

2019 Underwriting Issues & Innovation Seminar
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**Accelerated Underwriting – Two Studies (DELPHI and SOA
Survey)**

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SOA Accelerated Underwriting Practices Survey

Underwriting Issues and Innovation Seminar



Al Klein

JULY 29, 2019



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Concluding Thoughts

Introduction

Overview

- Milliman was hired to conduct an Accelerated Underwriting survey for the SOA
- Independent surveys were sent to direct companies and reinsurers
- 28 companies with AU programs responded to the direct company survey and 5 reinsurers responded to the reinsurer survey
- The surveys had questions on practices or opinions and on PBR – I'd like to recognize Karen Rudolph as the primary driver of the PBR section, but I will not covering PBR in this presentation
- Direct company survey had 19 questions, but some questions had multiple parts
- Most answers were based on information/data between 1/1/2017 to 9/30/2018

Direct Company Practices

Accelerated Underwriting

“Any fully underwritten life insurance program that allows some applicants to forgo having a medical or paramedical exam and providing fluids, if they meet certain requirements and/or meet a certain pre-determined threshold.”

Poll – What year did your company begin its first AU program?

Before 2014

2014-2015

2016

2017

2018

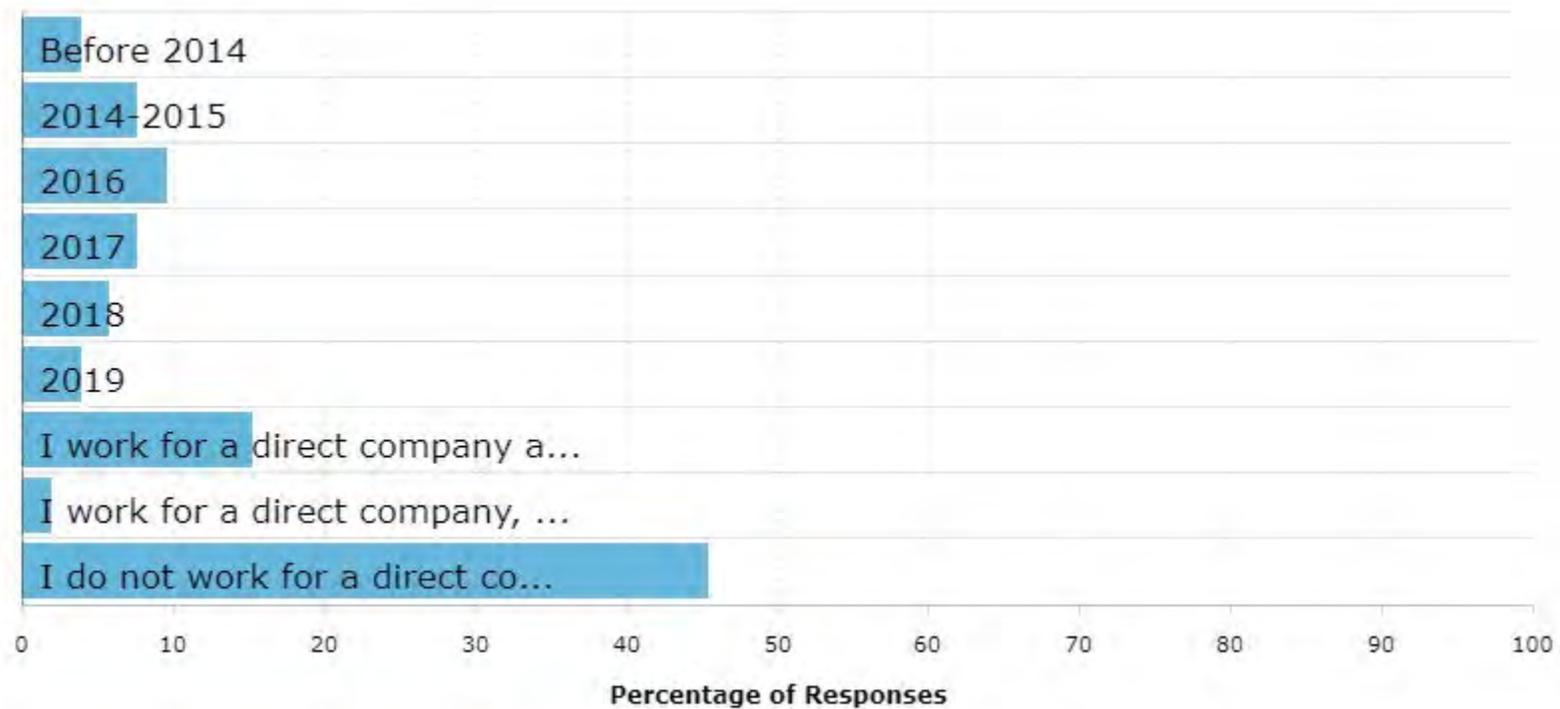
2019

I work for a direct company and we do not have an AU program

I work for a direct company, but do not know

I do not work for a direct company

Poll: What year did your company begin its first AU program?



When AU programs began

28 companies responded

YEAR PROGRAM BEGAN	NUMBER OF COMPANIES	STILL IN TEST MODE
2011	1	
2014	2	
2015	1	
2016	4	
2017	10	3
2018	10	2

Products that have AU programs

28 companies responded with between 1 (13 co.) and 6 (1 co.) products

AU PRODUCTS	
PRODUCT	NUMBER OF COMPANIES
Term	23
Equity Index Life	11
Other UL (Other than ULSG)	10
Whole Life (Par/Nonpar)	9
UL with Secondary Guarantee	8
Variable UL	6
Interest Sensitive Whole Life	1

Limitations

Age, Amount, Risk Class

AU Age and Amount Limits

Age Limits – 28 companies responded

MINIMUM AGE	
MEASURE	AGE
Low	18 (22 co.)
Average	19.7
High	50
Most common	18 (22 co.)

MAXIMUM AGE	
MEASURE	AGE
Low	39 (3 co.)
Average	55.4
High	85
Most common	60 (9 co.)

AU Age and Amount Limits

Face Amount Limits – 28 companies responded

MINIMUM FACE AMOUNT	
MEASURE	FACE AMOUNT
Low	\$0 (11 co.)
Average	\$52,500
High	\$150,000
Most common	\$100,000 (12 co.)

MAXIMUM FACE AMOUNT	
MEASURE	FACE AMOUNT
Low	\$300,000 (2 co.)
Average	826,800
High	\$2,500,000
Most common	\$1,000,000 (12 co.)

Risk Class Limitations

28 companies responded

RISK CLASS LIMITATIONS	NONSMOKER	SMOKER
<u>Available for all</u> risk classes (i.e., no restrictions)	21	18
Available for a <u>limited</u> number of risk classes	7	1
<u>Not available</u> for any risk classes	0	9

AU Eligible Applications

“Applications for life insurance where:

(1) an AU program is available,

(2) age and amount requirements for the AU program are met,

(3) an agent opts into the program either explicitly or implicitly by going through a specific process (such as a tele-interview), and

(4) an agent cannot opt-out of the program once the application has been submitted.”

Percentage of all applications that are AU eligible

27 companies responded

AU ELIGIBLE APPLICATIONS	
PERCENTAGE OF ALL APPLICATIONS	NUMBER OF COMPANIES
1%-25%	10
26%-40%	6
41%-60%	8
61%-75%	1
76%-100%	2

Algorithm

“The process that involves the use of rule sets/tools/calculations to determine who qualifies to have their underwriting requirements waived and if they are waived, what risk class they qualify for.”

Number of algorithms used in AU process

28 companies responded

AU ELIGIBLE APPLICATIONS	
NUMBER OF ALGORITHMS	NUMBER OF COMPANIES
1	14
2	13
> 2	1

Underwriting tools used in AU program algorithms

28 companies responded, but waive requirements (26) and determine risk class (24) had less respondents

TOP 10 UNDERWRITING TOOLS	WAIVE REQUIREMENTS	DETERMINE RISK CLASS
Prescription histories	24	23
MIB	24	20
MVR	22	24
Electronic application	21	20
Tele-underwriting interview	19	20
Credit data	18	9
ID authentication	11	4
Consumer data	10	5
Paper application	9	10
ID verification	9	3

Other tools: Propensity to smoke model (1/0) and write-ins Public Record (2/1), Prior underwriting decisions (1/1), Vendor model risk factors (1/1) Other insurance coverage (1/0), Previous internal applications (1/0), Proprietary matrix (0/1)

Assumptions vs. Experience

Waiver by age, Waived vs. Non-waived, Mortality, Lapse, Expenses

Waiving of underwriting requirements on AU eligible apps

28 companies responded, but 14 provided either only one age group or an entry only for all ages

% AU ELIGIBLE EXPECTED TO WAIVE			
Measure	IA ≤ 50	IA > 50	ALL AGES
Average	41.5%	41.8%	46.0%
# Responses	24	14	27
Most common	40% (3 co.)	10%, 15% & 50% (2 co.)	40% & 50% (3 co.)

% AU ELIGIBLE ACTUALLY WAIVED			
Range	IA ≤ 50	IA > 50	ALL AGES
1%-25%	7	5	9
26%-50%	11	5	8
51%-75%	5	2	6
76%-100%	2	2	4
Average	39.7%	37.9%	43.5%

- For all ages, 14 indicated actual was lower than expected, 8 indicated higher, 5 the same (+/- 1%)

Pricing Assumptions for waived vs. not waived policies

27 companies responded for best NS class, 26 for all risk classes

PRICING ASSUMPTIONS FOR POLICIES WHEN UNDERWRITING REQUIREMENTS WAIVED VS. WHEN UNDERWRITING REQUIREMENTS NOT WAIVED		
ASSUMPTION: WAIVED WAS	BEST PREFERRED NONSMOKER CLASS	ALL RISK CLASSES
> 10% Lower	0	0
1%-10% Lower	1	2
The Same	6	6
1%-10% Higher	13	13
> 10% Higher	7	4
Don't Know	0	1

How does mortality experience compare to assumptions?

24 companies responded

MORTALITY EXPERIENCE VS. ASSUMPTIONS		
EXPERIENCE WAS	WHEN REQUIREMENTS WAIVED	WHEN REQUIREMENTS NOT WAIVED
> 10% Lower	0	0
1%-10% Lower	1	1
The Same	2	7
1%-10% Higher	3	0
> 10% Higher	4	2
Don't Know	14	14

Random Holdouts

“are where a company decides to put an applicant, who has qualified to have their requirements waived, through full underwriting. This is typically done randomly, e.g., every 10th case, every 25th case, etc.”

Random Holdouts – Percentage Held Out

15 companies responded

RANDOM HOLDOUTS	
MEASURE	PERCENTATGE HELD OUT
Low	0.5%
Average	5.9%
High	11%
Most common	5% (5 co.)

Post-Issue Audits

“are when an insurance company collects additional information on the applicant after the policy has been issued, e.g., an APS, to help determine if they missed any important information when they waived the underwriting requirements for that applicant.”

Post-Issue Audits – Targeted vs. Actually Audited

10 companies responded

TARGETED	
MEASURE	PERCENTATGE TARGETED
Low	2%
Average	18.7%
High	100%
Most common	5% (2 co.)

AUDITED	
MEASURE	PERCENTAGE AUDITED
Low	0%
Average	10.4%
High	52%
Most common	None were same

Estimate of underwriting findings from random holdouts and post-issue audits

Only companies with $\geq 1,000$ AU eligible apps that provided breakdowns were used to determine the estimates (Average of 7 random holdout companies and 5 post-issue audit companies used below)

FINDINGS	POSITIVE		NEGATIVE			
	BETTER THAN EXPCT'D	AS EXPCT'D	WORSE RISK CLASS	SMOKER	SUB-STD	DECLINE
Random holdouts	8%	70%	18%	2%	2%	1%
Post-issue audits	3%	83%	10%	1%	2%	1%
Estimated Mortality	75%	100%	125%	200%	200%	600%

Resulting mortality is 109.5% for random holdouts and 108.7% for post-issue audits.

Challenges and Plans

Top 5 challenges in designing/developing your AU program

27 companies responded

CHALLENGE	RANK					Wt'd Rank
	1	2	3	4	5	
IT/Systems to implement	4	1	7	2	3	52
Creating algorithm	3	6	1	2	0	46
Design of program	3	2	3	6	1	45
Catching smoker liars	5	2	1	1	1	39
Agent buy-in	3	3	1	0	3	33
Determining mortality assumptions	2	1	3	2	1	28
Assumption setting	0	1	5	0	4	23
Management buy-in	2	2	1	0	0	21
Ensuring mortality is close to expected	2	1	1	1	0	19
Catching liars/clean-sheeters	0	1	2	4	0	18
Deciding what data to use	1	2	1	0	1	17
Internal underwriter buy-in	1	2	0	0	2	15
Emerging data sources	1	0	1	1	1	11
Deciding what vendor to use	0	0	1	2	3	10
IT/Systems to manage/monitor	0	0	0	4	2	10

Other challenges (Wt'd Rank): Other internal stakeholder buy-in (8), Internal actuarial buy-in (4), Reinsurer buy-in (4), Rescissions from post-issue audit findings (3), Random holdouts (2), Vendor buy-in (2), Post-issue audits (1), Determining lapse assumptions (0), Write-ins: Filing and approval of new app (5), Updating preferred criteria (4)

Highlights of Current/Planned Changes

As of 2018 companies indicated they were working on or planned changes to:

- Their **algorithms** (16), with 7 to be additions and 6 to be less restrictive
- **Face Amount limits** (13), with 12 being less restrictive
- Their **data sources** (9), with 8 being new additions
- **The way they collect app data** (9)
- **Random holdouts** (8), with half making them more and half making them less restrictive
- **Issue age limits** (7), with 6 being less restrictive
- **Risk classes that can qualify for waiver** (6), with 5 being added and all 6 being less restrictive
- **Instant decisions** (5), with all being new additions
- **Products** (5), with all 5 being new additions
- **Vendor score(s)** (5), with 4 being less restrictive

Reinsurer Opinions

Introduction

Overview

- 5 reinsurers responded to the reinsurer survey, but some did not answer all of the questions
- On some of the ranking questions, a couple of reinsurers decided to use more votes than we gave them

Range of Expected Mortality when Requirements Waived

5 reinsurers responded

RELATIVE TO FULLY UW MORTALITY LEVELS IN 2018 (AND EXCLUDING MORTALITY IMPROVEMENT), WHERE WILL MORTALITY BE IN 2023?	LOW MORTALITY CLIENT	HIGH MORTALITY CLIENT
More than 50% lower	0	0
More than 20% up to 50% lower	0	0
More than 10% up to 20% lower	0	0
1-10% lower	2	0
Within 1% in either direction	0	0
1-10% higher	3	1
More than 10% up to 20% higher	0	2
More than 20% up to 50% higher	0	2
More than 50% higher	0	0

Range of Expected Mortality when Requirements Not Waived

5 reinsurers responded

RELATIVE TO FULLY UW MORTALITY LEVELS IN 2018 (AND EXCLUDING MORTALITY IMPROVEMENT), WHERE WILL MORTALITY BE IN 2023?	LOW MORTALITY CLIENT	HIGH MORTALITY CLIENT
More than 50% lower	0	0
More than 20% up to 50% lower	0	0
More than 10% up to 20% lower	1	0
1-10% lower	2	0
Within 1% in either direction	1	1
1-10% higher	1	3
More than 10% up to 20% higher	0	0
More than 20% up to 50% higher	0	1
More than 50% higher	0	0

Top 5 AU components that have an impact on mortality

4 reinsurers responded, 1 reinsurer provide two votes for rank 2

AU COMPONENT	RANK					Wt'd Rank
	1	2	3	4	5	
Application data	1	2	0	1	0	15
FCRA approved data	1	0	2	0	0	11
Random holdout program	0	1	1	1	0	9
Qualification percentage goal	1	0	1	0	0	8
Algorithm used	1	0	0	0	2	7
Post-issue audits	0	1	0	1	1	7
Other (write-in) Pool of applicants	0	1	0	0	0	4
Non-FCRA approved data	0	0	0	1	0	2
Training completed	0	0	0	0	1	1

Note: One reinsurer added a comment that “the importance of these items will vary by client and program.”

Top 6 Items/Tools for success in AU programs

5 reinsurers responded, 1 reinsurer provided two votes for ranks 3 & 6 and another provided two rank 6 votes

ITEM / TOOL	RANK						Wt'd Rank
	1	2	3	4	5	6	
Prescription histories	3	1	1	0	0	0	27
Credit data	0	1	1	2	0	0	15
MIB	1	0	1	0	2	0	14
Electronic Health Records	1	1	0	0	1	0	13
Random holdouts	0	1	1	0	0	2	11
MVR	0	0	1	2	0	0	10
Predictive algorithm(s)	0	1	0	0	1	1	8
Post-issue underwriting	0	1	0	0	0	1	6
Financial data	0	0	1	0	0	0	4
Demographic data	0	0	0	1	0	0	3

Advice on design, implementation, or overall success of AU programs

4 reinsurers responded

ADVICE

Start conservative and expand gradually as you learn.

Be open to new data, but cognizant of how it is currently viewed by regulators, and how it might change in the future.

Be clear on program objectives.

Communicate and train as you develop the program.

Have strong focus on change management and training of staff.

Do back-testing so you have benchmarks to compare to emerging results.

Experience monitoring is critical so you can learn quickly and adjust as issues emerge. Don't wait.

It is essential to have a random holdout process and post-issue audits so data can be collected and analyzed for comparison to your initial pricing assumptions (credible experience studies are a few years out).

Track misrepresentation rates (smoking, BMI, personal/family history), misclassification, and severity of declines that would have been accepted standard or better.

Monitor early duration lapse and preferred class prevalences compared to fully underwritten.

Engage your reinsurance partners for help in setting up your AU program and monitoring process.

Concluding thoughts – Part 1

- AU programs are still relatively new
- They will continue to evolve as:
 - Agents and applicants provide feedback
 - Companies better understand the programs
 - Companies decide how to better position themselves
 - New tools become available
 - Regulatory positions are taken
- I think AU programs provide a more positive customer experience, but companies need to be aware of the extra costs so they maintain their profitability
- I also think that 10 years from now, these programs won't look like they are today

Concluding thoughts – Part 2

- I would like to thank:
 - The SOA for allowing us to do this survey
 - The participating companies for taking the time to complete the survey and for their willingness to share early results and feedback
 - The POG for their insightful help in designing the survey and feedback on the report
- The report and complete survey results will be posted on the SOA website when done (sometime this year)
- Please contact me with any feedback or questions



Thank you

Al Klein

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Questions?



Bio – Al Klein

- Principal and Consulting Actuary, Milliman, Buffalo Grove (Chicago), IL, since 2009
- Responsible for industry experience studies at Milliman, mortality/longevity/life underwriting consulting, helping InsurTech companies enter the life insurance marketplace
- Frequent national and international speaker on many topics
- SOA activities: Chair of Underwriting Issues and Innovation Seminar planning committee, Chair of Accelerated Underwriting Practices and Mortality Improvement surveys, Chair of POG for Economic Costs of Opioid Epidemic paper, Member of Mortality and Longevity Steering Committee, Consistent Framework for Mortality Improvement Assumptions Team, Actuaries Longevity Illustrator Team, WILL (Workable Innovations for Living Longer) Contest Team, Mortality and Underwriting Survey Committee, 2015 Valuation Basic Table team
- Other activities: Co-Vice Chair of the International Actuarial Association Mortality Working Group, Chair of MWG Research Projects Team, Drivers of Future Mortality and Underwriting Around the World research projects, Member of Longer Life Foundation Advisory Board
- Awards: One of 2017 SOA Volunteers of the Year, Best paper for 2018 SOA Product Development Section contest on creative presentation of future technologies, SOA Outstanding Presentation awards in 2016 and 2018
- Bachelor of Science degree in Actuarial Science and Finance, University of Illinois, Champaign/Urbana
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Accelerated Underwriting – The Delphi Study

LAUREN CROSS, FSA, MAAA

Underwriting Issues & Innovation Seminar

July 29, 2019

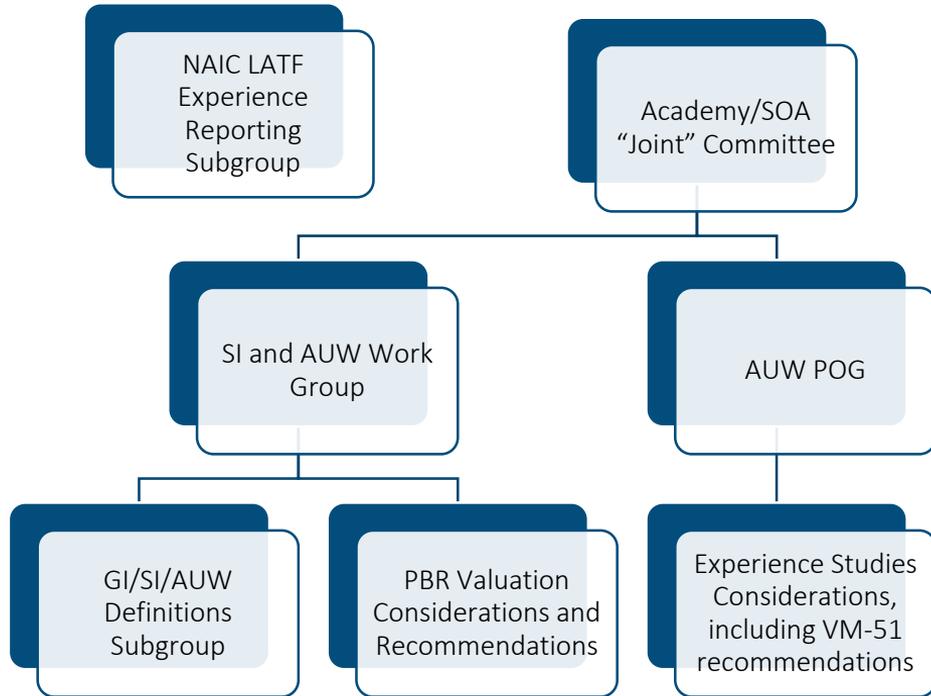


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Joint Committee SI and AUW Structure



GI/SI/AUW Subgroup

- Define underwriting type definitions

PBR Valuation Considerations and Recommendations

- Identify issues when applying VM-20 to policies issued using an accelerated underwriting program

VM-20 Reserving Subgroup Goals and Focus

- Primary Goals
 - Identify current valuation practice for underwriting types
 - Identify areas where additional guidance within VM-20 is needed
 - Out of scope: appropriateness of underwriting techniques
- Focus on Mortality in Modeled Reserves
 - Deterministic (DR) and Stochastic (SR) rather than Net Premium Reserve (NPR)
- Durability
 - Relevance to future innovation

Two different tools came out of the subgroup:

1. Accelerated Underwriting (AUW) Question and Commentary
 - 2017 exposure that clarifies and provides reference to pertinent sections within VM-20 to calculate PBR modeled reserves under an AUW program
 - https://www.naic.org/documents/cmte_a_latf_exposure_academy_auw_questions_commentary.docx
2. Research Study: Delphi Technique*
 - Draw conclusions regarding:
 - Emerging underwriting practices
 - Impact on observed mortality under emerging practices
 - Purpose is to provide practitioners and regulators with a framework that:
 - Clarifies how to categorize different underwriting practices
 - Benchmarks adjustments to base mortality tables for different practices
 - Sets expectations for future changes and product evolutions valued under VM-20
 - <https://www.soa.org/globalassets/assets/files/resources/research-report/2018/2018-delphi-study.pdf>

* The Delphi technique uses a structured communication technique involving surveying experts in the topic, sharing anonymous survey results with those experts, and allowing revisions and refinements to responses to obtain greater convergence or divergence of views among the participants.

Introduction to the SOA Delphi Study

- Need for clarity in VM-20: Setting mortality assumptions for modeled reserves – DR and SR
- Prudent estimate mortality assumptions are set for each mortality segment
 - Based on company experience data and credibility
- Delphi Study: Survey early and often



Study Results – Definitions and Methods

- Key terms used throughout the study:
 - Traditional Underwriting
 - Accelerated Underwriting (AUW)
 - Simplified Issue / Simplified Underwriting
- Critical to distinguish “Accelerated” from “Simplified”
 - Expected mortality and premium differences
 - Acceptance rate and class differences
- Definitions of new underwriting techniques and tools
 - Triage, Predictive Analytics, Rules Engines, and others



Study Results – Effectiveness of Methods & Data

- Data limitations are a controlling factor powerful techniques
- Relative efficiency of several current methods and tools: Rx rules, retrospective studies, APS, facial recognition, etc.
- Benefits of mixed models: Traditional + New Methods
- Treatment of mixed models under VM-20



Study Results – Frequency of Acceleration

- Factors that impact the amount of applications that are accelerated: Age, Face, Distribution, Knock-Outs, EMR
- Upper and Lower Bounds for Acceleration:

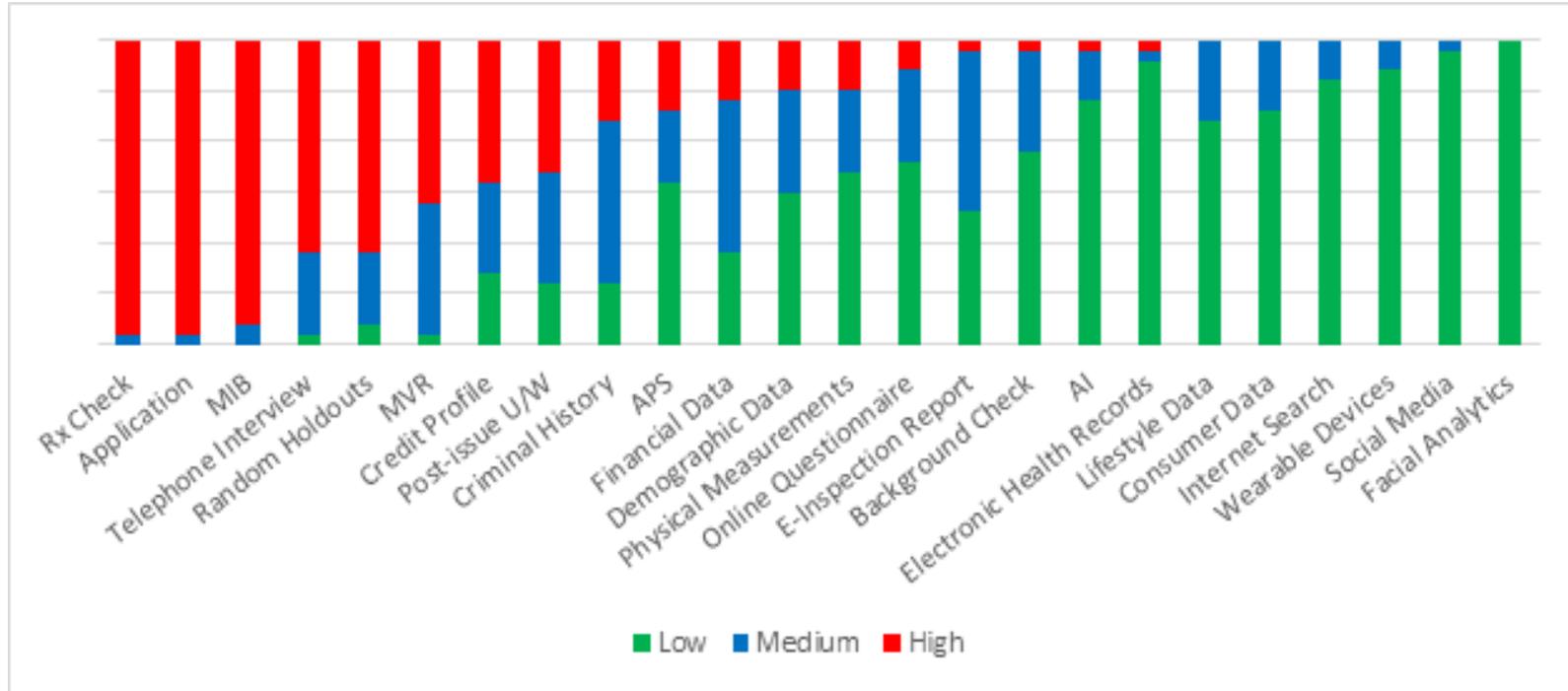
Study Results	Current	In 10 Years
Upper Bound – MIN/MAX/AVG	25% / 90% / 49%	45% / 100% / 84%
Lower Bound – MIN/MAX/AVG	0% / 40% / 15%	5% / 80% / 41%

- Traditional Underwriting can be more effective in certain situations



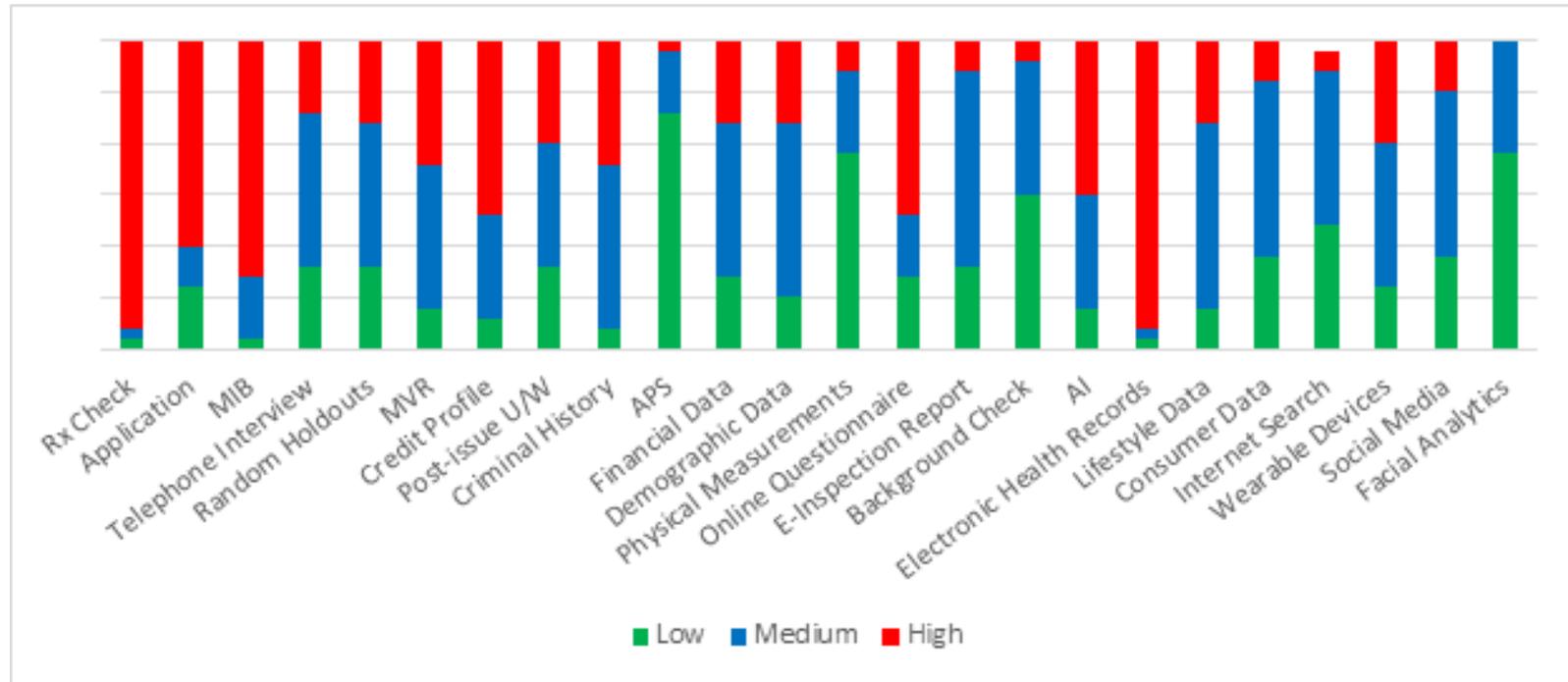
Study Results – Ranking of Data Elements

Currently...



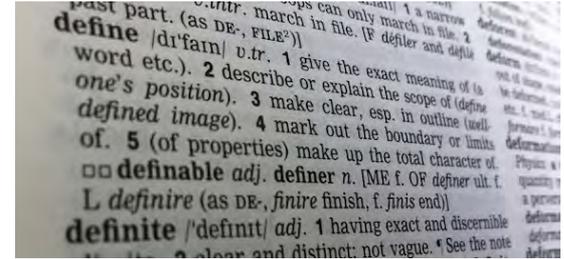
Study Results – Ranking of Data Elements

In 10 Years...



Study Results – Program Definitions

- Characteristics of ideal accelerated underwriting programs
 - Data Use: Multiple sources, stress on accuracy
 - Structure: Matched class offerings, adaptable/changeable
 - Validation: Feedback loop exists; hold-outs, post-issue checks
- Accelerated underwriting programs under VM-20
 - Adaptable/Changeable programs vs. mortality segments



Study Results – Considerations for Expected Mortality

- Quality of data sources
 - How much protective value?
 - How reliable was your old data?
 - Sometimes it's alternative data sources that enable a program to get back to a traditionally underwritten level
 - All study participants agree the data quality should continue to improve with time



Study Results – Considerations for Expected Mortality (cont.)

- Risk Exposures
 - Broadly categorized as process-related vs. health related
 - Both categories can have an impact on mortality
 - Misclassification by model
 - Misrepresentation
 - Anti-selection vs. competing companies
- Mortality Risk Indicators that may be more difficult to capture
 - Impairments that applicants may be more reluctant to self-disclose
 - Undiagnosed medical impairments

Study Results – Considerations for Expected Mortality (cont.)

- Distribution of UW classes
 - Absent some of your traditional preferred criteria, are the same applicants getting the same risk classification?
 - If primarily your best risks are being accelerated, what is the impact on the expectation for the remaining cases being sent to traditional underwriting?
- Impact on slope and grade off of selection
 - Less robust programs could see a shorter select period and/or a flatter slope of the mortality curve
- Sentinel effect
 - Risk of anti-selection if the applicant knows fluid testing may be bypassed
 - Can't allow a "choice" of, or pre-qualification for, underwriting path – instead utilize a triage model and/or risk mitigates such as random holdouts or post-issue auditing

Study Results – Considerations for Expected Mortality (cont.)

- How to measure performance – early indicators:
 - Results of random holdouts or post-issue APS
 - Looking at your other expectations for the program: placement rates, demographics and risk classes, analysis of submissions at agent level, straight through percentage
 - Early lapses and mortality
- Other variables:
 - New customers? Distribution channel impact? Automation? Exceptions?

Study Results – Considerations for Expected Mortality (cont.)

- So what might the outcome of your AUW program be relative to traditionally underwritten business?
 - Compelling arguments made for mortality to possibly improve as well as to deteriorate
 - Trade-off between acceleration rate (or “straight through” rate) and mortality slippage?
 - Current state AUW models: On average, study participants expect mortality on accelerated business to increase by 4%
 - Min = -5%, Max = 25%

Study Results – AUW vs. Industry Tables

Industry tables are built from a broad base of historical experience – is there one that is applicable for AUW?

- It will take years to accumulate credible experience specific to AUW
- Many company programs are targeting replication of historical underwriting outcomes
- Industry table never an exact match to individual company experience anyhow
- Consider if adjustments may be appropriate, consistent with the material factors influencing your best estimate expectations of mortality

Study Results – PBR Approach and Beyond

- Questions: How to set best estimate and PBR mortality assumptions for business subject to accelerated UW
 - Best Estimate: Start with, mix with, or calibrate to traditional underwriting
 - PBR Assumption for Modeled Reserves: No single approach
 - Adjust for acceleration as for any new method
- Beyond the Study: APF 2018-17 provided clarification on aggregation of mortality segments
 - Adopted by LATF in November 2018 for the 2020 Manual

Questions?

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