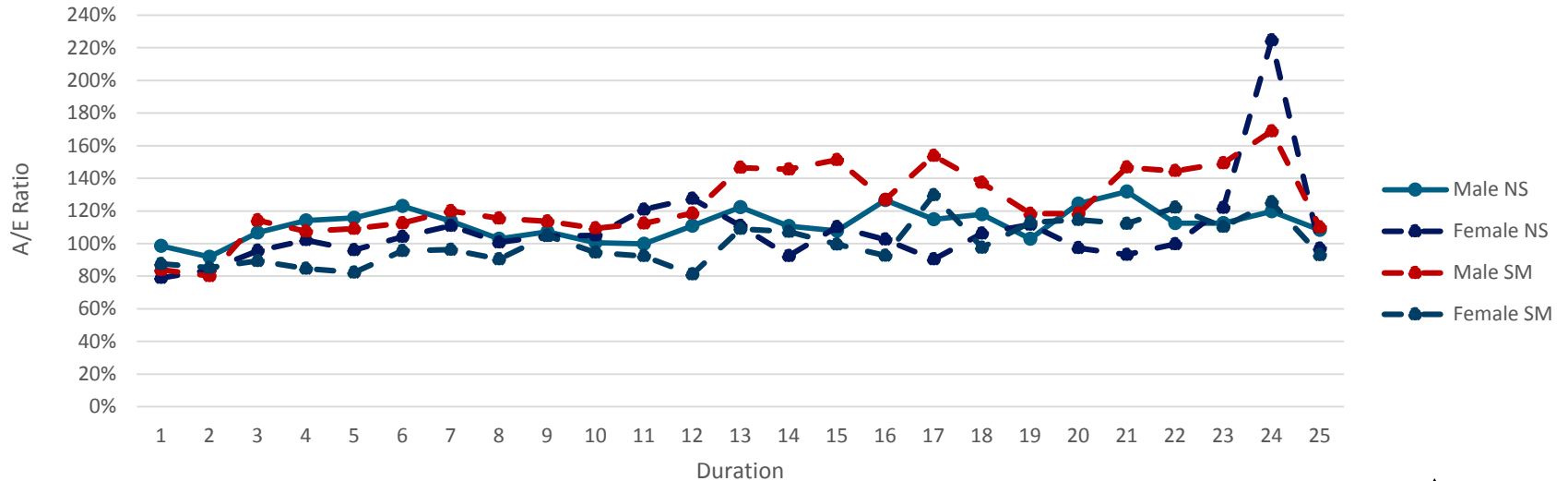


A/Es on blended basis results in shortened select period results and consistency across ages, gender and risk class



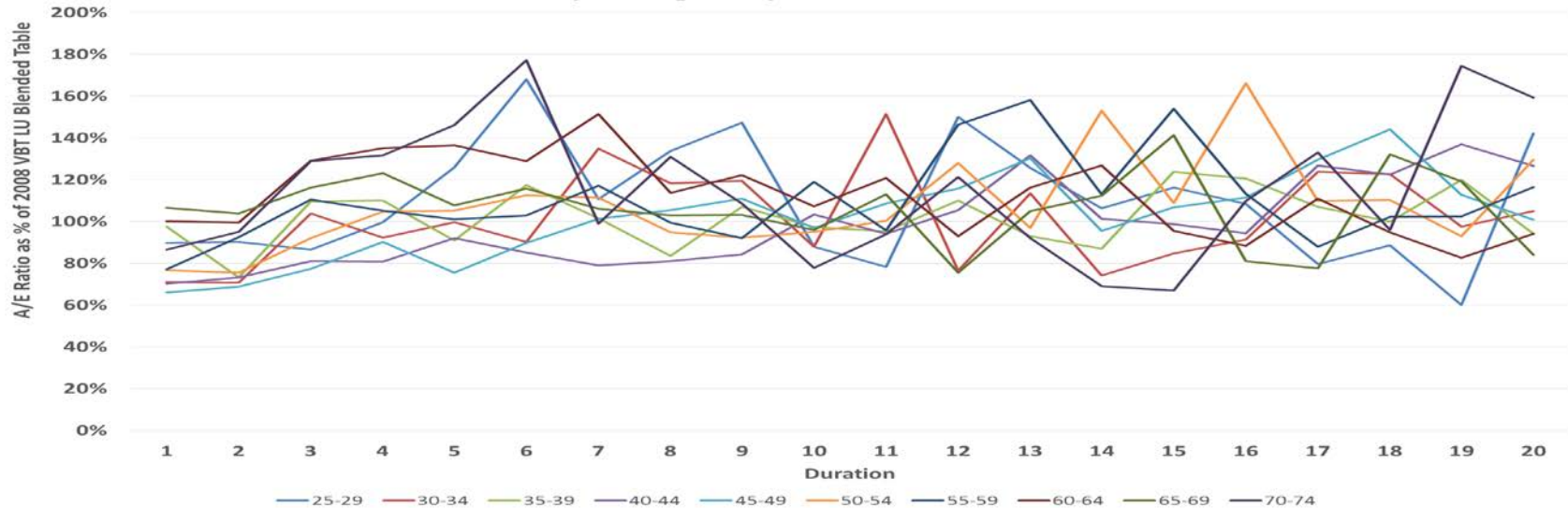
A/Es on blended basis results in shortened select period results and consistency across duration, gender and risk class

A/E Ratios by Duration
 E = 50% 2008 VBT LU S&U + 50% 2008 VBT Ultimate



A/Es on blended basis results in consistency across age and gender

SI NS+SM Mortality Ratios
to 40/60 Sel/Ult Blend of 2008 VBT LU
by Issue Age Group and Duration



Coverage Level of 40% S&U/60% U SOA 2008

VBT LU Table

- For all SI smoker distinct business, mortality ratios to achieve targeted coverage levels varied by smoker class

Coverage percent of Contributing Companies	Percentage of 2008 VBT LU 40/60 Blended Table to Meet Targeted Coverage Level	Exposure Covered by Amount
60%	4.7%	86.1%
70%	20.6%	95.6%
80%	36.6%	98.4%

A single table or approach is difficult for SI products



- Mortality outcome for any underwriting regime is a factor of many selection levers
- All levers need to be considered
- For these reasons, two seemingly similar programs will not necessarily result in a similar mortality outcome
- Key determinants to mortality outcome include:
 - ▣ Application structure
 - ▣ Target market
 - ▣ Distribution method
 - ▣ Individual selection criteria
 - ▣ Claims adjudication policies
 - ▣ Program management

Significant Changes in SI Since 2009

- There have been significant changes in simplified issue pricing and underwriting processes since the 2005-2009 data was collected:
 - ▣ Prices (and mortality) are lower due to increased use of Rx checks, MVR*, MIB**, credit/financial information and underwriting algorithms
 - ▣ More business issued on a smoker/nonsmoker distinct basis
 - ▣ Significant increase in issued face amounts

*Motor Vehicle Report

**Medical Information Bureau Report



An SI table may not make sense to cover the varied SI market

- Based on underlying data, table can not account for the differences in the market across the various levers
 - Could be applicable to SI uni-smoke policies with amounts too small to justify collection of Rx, MVR, MIB, etc.

A single SI table may not make sense to cover the varied SI market, cont'd

- Need a clear definition of what SI is and is not
- Definition of SI becoming more difficult with the emergence of new instantly available data sources and automation
 - Many of the data sources being considered to accelerate underwriting and issuance of fully underwritten business can also be applied to SI business cost effectively
- Mortality outcome depends on various levers
 - Often significant underwriting in advance via targeted marketing or solicitation of offering

Accelerated Underwriting



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What is Accelerated Underwriting (AUW)?

- **Working definition:** AUW is a process which is dynamic in that non-medical and medical information gathering may be customized to the individual applicant.
 - The information gathered on two applicants for the same product, at the same face amounts and of the same gender, age and smoking status may be different
 - The impact on the retail premium is not expected to be significantly different from impact of traditional fully underwritten processes as we know them today
 - To achieve this dual goal the approach may involve:
 1. Reliance on traditional and non-traditional sources of information
 2. The use of predictive models that quickly interpret available information
 3. Parse the applications into cases that can be rated through non-traditional methods alone and cases that have to go through traditional underwriting

What is Accelerated Underwriting (AUW)?, cont'd

- The result of AUW processes is to “right-size” the underwriting with a less invasive underwriting approach and faster time from application to issue for certain applicants with higher likelihood that collection of additional information would not change the underwriting decision

Identifying AUW

- AUW may look like an expanded simplified issue process but with mortality that aligns more closely with fully underwritten business
- AUW is often modeled using predictive modeling and complex algorithms, though not always
- May include
 - Traditional underwriting sources collected through different means such as MIB, MVR, Criminal histories, Rx data, electronic lab data and health records; and
 - Expanded application and tele-interview process
 - Non-traditional data such as clinical lab data, credit profiles, facial analytics, etc.
- In many cases, exclude fluids (blood/urine) for cases that qualify



Identifying AUW, cont'd

- AUW approaches are not homogenous and have different mortality impact expectations
 - Expected mortality differences by class typically range from small expected impact to in excess of 10%
 - Most result in shifting of mix of business between standard and preferred classes

Challenges for SI and AUW in VM



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VM-20: Net Premium Reserve (NPR)

- Need a definition of what SI business is and is not
- Currently requires use of 2017 CSO
- With no current CSO table for the SI business, guidance needed in terms of what companies should use
 - 2017 CSO Ultimate may be too conservative after some time
 - 2017 Residual Standard table may be a fit for SI smoker/non-smoker distinct business but the select period within the 2017 CSO is longer than that observed in underlying experience and this table is not available in a composite/uni-smoke form



VM-20: Deterministic Reserve

- ❑ Most SI business issued as level premium term; AUW business issued both term, UL, WL and ULSG
- ❑ Deterministic exclusion test no longer an option so must calculate a deterministic reserve for SI issues
- ❑ Prescribed method does not fully contemplate SI business or the blurring between traditional SI business, accelerated underwriting and fully underwritten

Steps in the VM-20 §9.C Process

1. Choose mortality segments
2. Determine company experience mortality rates
3. Determine industry experience mortality rates
4. Determine credibility of company experience
5. Determine prescribed margins
6. Determine prudent estimate assumptions
7. Determine mortality margins



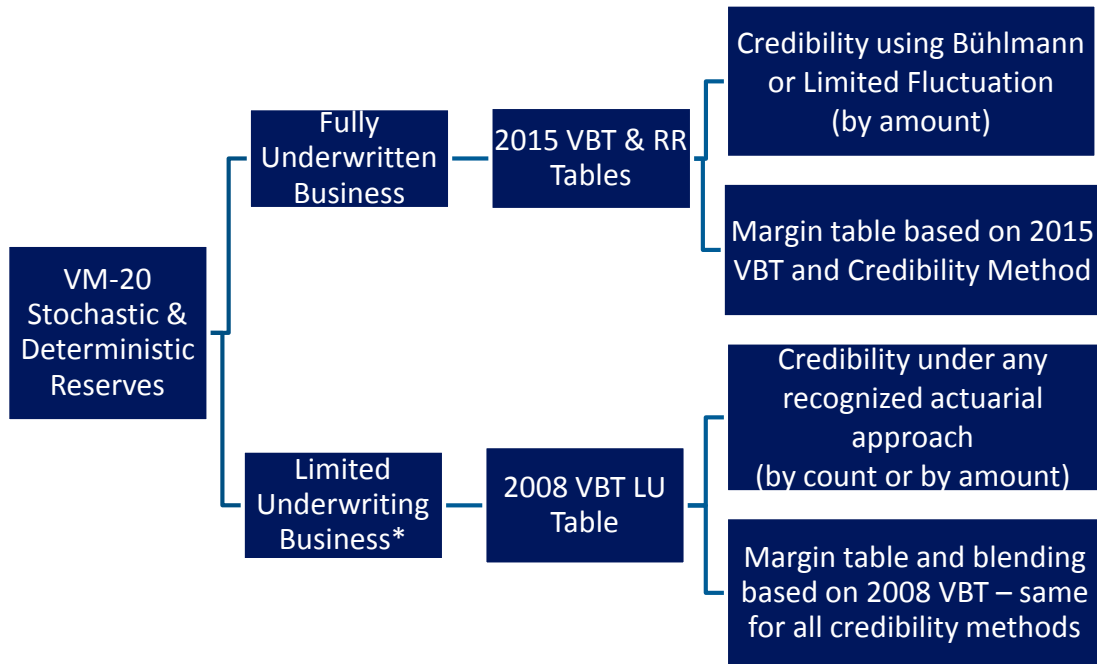
Step 1: Mortality Segment Considerations

- No definition or guidance about what “different mortality” might mean?
 - ▣ Differences in level (i.e., shift in curve) vs. differences in slope (i.e., change in curve)
 - ▣ How does AUW fall into this category?

Step 2: Own company experience

- ❑ Own company experience must be based on experience on exposure period of 3-10 years
- ❑ Allows companies to adjust the mortality experience rates for each mortality segment to reflect the expected incremental change due to the adoption of risk selection and underwriting practices different from those underlying the experience data identified above, provided that:
 - ❑ The adjustments are supported by published medical or clinical studies;
 - ❑ The rationale and support for the use of the study and for the adjustments are disclosed in the PBR Actuarial Report
- ❑ What does this mean for AUW policies?
 - ❑ Do retrospective studies to evaluate impacts for change in requirements count even though all changes/impacts may not be effectively measured?
 - ❑ Use of new data sources and analytics not always based on “published medical or clinical studies”

Step 3: Applicable Industry mortality tables under VM-20 are listed in VM-M



- There is no 2015 Limited Underwriting Table
- Directs companies to utilize RR Tool to determine industry table but tool only applies for fully underwritten business
- The 2008 VBT LU is not appropriate for AUW and likely not appropriate for certain SI business

Steps 4-6: Determining Prudent Estimate Mortality

- Need to determine sufficient data period and credibility to determine blending into industry table and level of margins
- AUW will not likely develop sufficient data (50 or more claims) for some time but use of 100% of industry table may or may not result in appropriate representation of mortality
- What will be used for determining credibility – is Bühlmann formula within VM-20 appropriate?

Additional areas within PBR where AUW needs special consideration

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- VM-51 – Mandatory experience reporting and Claims Questionnaire
 - Specified format which currently only indicates if fluids were/were not collected.
 - Instructions indicate:
 - For ordinary business only – not SI/GI/COLI/BOLI
 - Several areas where class indicators and description of underwriting but no area where a company can indicate class with or without fluids or replacement, if any, criteria or algorithmic model
 - Can split plan codes but won't know for further study how business correlates to same policy form, fully underwritten

- VM-20 §3 – Conditions for using 2017 Preferred Structure Tables



LATF Guidance Requested



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LATF Guidance Requested for SI

- Definition of SI needs to be developed
- Should charge to develop a new SI basic and valuation mortality table be modified?
 - New SI basic tables are 10-year select and ultimate, male and female, composite
 - Not applicable to smoker/nonsmoker business as there is insufficient data for smoker/nonsmoker SI tables
 - No industry table is currently a good fit for smoker distinct business

LATF Guidance Requested for SI, cont'd

- Need to consider approach to loading
 - Level of loading varies significantly by table, coverage target and target market
 - Coverage level versus percentage load
- Guidance needed for 2017 issues under PBR until such time that tables (or methodology) are developed



LATF Guidance Requested for AUW

- Current approach within VM-20, §9.C does not really fit for policies issued under an accelerated underwriting approach
- What constitutes industry table and choice of table as RR Tool not applicable

Committee Recommendation



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Committee Recommendation

- For SI Composite Mortality Table for Lower Face Amounts:
 - Finalize development and exposure of current table
 - Request industry to test against experience for current forms which may or may not have revised underwriting
 - Develop a definition for SI business that would fall under this table

Committee Recommendation, cont'd

- For the range of SM/NS distinct business issued under either a simplified manner or accelerated underwriting regime
 - Receive new LATF request to develop an approach for companies to use to set valuation mortality rates based on specific levers and expected experience
 - Develop definition for VM-20 to address when this process would or would not apply
 - Develop guidance to clarify approach and considerations for companies' determination of:
 - Applicable industry table
 - Application for mortality segment
 - Margin level

Thank you for the opportunity to provide input.

If you have any questions or would like to further discuss these topics, please contact
Amanda Darlington, life policy analyst, at darlington@actuary.org.



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