

The Product Development Section Presents

# Accelerated Underwriting Program Development Seminar

May 22, 2019 | Tampa Marriott Water Street | Tampa, FL

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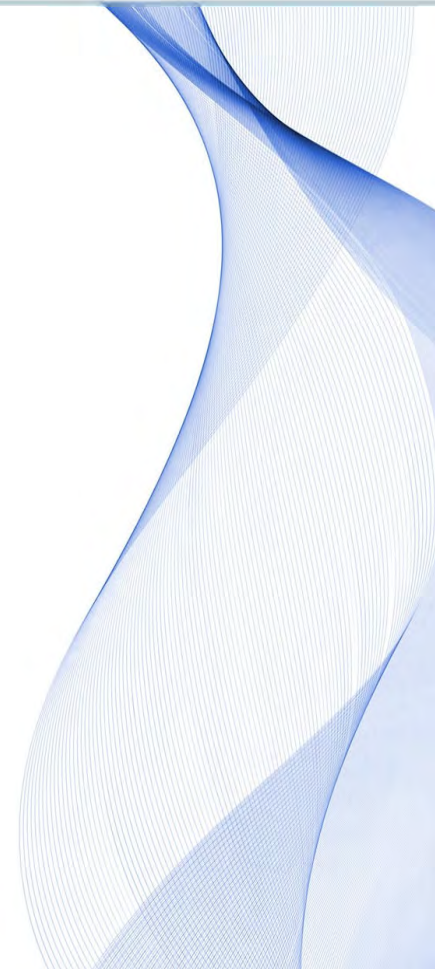
Ron Schaber, FALU, FLMI, ACS, AIAA, HIA

Lisa Ann Seeman, FSA, MAAA

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# Accelerated Underwriting Market Overview

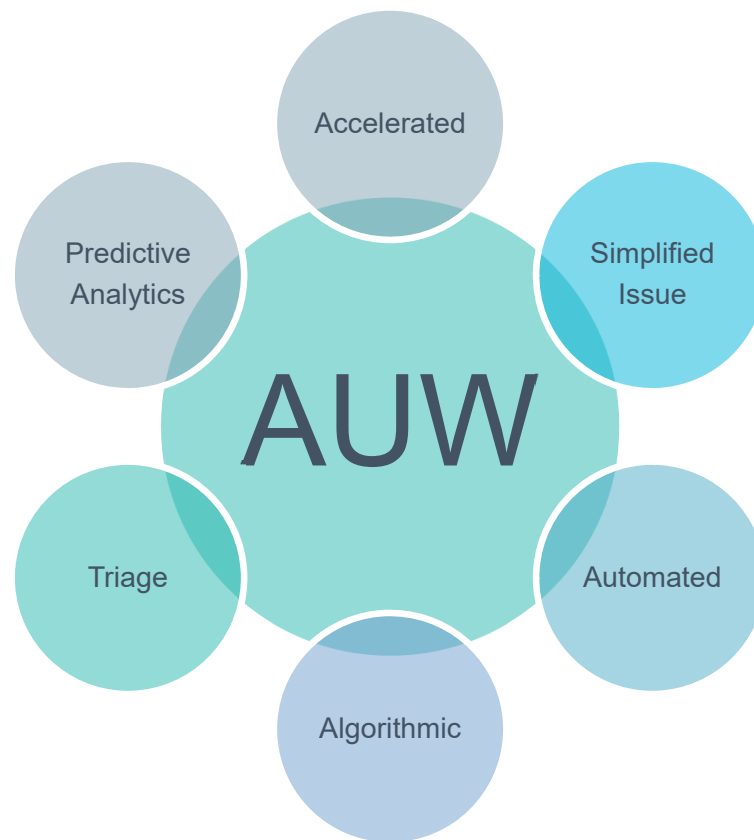
Lisa A. Seeman, FSA, MAAA,  
2<sup>nd</sup> VP and Actuary



# Today's Agenda

1. Background on Accelerated Underwriting
2. Market History
3. Illustrative Program
4. Age and Amount Limits
5. Experience and other Survey Results

# Background on Accelerated Underwriting

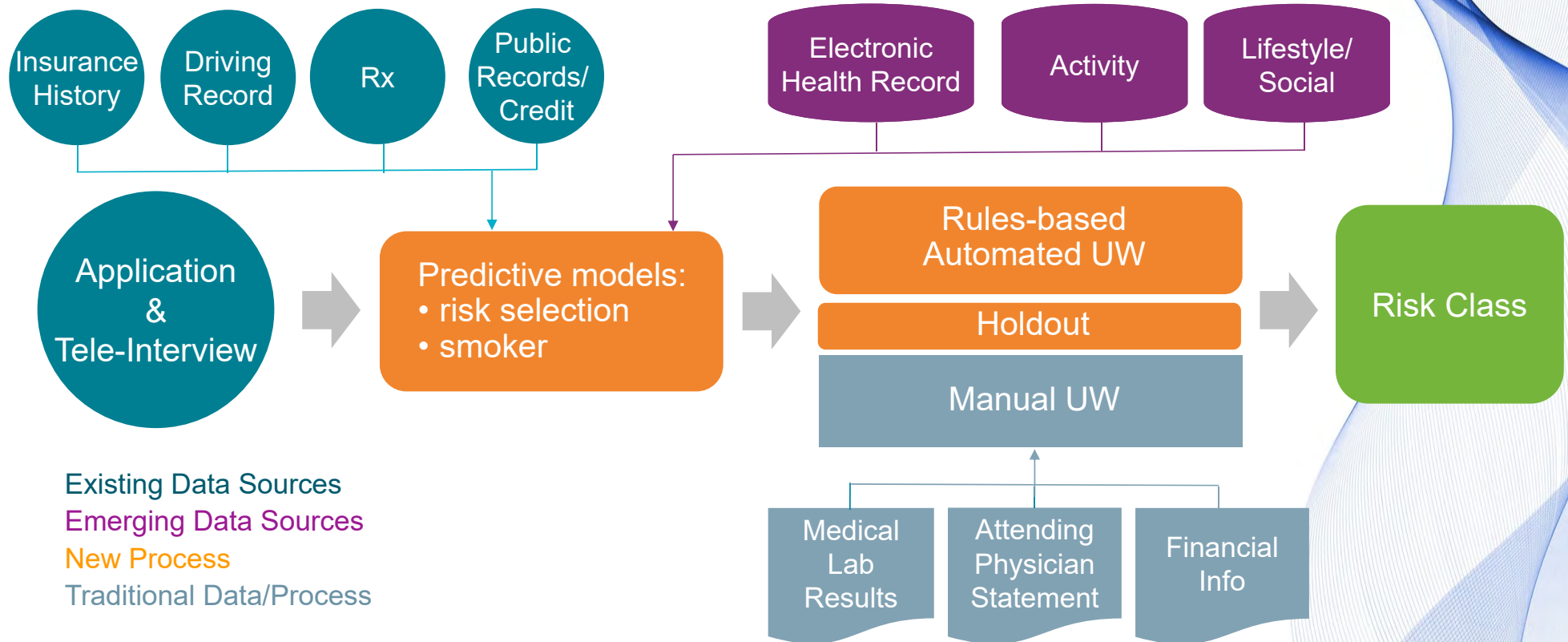


# Market History

Industry-wide	2010	2014	Today
Programs	Few – mostly simplified issue (SI)	Handful – mix of SI & accelerated	Many – varying designs and target markets
Underwriting tools	MIB, MVR, Rx	+ First generation predictive models, interviews, reflexive questions	+ More sophisticated predictive models, public records and credit-based tools
Rules engines	Some	Half	Most
NS risk classes	One	Two or more	Similar to FUW
Pricing	Table 4-8	10-15% loads	FUW premiums
Face amounts	Up to \$100K	\$250K	\$1M+

*“Underwriting has always been an evolving discipline” -SOA Delphi Study, 2018*

# Illustrative Program



# Age and amount limits



- AUW age and face amount limits are based on results from the 2018 Munich Re AUW Survey
- 18-60 is the median issue age range
- \$100k-\$1m is the median face range
- Companies are continually evaluating and expanding their maximum age and face amount limits

Represents median range

# Experience and other survey results

- There is lack of credible experience in accelerated underwriting programs to date.
- In the meantime, it's important to start tracking AUW experience separately from fully underwritten (FUW). From the Munich Re AUW survey results, we found:
  - 85% are monitoring AUW mortality separately from FUW.
  - 55% are monitoring AUW lapse separately from FUW.
- Implementing pre and post-issue monitoring processes can serve as leading indicators. From the survey results, we found:
  - 70% of responding companies are performing random holdouts.
  - Similarly, around 70% are performing post-issue underwriting.
    - APS is the most commonly used, followed by MIB Plan F and Rx recheck.



# Accelerated Underwriting Program Development Seminar

Catie Muccigrosso FALU, FLMI, ARA, ACS  
VP, Underwriting  
May 22, 2019



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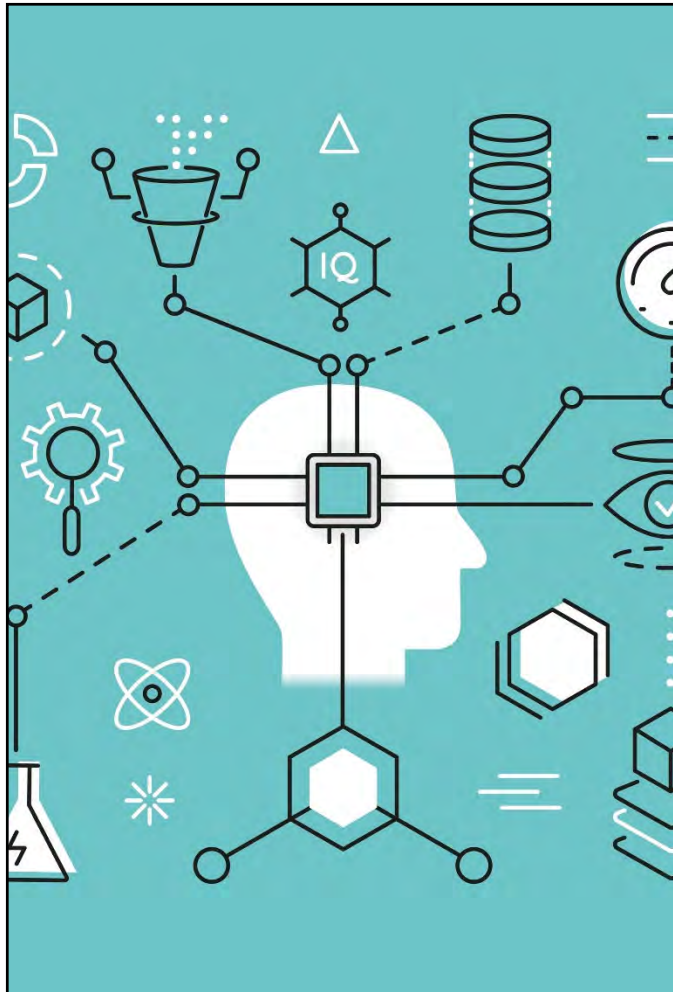
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- -**Do not** discuss what you or other entities plan to do in a particular geographic or product markets or with particular customers.
- -**Do not** speak on behalf of the SOA or any of its committees unless specifically authorized to do so.
- -**Do** leave a meeting where any anticompetitive pricing or market allocation discussion occurs.
- -**Do** alert SOA staff and/or legal counsel to any concerning discussions
- -**Do** consult with legal counsel before raising any matter or making a statement that may involve competitively sensitive information.

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# A Changing Paradigm

# Traditional Life Insurance Process

- Agent-driven
- Fixed underwriting process based on age/amount requirements
- Traditional requirements: exam, labs, EKGs, APSs
- Slow process, could take weeks or even months



# The Future

- Better customer engagement
- Reduced cycle time
- Improved consistency
- Increased automation
- Non-traditional underwriting



# A Different Perspective

- Some agent-driven
- Some direct-to-consumer
- Speed to issue
- Electronic and mobile
- Alternative data sources



# Current State

- Blend of accelerated underwriting and fully underwritten
- Blend of automated vs. manual underwriting
- Blend of traditional and alternative requirements







# Trickle Down Effects

# Effects on Workflow

- Is automated underwriting a component of the accelerated underwriting process?
- If it is, what are the rules and what types of cases are being kicked out?
- Can the underwriter explain the decision to the field?
- Can exceptions be made?

# Effects on Workflow

- How do automated rules fit into the workbench?
- Are there system changes needed to accommodate accelerated underwriting?
- What are the effects on issuing the policy?
- What are the effects on post-issue policy changes such as reinstatements and replacements?

# Effects on the Application: Part 2 vs. the Tele-Interview

- Will a tele-interview with drill-downs be mandatory for accelerated underwriting?
- Who will be conducting the tele-interview?
- Will there be automated rules to the tele-interview?
- If there is an option to do a paper or e-app version of Part 2, are the questions the same as a tele-interview?

# State Filing

- To handle accelerated underwriting, will there be changes to both Part 2 and tele-interview? This will require re-filing with the state, which requires additional time.
- How will behavioral economics play into medical questions?
  - Who is the target market?
  - Will this be agent-driven or direct-to-consumer?
  - How do I maximize disclosure in the absence of traditional exams and labs?
  - Will state regulations dictate how much behavioral economics can be used?

# Effects on Underwriting Rules

- Preferred criteria will have to be changed to accommodate lack of fluids
- Consideration of any stretch criteria
- Debits allowed as standard
- MIB rules/IAI rules
- Rx rules
- Underwriting rules-exclusion list



# Effects on Underwriting

- Is there a component of underwriter override?
- Are there any manual processes involved in accelerated underwriting?
- Where does the underwriter fit into this process?
- Does the underwriter need to review any of the requirements?
- If so, training on rules needs to occur.





# Training Needs



# Training for Underwriters

- Underwriters need to move away from traditional underwriting principals
- Underwriters need to understand the new requirements and how they predict mortality
- Underwriters need to understand data analytics
- Underwriters need to explain their decisions to the field



# Training for Underwriters

- Underwriters need to learn to design automated rules differently than fully underwritten rules.
- Underwriters need to be familiar with these rules so they can explain kick-outs or make decisions to keep cases in accelerated.
- Underwriters need to understand their role in the workflow process.



# Training for Agents

- Communication and marketing materials for the agents
- Communication and marketing materials for the applicants
- Minimize misrepresentation
- Minimize ability to 'game' the system





# Key Takeaways

# Key Takeaways

- The world is changing and life insurance industry needs to stay relevant.
- The client and modern technology are dictating the market.
- The insurance industry needs to be responsive and utilize the advancements that are available.



# Key Takeaways

- Mortality still needs to be preserved so care must be taken to create programs that maintain fully underwritten mortality.
- Underwriters and agents need to be onboard with the accelerated program in order to be successful.
- Underwriters and agents need to understand these programs fully.

# Key Takeaways

- Accelerated underwriting programs must be designed holistically from the beginning.
- By thinking through all of the downstream effects initially, transition to the program will be smoother and gaps can be handled upfront.





# Questions



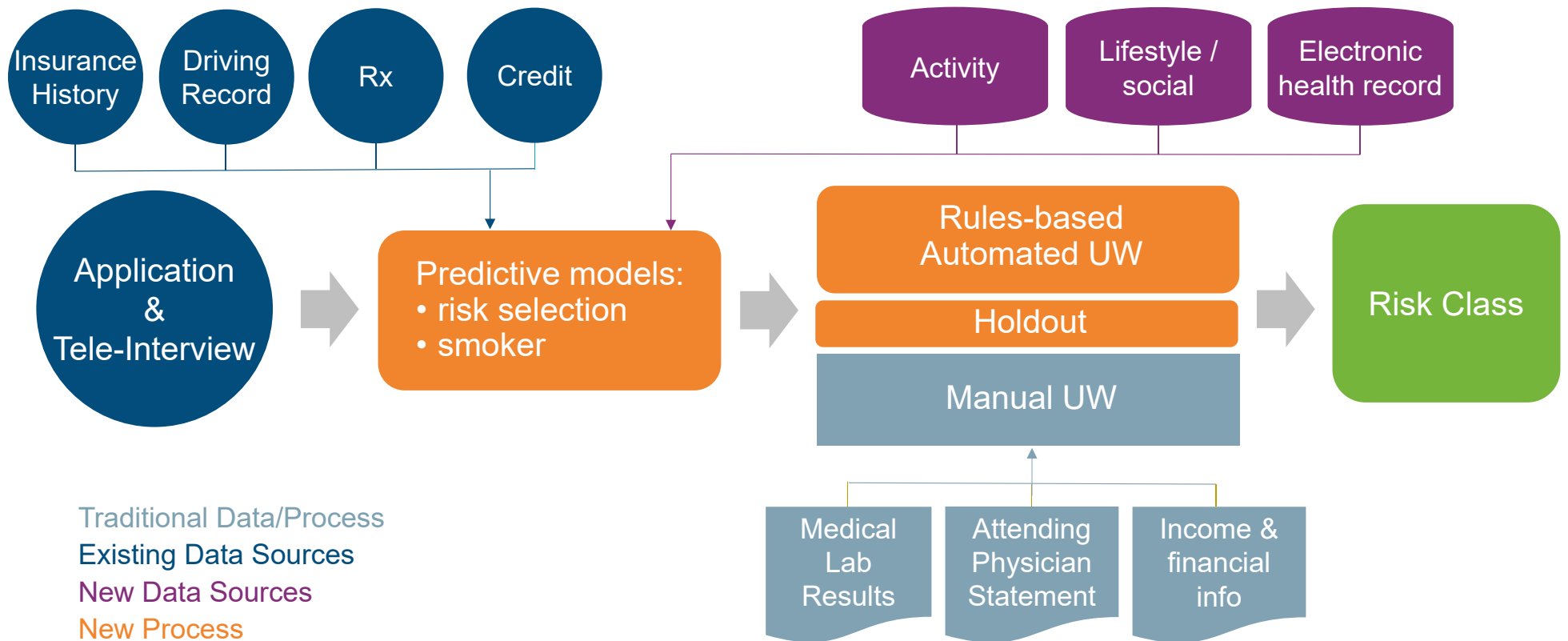


# Accelerated Underwriting Program Development Seminar

Niall Maguire  
Hareem Naveed  
Tools in Accelerated UW Process  
22 May 2019



# Incorporating new data and tools into underwriting



# Health records (Attending Physician Statement)

1) The APS provides useful information for modelling declines

EMSI Examiner Work Order  
 LOS ANGELES-WILSHIRE  
 Ticket# 17792610 Phone# 1 818 414 0093  
 Received 8/14/2015 10:42:18 (Fax) 1318 300-6722  
 Appointment Scheduled for: Examiner # 31984 CL CELIA  
 Fax #  
 SCOTT E Special Instructions  
 Branch Exam  
 PRESE-08/14/2015 16  
 Grouped with  
 Insurance Company  
 Agent: STEWART, M Cost: 011769  
 Lab Code  
 Procedures  
 Fax Copies 0  
 Paperwork Distribution  
 31 MADISON AVENUE  
 NEW YORK, NY 10017

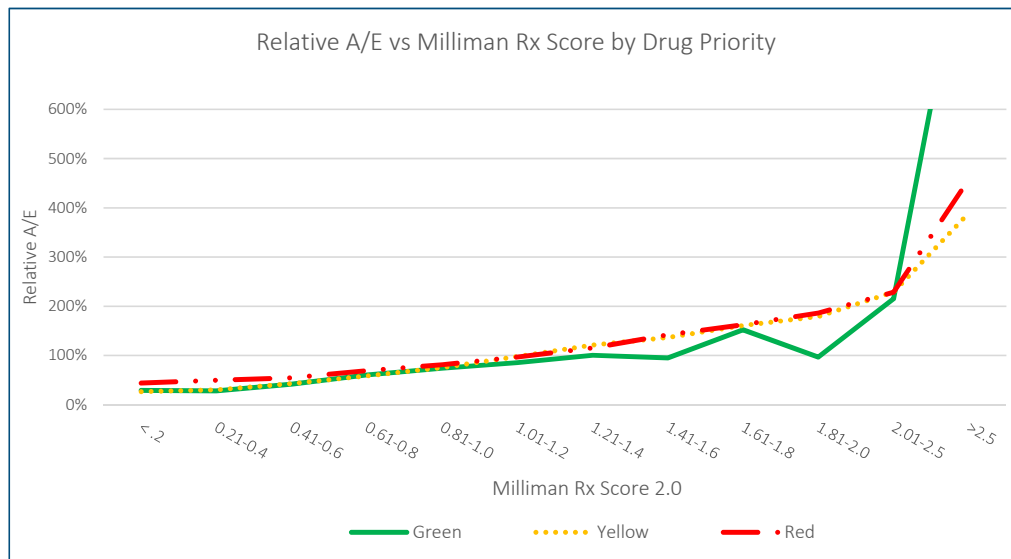
2) Regression and machine learning techniques, including **random forest**, **gradient boosting** and **support vector machines** are applied to predict the probability of decline



3) Besides decline probability, the model provides keywords driving prediction along with the page where found in the APS

- axillary: 12, 28, 30
- prostate: 12, 56, 57
- svc: 33
- ancillary: 39, 40, 41, 43
- prostatic: 57, 61
- influenza: 62, 63, 66
- jaundice: 59
- excised: 59, 61, 62
- jaundiced: 68

# Prescription history (Rx)

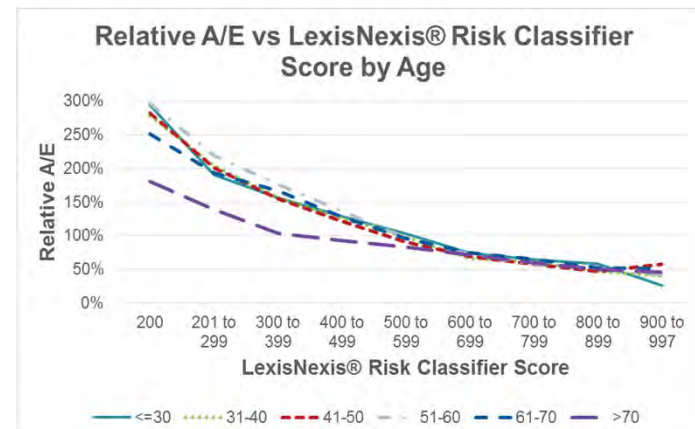
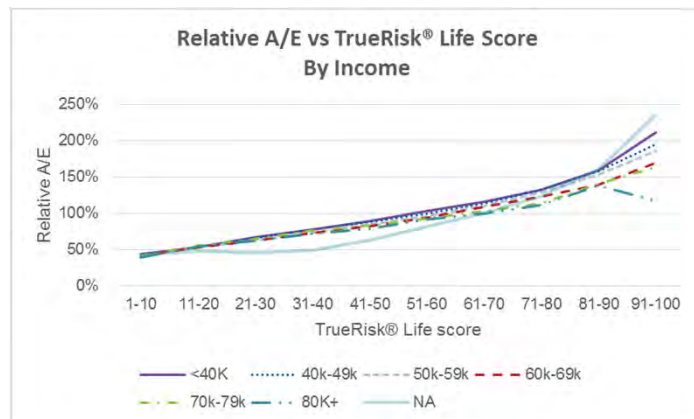


- Milliman created a proprietary Rx-based mortality score
- Milliman Rx Score effectively stratifies mortality risk across attributes
- Particularly effective at identifying high mortality risk when other medical data is sparsely available

▶ Prescription history can effectively segment mortality

# Credit and financial attributes – predict mortality

- Credit-based mortality scores are a non-medical based dimension of mortality risk
- Are not intended to mimic the same UW risk class assigned using traditional medical underwriting
- Improve the fit of mortality predictions on in addition to health-based underwriting criteria



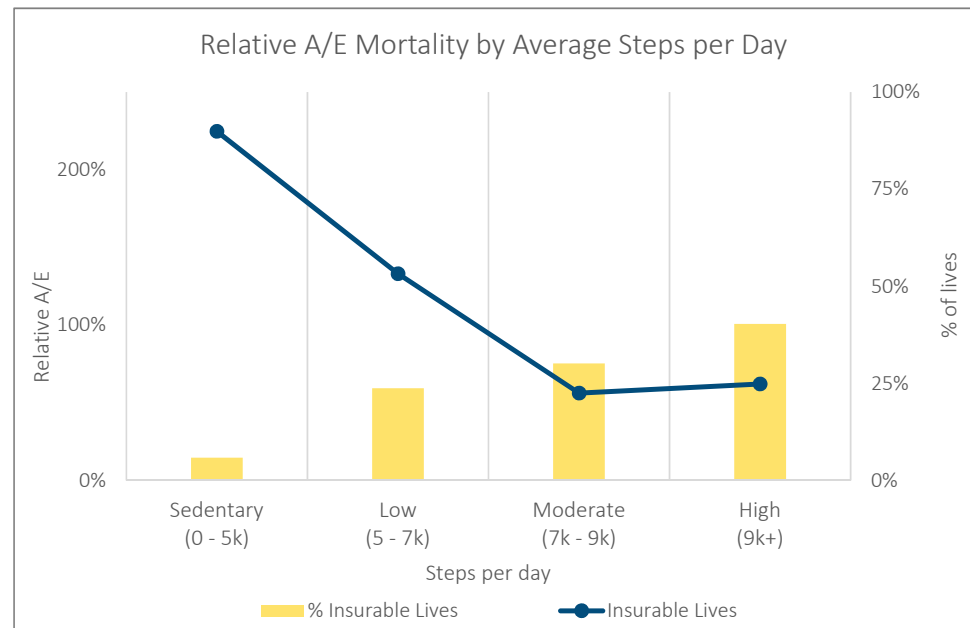
- ▶ Scores based on credit attributes effectively stratify mortality risk across age, gender, duration and wealth levels

# Physical activity and mortality

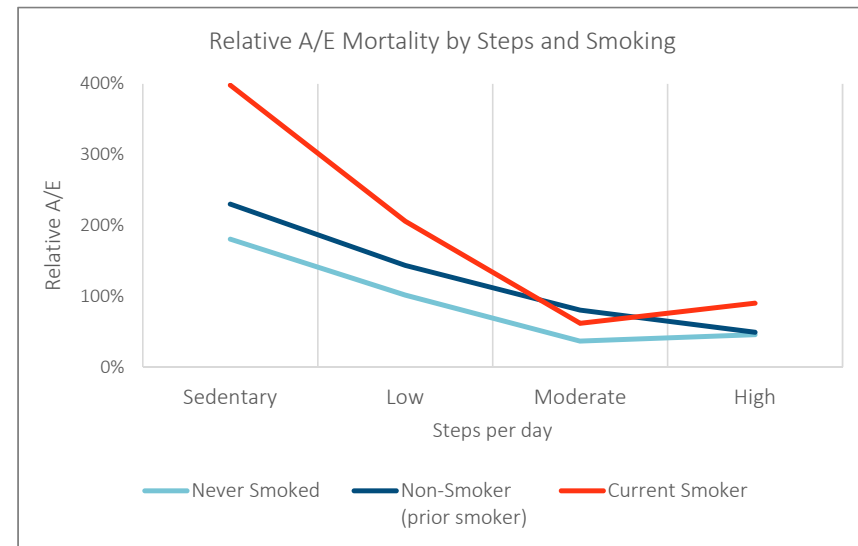
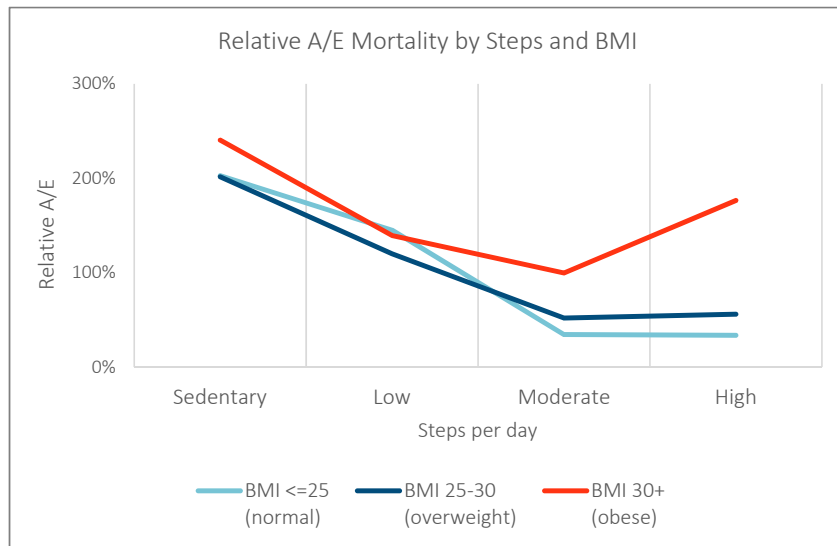
Steps per day stratifies mortality risk

Analysis of physical activity of a U.S. population-based dataset provided by Vivametrica

- Physical activity as measured by steps per day effectively stratifies mortality risk
- Steps per day is an important predictor of mortality risk
- Is effective at identifying high mortality risk for sedentary behavior
- Steps per day provides additional segmentation of mortality even after considering traditional underwriting attributes, such as smoking status, BMI, cholesterol, blood pressure and health history of diabetes, cardiovascular disease and cancer



# Physical activity and mortality



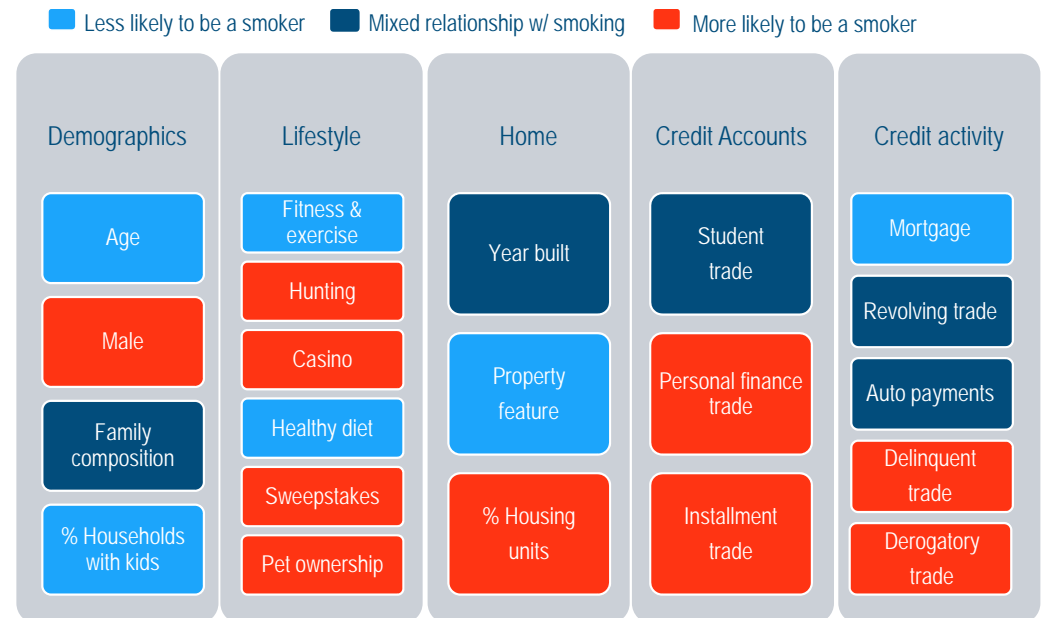
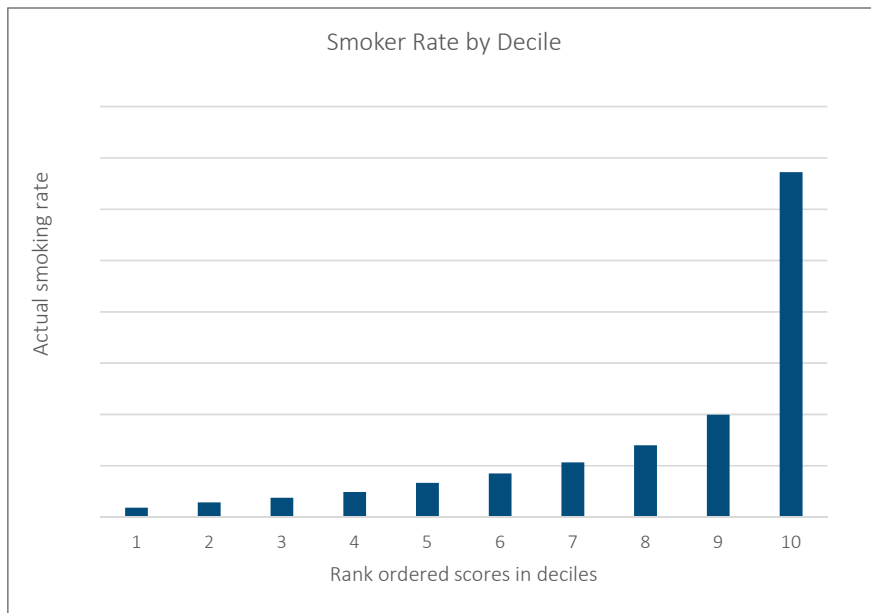
- Obesity is associated with higher relative mortality
- Steps per day segments mortality across BMI ranges

- Regardless of smoking status, relative mortality is higher for sedentary and low steps
- Non-smokers with sedentary, low steps have higher relative mortality than smokers with moderate and high steps



# Predict smokers with lifestyle data

- Consumer data can be utilized to predict smoking behavior
- The decile chart segments smokers and nonsmokers, i.e., the likelihood of smoking increases monotonically from left to right

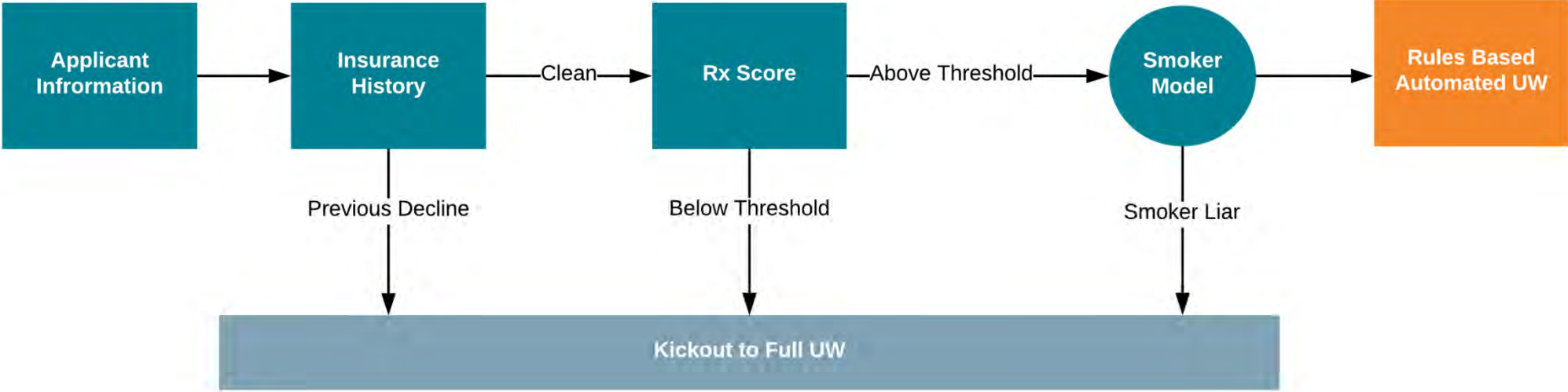


# Electronic health records (Dental)

- Sikka Software generates a tobacco score for individuals based on dental medical records
- Evidence of tobacco use is extracted from a patient's structured/unstructured clinical notes and intake forms

<b>Sikka Tobacco Score</b> \ <b>U/W Class</b>	<b>Tobacco</b>	<b>Non-Tobacco</b>	<b>Total</b>
Tobacco (T1 – T5)	34	13	<b>47</b>
Non-Tobacco (NT) or No Evidence (N)	312	641	<b>953</b>
<b>Total</b>	<b>346</b>	<b>654</b>	<b>1,000*</b>

# Tying it all Together



# Pricing Accelerated Programs

Accelerated Underwriting Program Development Seminar

May 22, 2019

Craig Hanford – FSA, MAAA  
VP, Account Manager and Marketing Actuary  
Swiss Re

Chris Fioritto – FSA, MAAA  
2<sup>nd</sup> VP & Marketing Actuary  
Munich Re



# Predictive Models

How did we get here?

Traditional underwriting and sales processes are broken

- ✓ **Process** takes **too long**
- ✓ **Expenses** are **too high**
- ✓ **Requirements** are **too invasive**

All of this dissatisfaction can create an opening for new and innovative approaches.

Predictive models used in an accelerated underwriting process can be a key to remedy many of these concerns.



# Different types of predictive models



## Propensity to Buy

- Identify customers who are more likely to buy a particular product.
- Improve customer's decision making process.
- Combine with *Behavioral Economics* for more effective client portfolio intervention services.



## Propensity to Survive

- Target underwriting effort accordingly to predict health risk of individuals.
- Streamline and automate underwriting process through predictive models.
- Propose new questions, improve current questions, or remove the ones which are no longer needed.



## Propensity to Lapse

- Predict lapse behavior and identify customers who are more likely to lapse.
- Understand and benchmark main lapse drivers across multiple portfolios.
- Enable the development and *testing* of successful retention strategies.

Most of these models utilize publicly available information and other details provided by the individual to draw correlations to desired outcomes.

# Predictive models for risk classification

Most prominent use of predictive modeling for life insurance to date

- Potential types of predictive models

- ∅ Credit

- ∅ Health/Prescription



- ∅ Social media

- ∅ Facial Analytics



- ∅ Genetics

- ∅ Others



- Goal is to be able to find a model(s) to assess risks effectively

- ∅ Can we price appropriately?

- ∅ Have we significantly improved the insurance buying process?

# Evaluating a predictive model

## Retrospective study

- ✓ Use your own data, as results can vary widely by company
- ✓ Examine how the model results vary by preferred, standard, rated, declined, not taken

## Risk classification using a model $\neq$ Risk classification using traditional UW

- ✓ Other tools (detailed application, prescription profile) can reduce differences
- ✓ Neither approach is perfect; understand how the model will classify risks and price accordingly

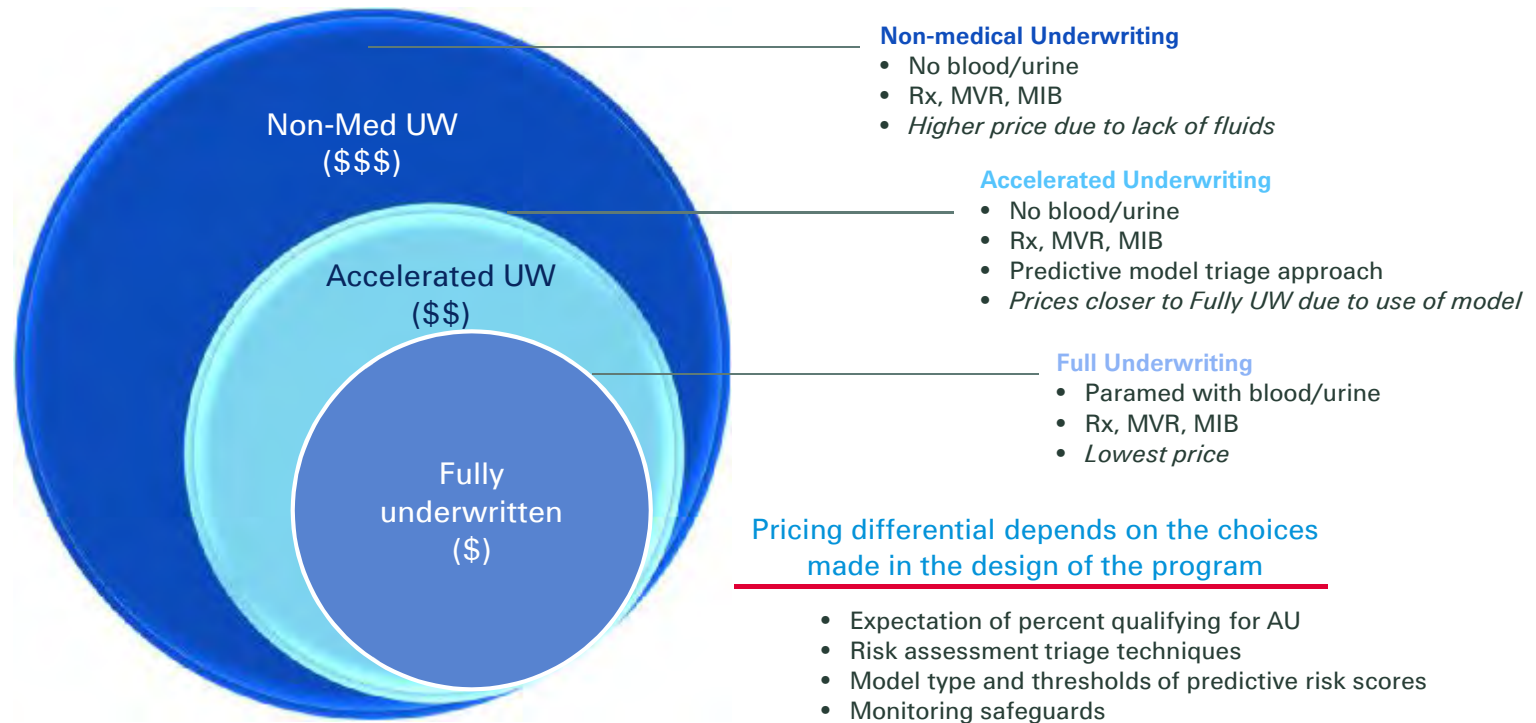
## Vendor-provided A/E mortality

- ✓ Understand how actual deaths are determined
- ✓ Usually based on a death master file, where underreporting of deaths is common
- ✓ May want to share a file of known deaths to see how many are found in the death master file



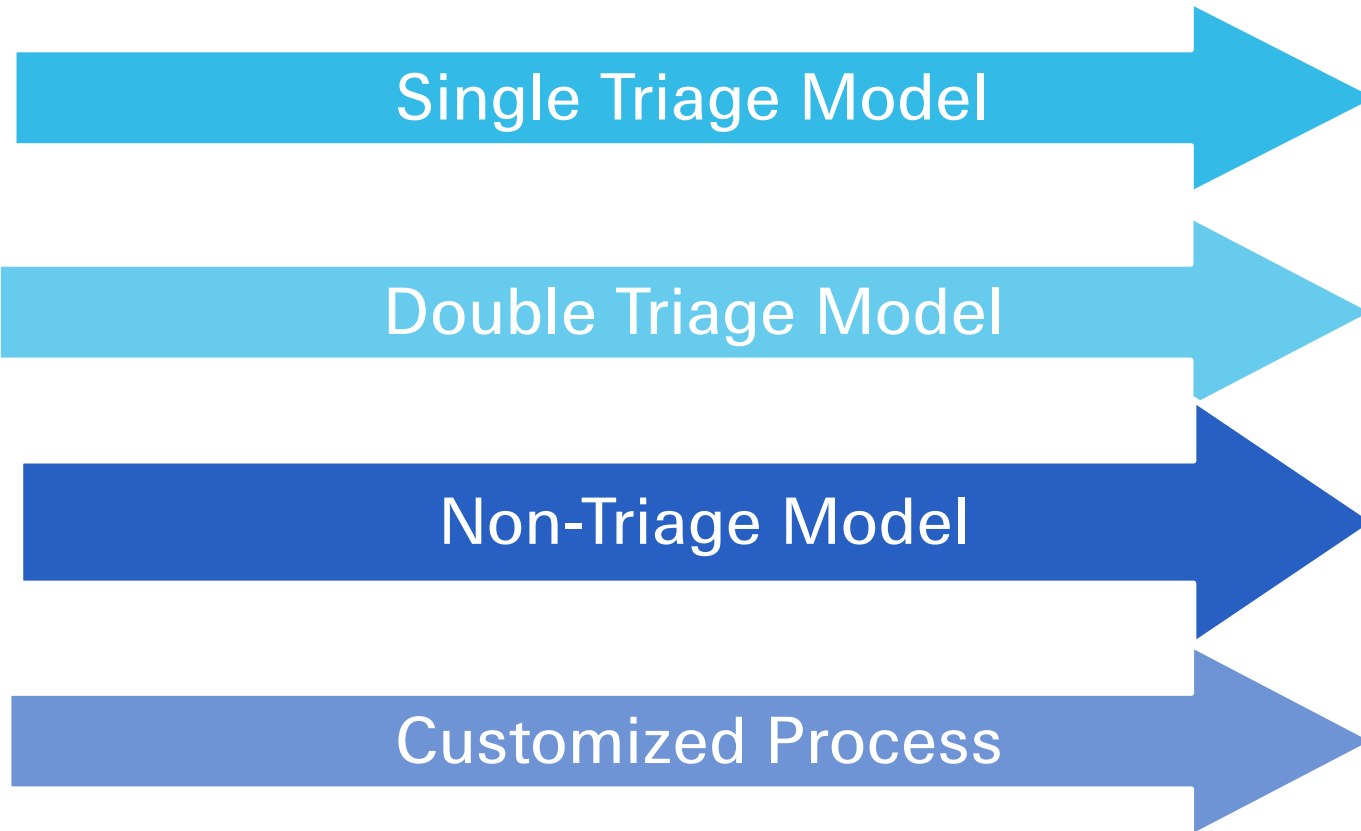
# Mortality Cost Implications of Various Underwriting Approaches

New accelerated approaches bring mortality cost much closer to fully underwritten costs



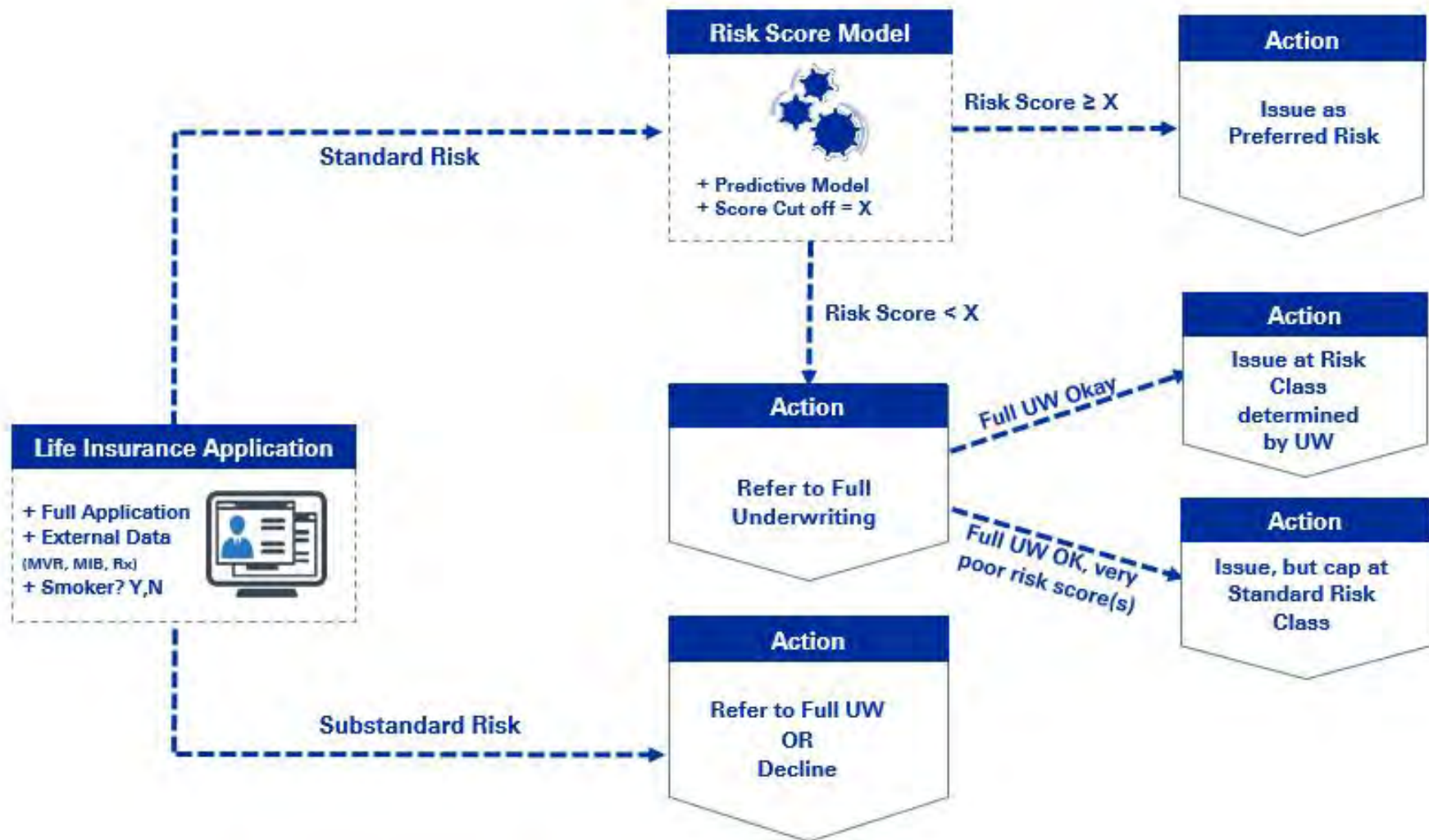
# Triaging and Other Techniques

**Some form of triaging is generally used in accelerated underwriting. Here are four examples.**



# Accelerated underwriting

## Single triage model



# Issues and considerations

## Single triage model

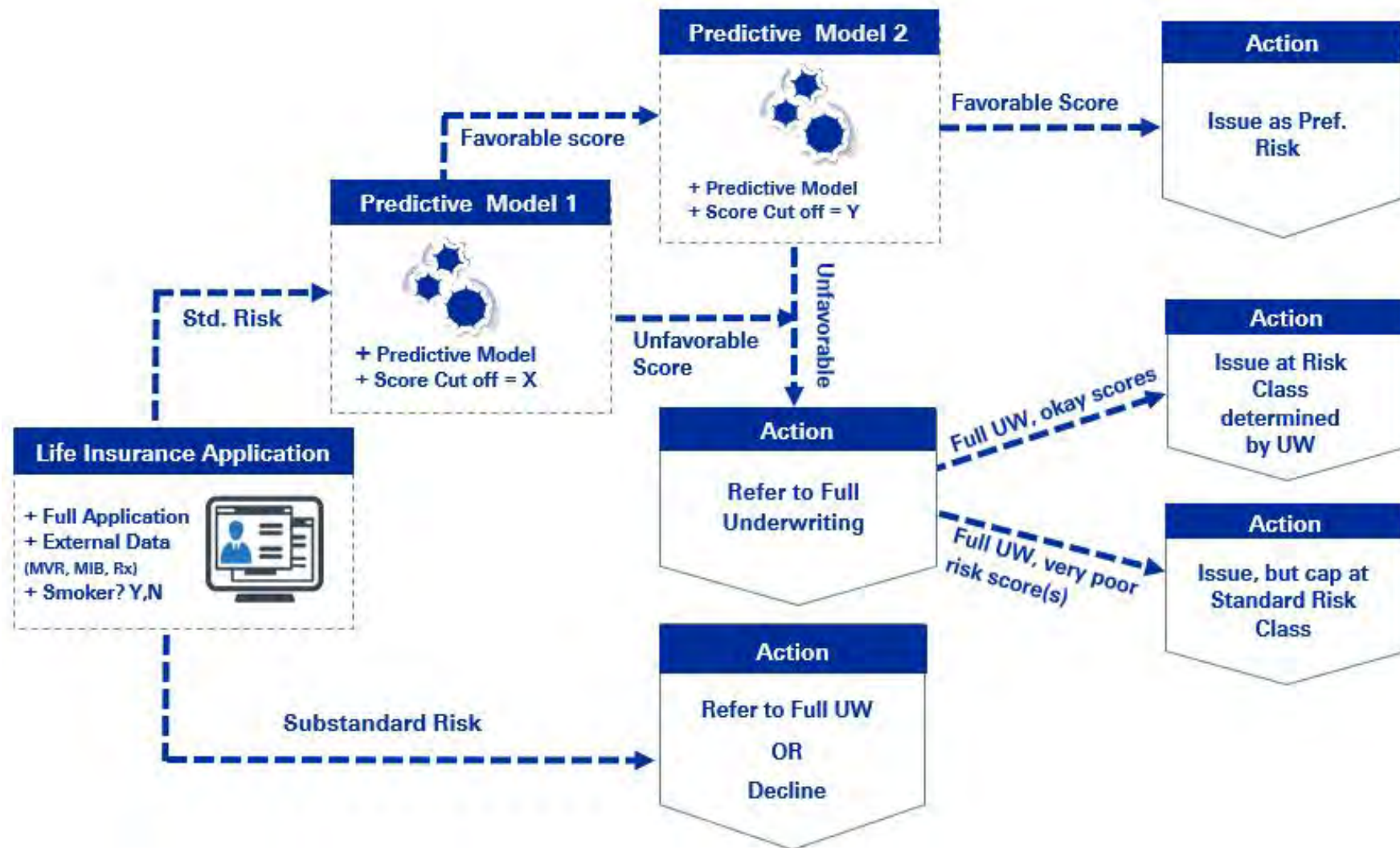
### **If you desire multiple preferred classes, how do you differentiate?**

- ✓ Usually based on non-medical preferred criteria, which often have little variation between Preferred Best and Preferred
  - ✓ This will lead to significant distribution shift to Preferred Best
- ✓ Could use the predictive model risk score to differentiate between preferred classes
  - ✓ Allows you to dial in cut-points to desired risk class distribution
  - ✓ May not see quite the extent of mortality differentiation between classes as typically seen in traditional underwriting

### **Prescription profiles can be critical; what to do if unavailable?**

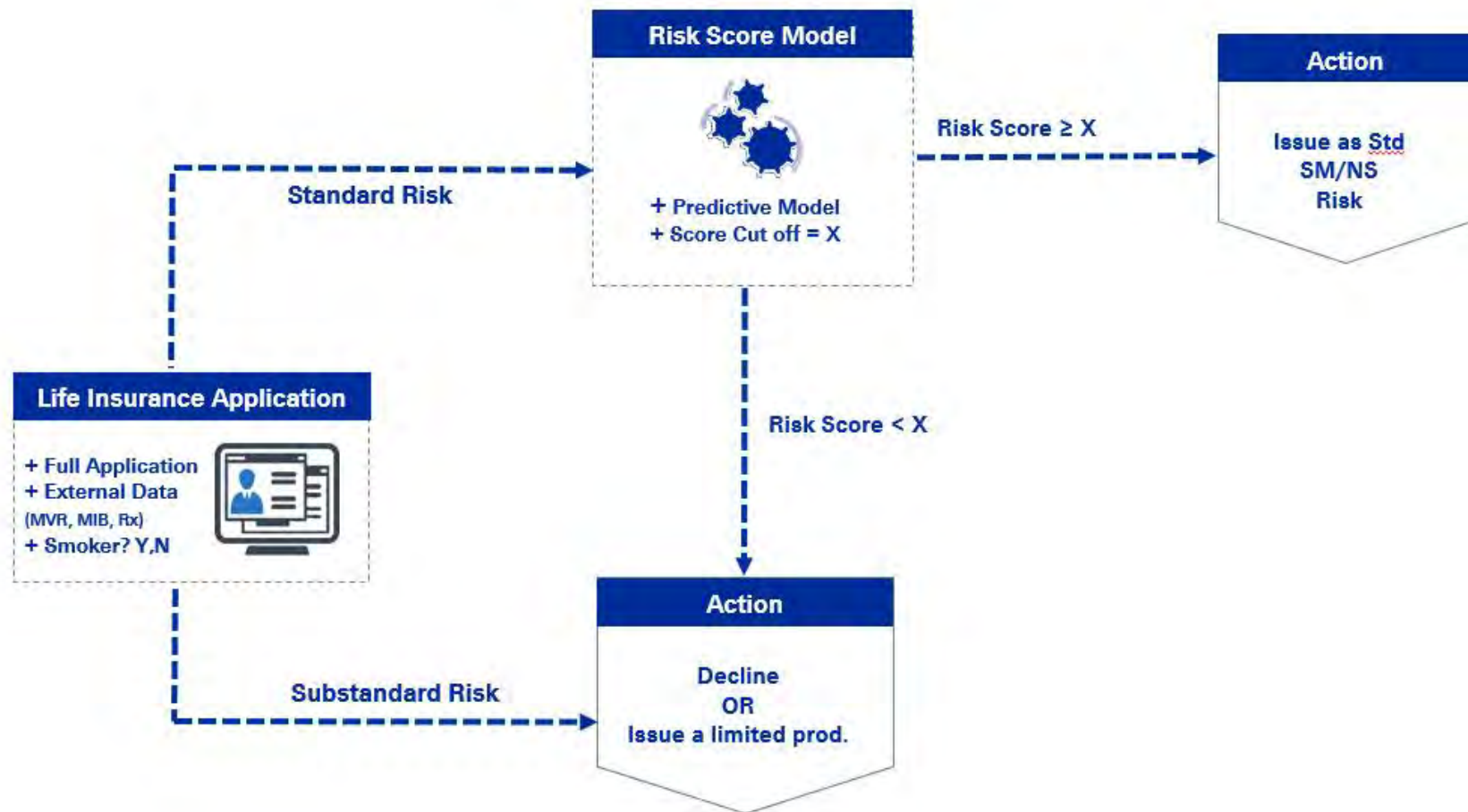
# Accelerated underwriting

## Double triage model



# Accelerated underwriting

Non-triage model



# Issues and considerations

Non-triage model

Potentially most efficient structure- **quick** with significant **reduction in underwriting expense**

## Possible implications:



**Price** with **higher** levels of expected **mortality**



**Reject** a higher proportion of **applicants**



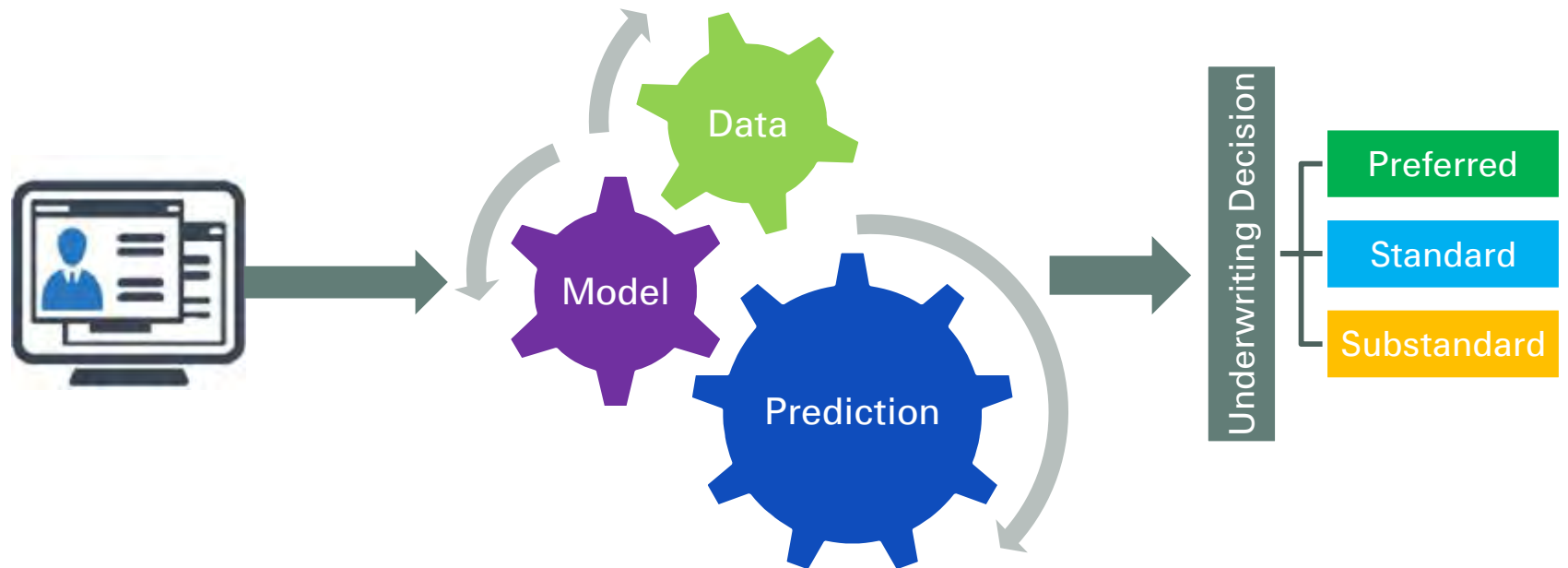
Specifically **priced/loaded product** for non-qualifiers



**Increased uncertainty** on the profitability of the block

# Accelerated underwriting

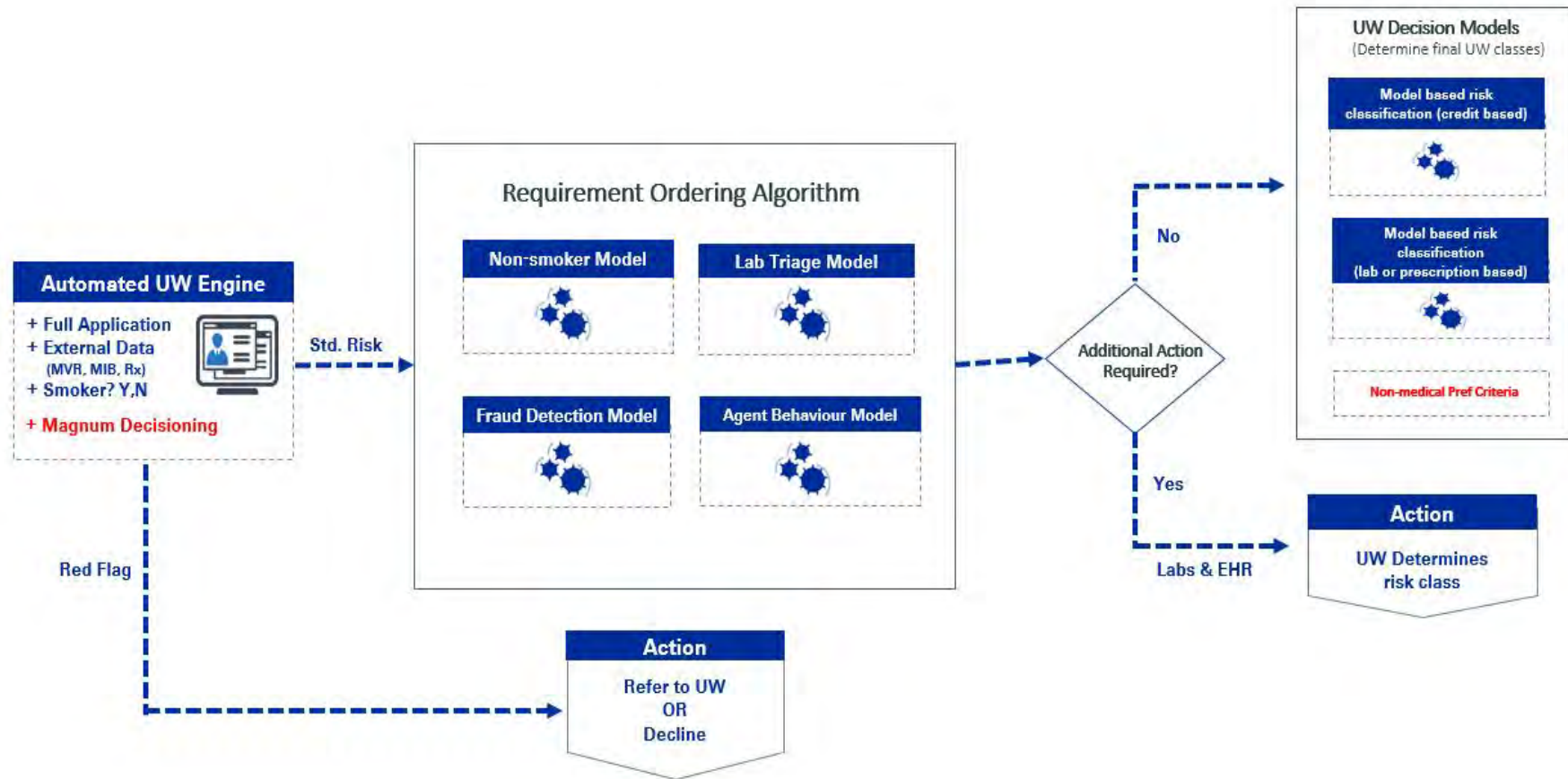
Customized process



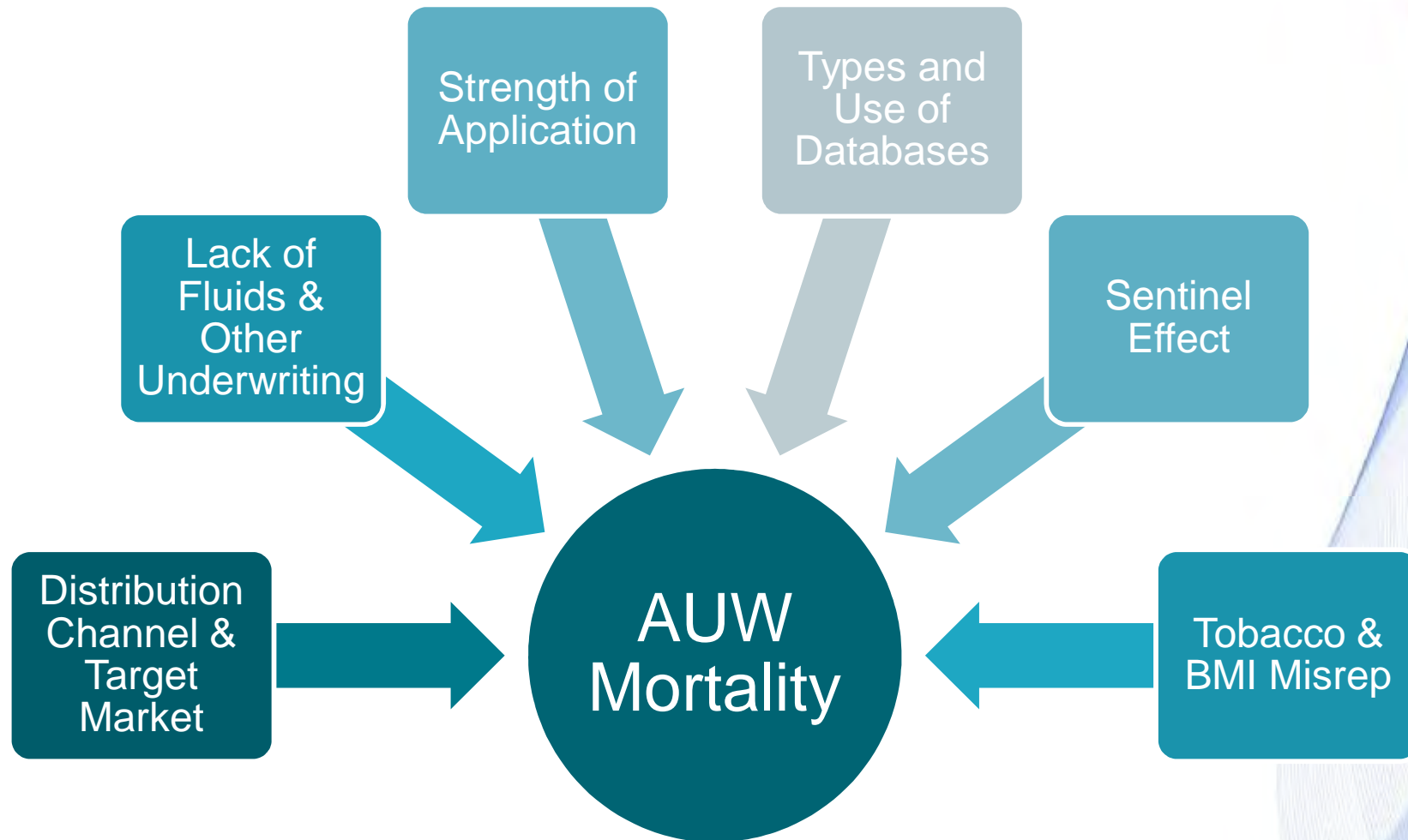


# Accelerated underwriting

Potential Future State

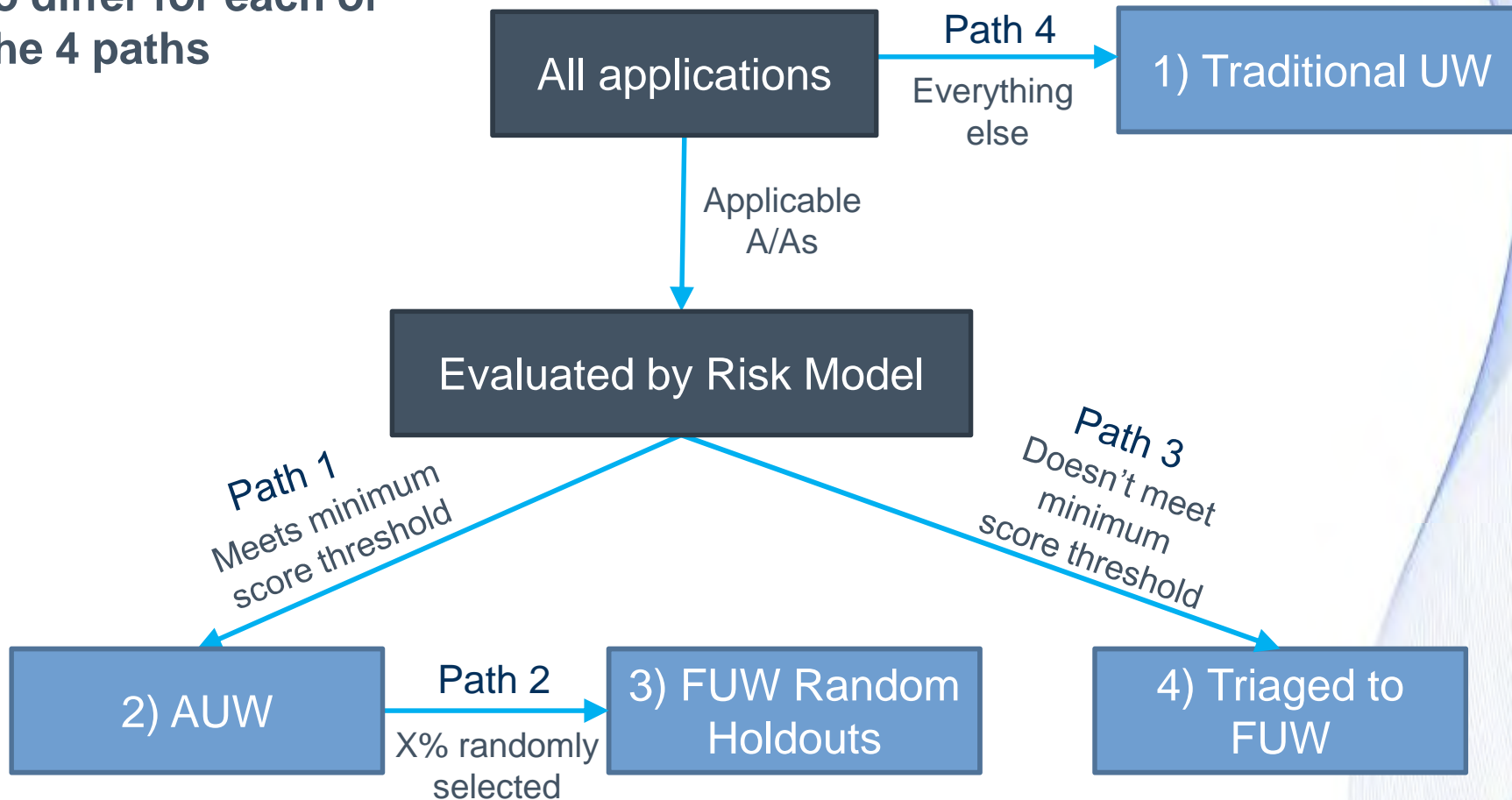


# Factors in AUW Mortality

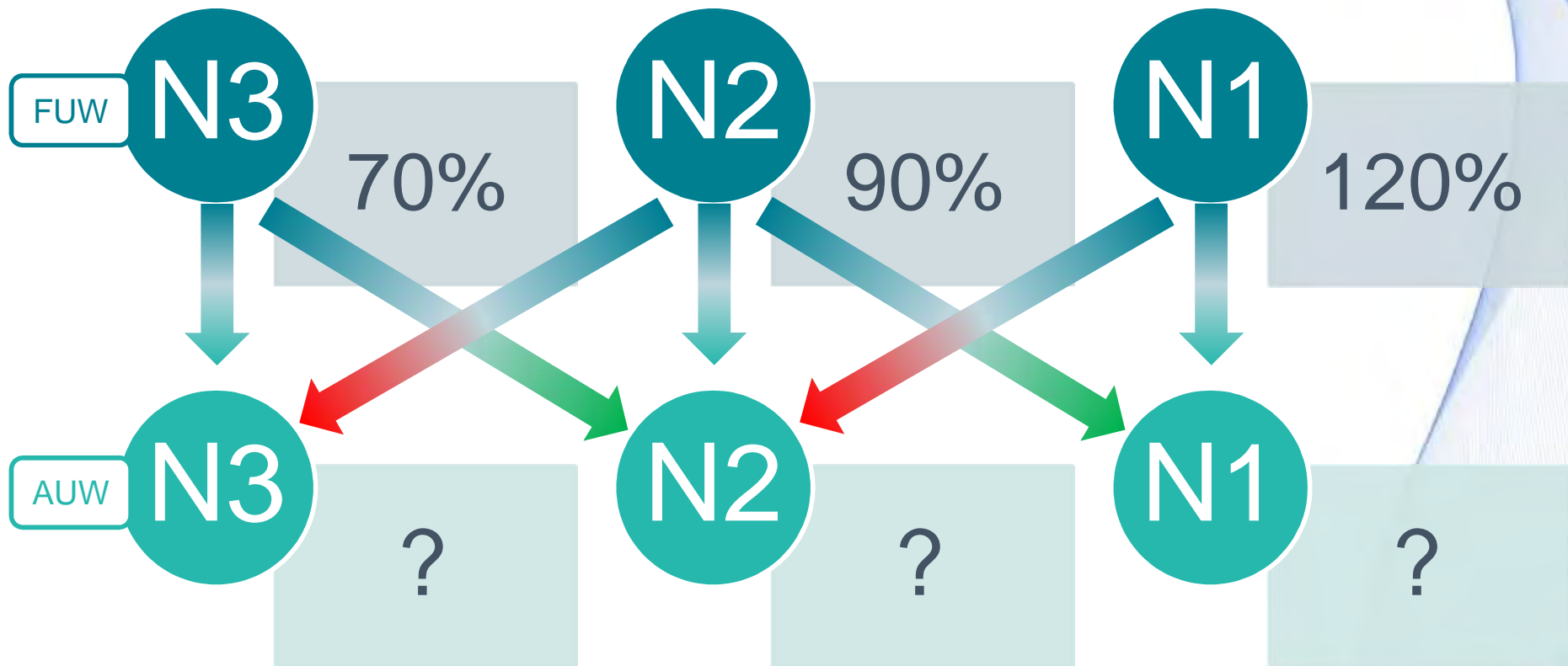


# Single Triage Model Mortality Assumptions

Mortality is expected to differ for each of the 4 paths



# Misclassification Impacts to Mortality



## A Simplified Retro Study Example

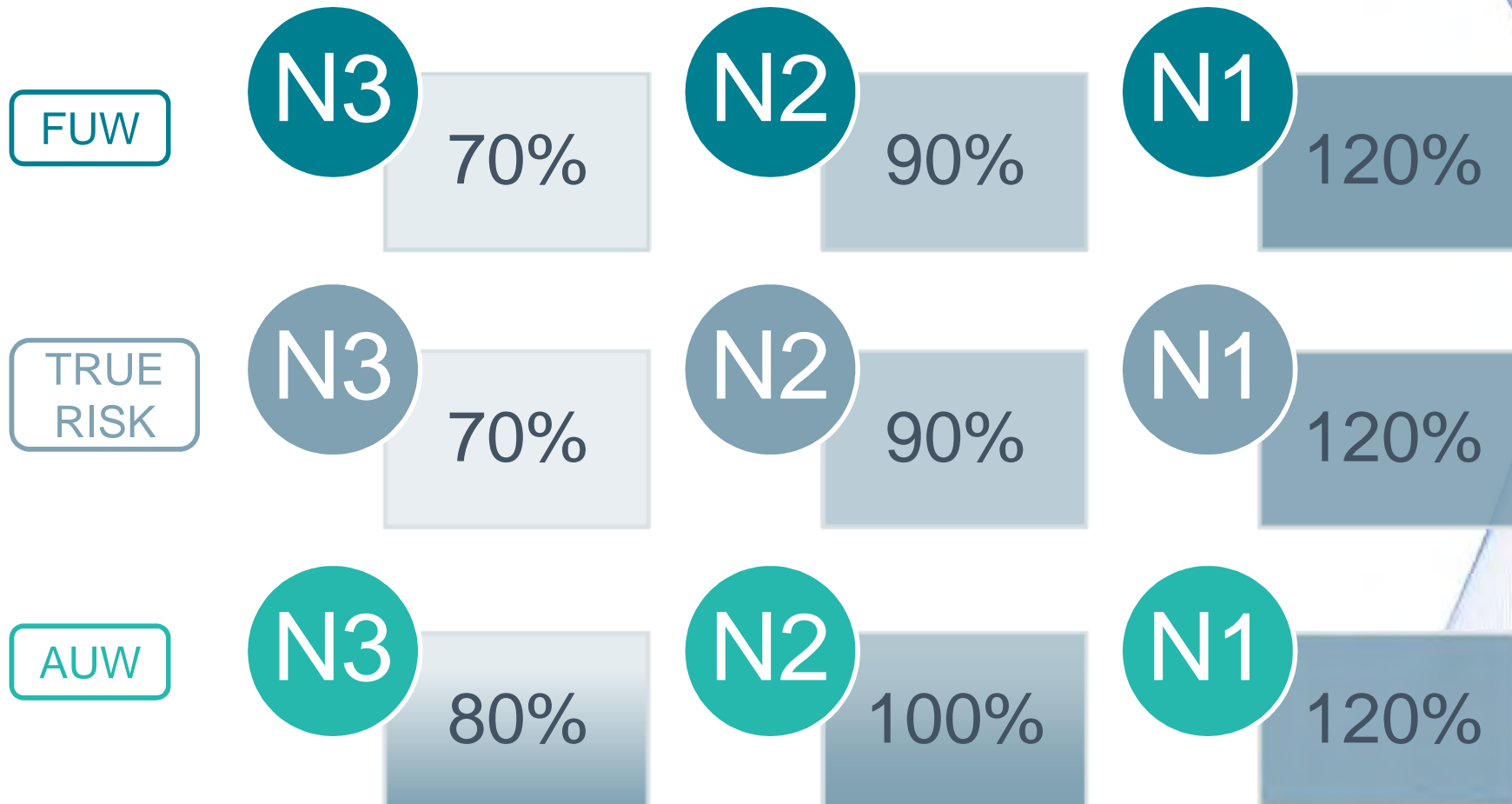
FUW	AUW			Total
	N3	N2	N1	
N3	25%	0%	0%	25%
N2	5%	20%	0%	25%
N1	5%	10%	35%	50%
Total	35%	30%	35%	100%

## Approach A – Maintain FUW Risk Segmentation

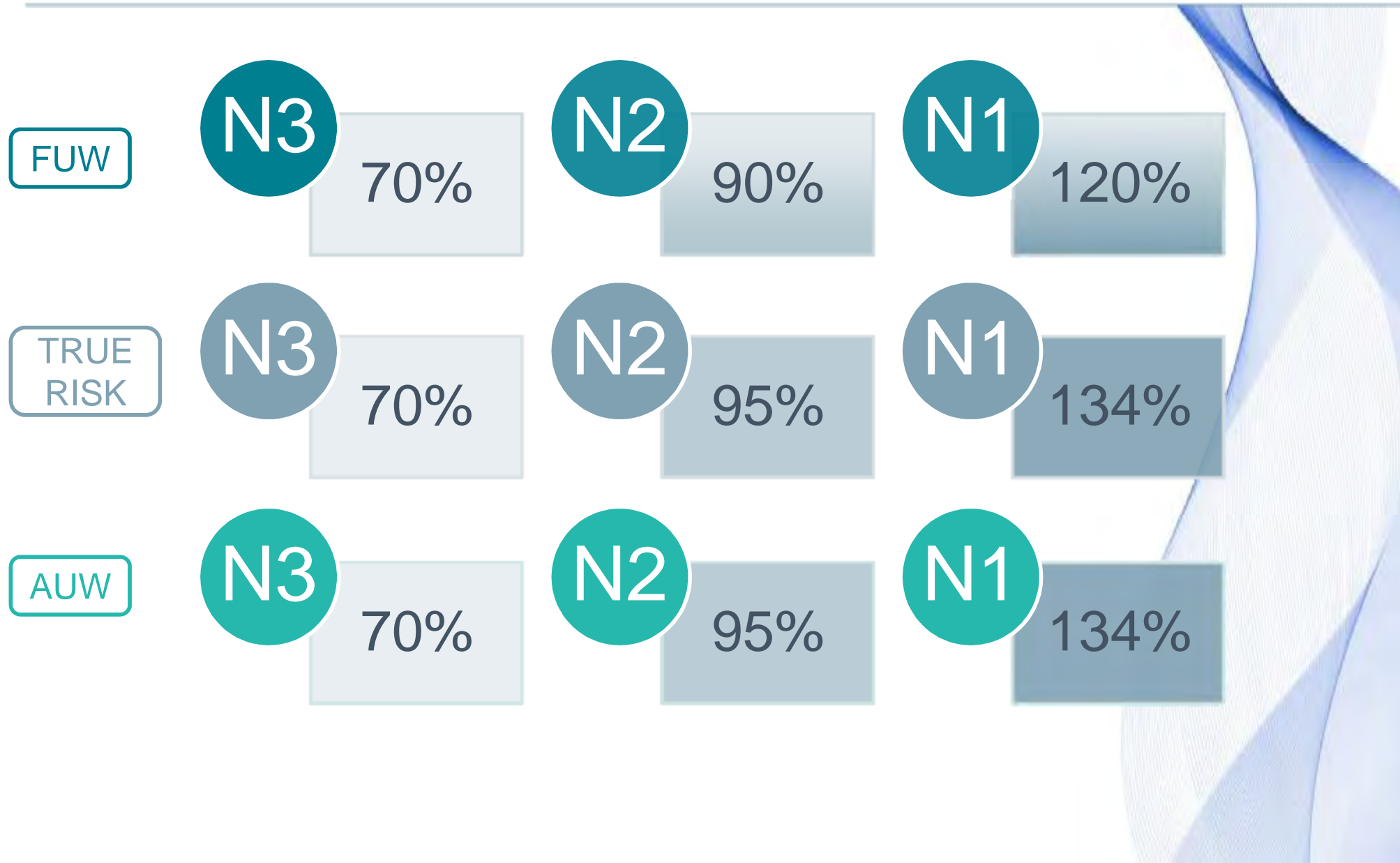
Rescale mortality multiples to weight back to 100% with the new distribution

Risk Class	FUW Distribution	FUW Mortality	AUW Distribution	AUW Mortality
NT3	25%	70%	35%	75%
NT2	25%	90%	30%	96%
NT1	50%	120%	35%	128%
Total	100%	100.0%	100%	100.0%

# Approach B – FUW Classes Accurately Capture Risk



# Approach C – AUW Classes Accurately Capture Risk





# Varying Assumed Mortality Across Approaches

Assumptions from the Simplified Example Retro Study

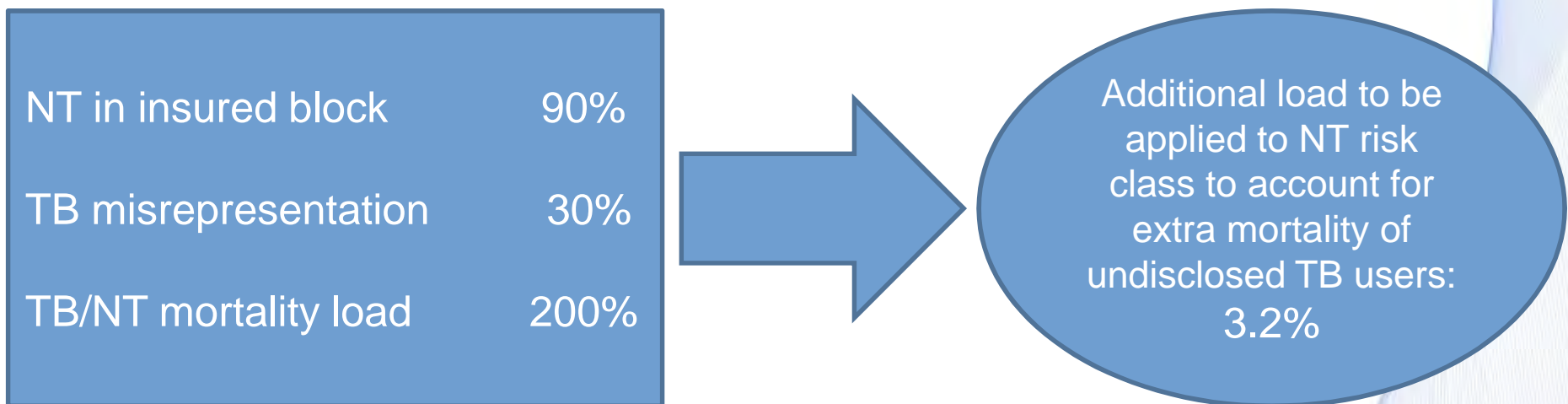
	Assumptions			
	FUW	A	B	C
N3	70%	75%	80%	70%
N2	90%	96%	100%	95%
N1	120%	128%	120%	134%
Total	100%	100%	100%	100%

# Varying Loads Across Approaches

Assumptions from the Simplified Example Retro Study

	Multiples over FUW		
	A	B	C
N3	107%	114%	100%
N2	107%	111%	106%
N1	107%	100%	112%
Total	107%	108%	106%

# Hypothetical Tobacco Misrepresentation



# Mortality Neutral <> Profit Neutral

Traditional UW		
Risk Class	Relative Mortality	Distribution
N3	85%	40%
N2	95%	30%
N1	125%	30%
Total	100%	100%

Same population, switch UW type

Accelerated UW		
Risk Class	Relative Mortality	Distribution
N3	90%	50%
N2	105%	40%
N1	130%	10%
Total	100%	100%

# Mortality Neutral <> Profit Neutral

Traditional UW		
Risk Class	Relative Mortality	Gross Margin
N3	85%	9%
N2	95%	9%
N1	125%	9%
Total	100%	9%

Same population, switch UW type

Accelerated UW		
Risk Class	Relative Mortality	Gross Margin
N3	90%	4%
N2	105%	0%
N1	130%	5%
Total	100%	2%

# Cost Benefit Analysis

# Cost-Benefit Analysis

## **What:**

Comparison of underwriting expense savings against the additional expected increased mortality cost resulting from the predictive model.

## **How:**

Review and understand differences that emerge by age, face amount, and gender.

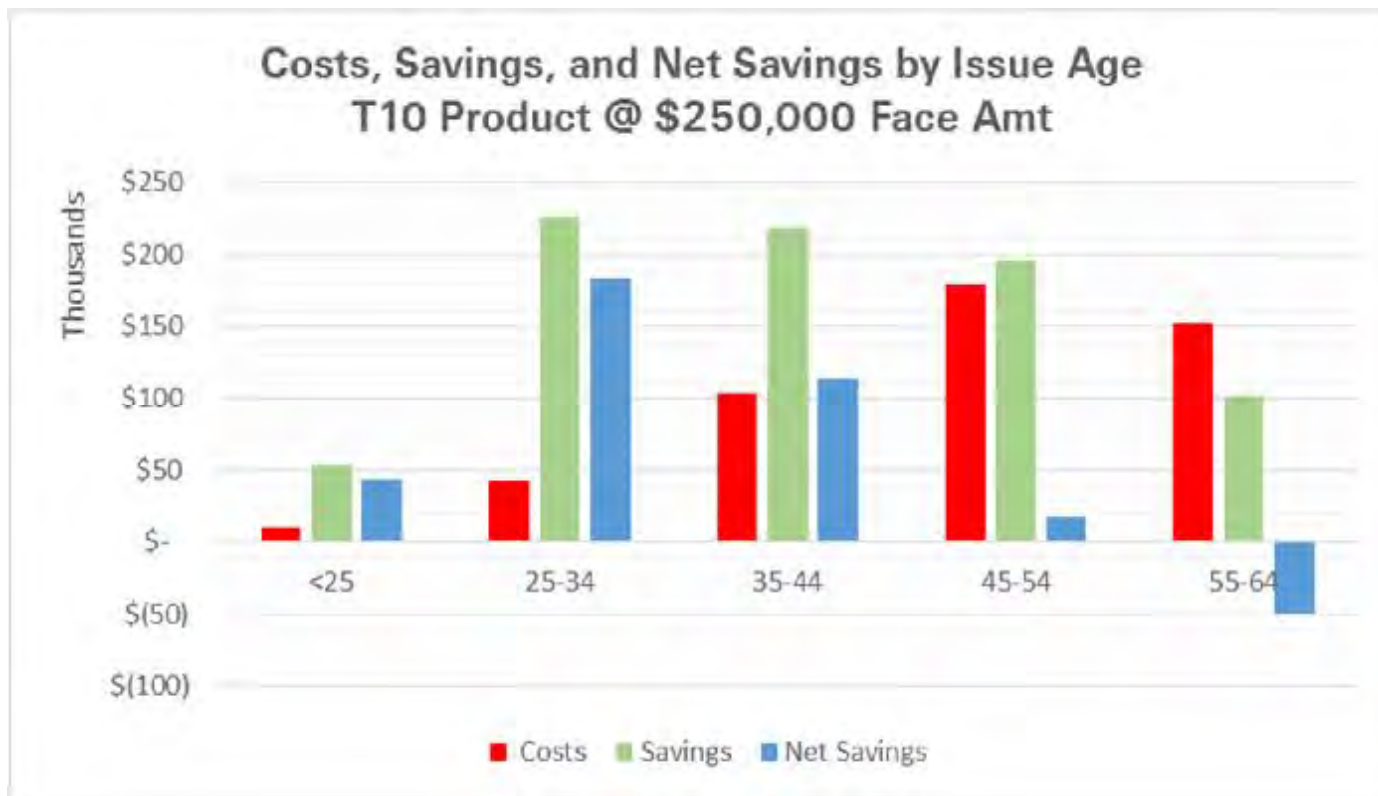
- ✓ As face amount increases, expense savings may be limited, but expected mortality costs could increase significantly.

## **Why:**

A good understanding of these details is recommended when setting maximum ages and amounts at which the predictive model will apply.

# Example A: 10 year term product offered with no fluids (Non Med) at face amounts of \$250,000

- For ages below 55, Underwriting Cost Savings > Mortality Costs results in Net Savings
- For ages 55 and over, Underwriting Cost Savings < Mortality Costs results in Net Losses



Aggregate Mortality Impact



## Assumptions:

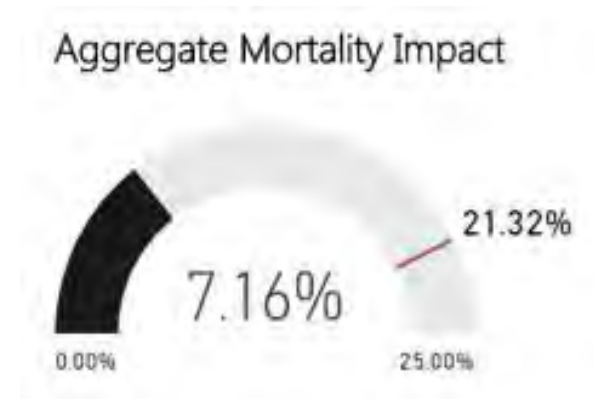
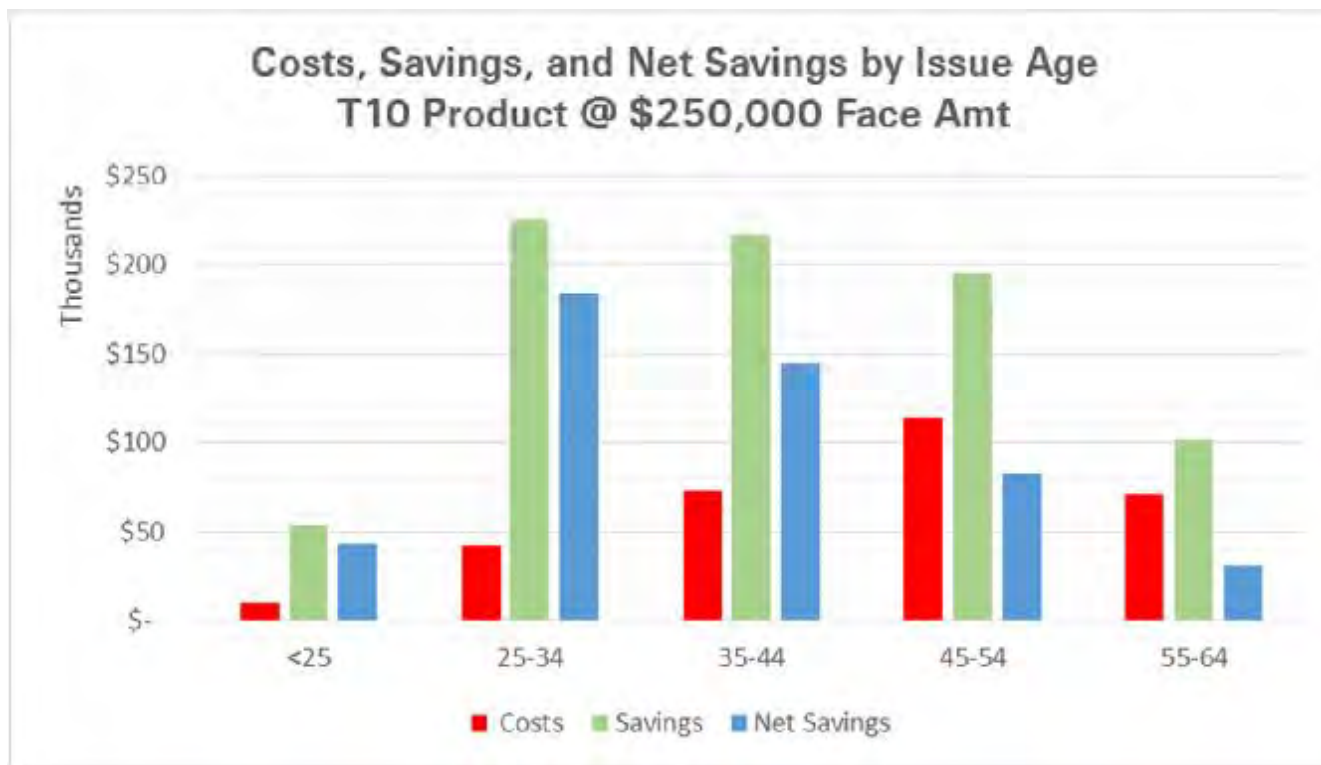
**Mortality Data:** LMS data on PV (Mortality Costs) based on Accelerated Underwriting parameters (i.e. No fluids, no APS, no PM/ MD)

**Cost Assumptions:** Lab testing cost; Underwriter Efficiency cost; Lost Premiums estimate



## Example B: 10 year term product offered using a predictive model at face amounts of \$250,000

- For all ages **Underwriting Cost Savings** > **Mortality Costs**, demonstrating the value of the predictive model



### Assumptions:

**Mortality Data:** LMS data on PV (Mortality Costs) based on Accelerated Underwriting parameters (i.e. No fluids, no APS, no PM/MD)

**Cost Assumptions:** Lab testing cost; Underwriter Efficiency cost; Lost Premiums estimate

# Summary

- ✓ Our success as an industry requires creating an improved experience for our customers. A non-invasive underwriting process and competitive products are a good start, but we need to be aware of other considerations as well.
- ✓ A successful accelerated underwriting program will have:
  - ∅ Clear and specific goals and expectations for all parties involved in the process
  - ∅ Active monitoring of the program to understand the quality of risks being accepted.
- ✓ New models and other data sources will continue to emerge in the near future
  - ∅ Actuaries will have a significant responsibility to appropriately interpret this information and to ensure that our products incorporate those tools and remain priced appropriately.
- ✓ We will be confronted by many challenges, but we will find many exciting opportunities ahead too!

# QUESTIONS?







**ARGA**

# Accelerated Underwriting Program Development - Monitoring

**Taylor Pickett**, FSA, MAAA

May 22, 2019

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## Our Historical Paradigm

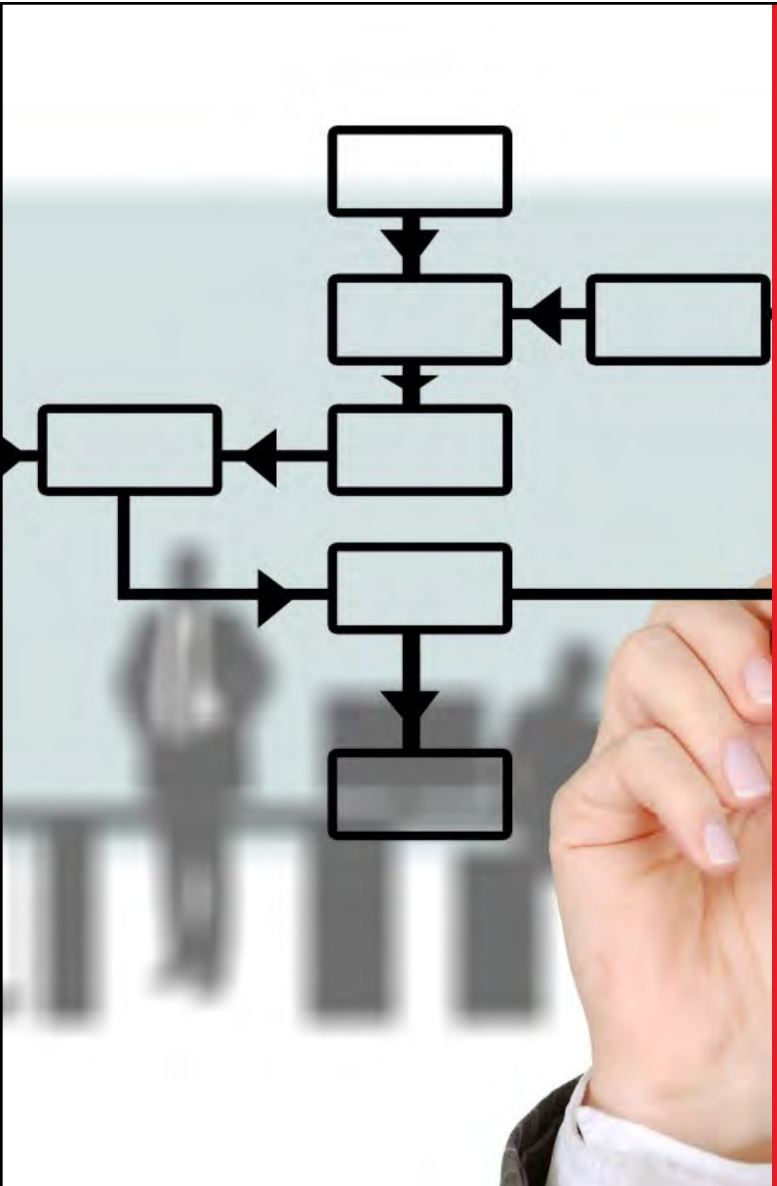




# Monitoring

## Why should I care about this?

- No credible mortality experience any time soon
  - Need other mechanisms to validate our mortality assumptions
- Historical studies cannot quantify all potential impacts
  - Applicant/agent behavior, attracting different applicants, etc.
- Key stakeholders will need this information
  - Senior management
  - Reinsurers
  - Regulators

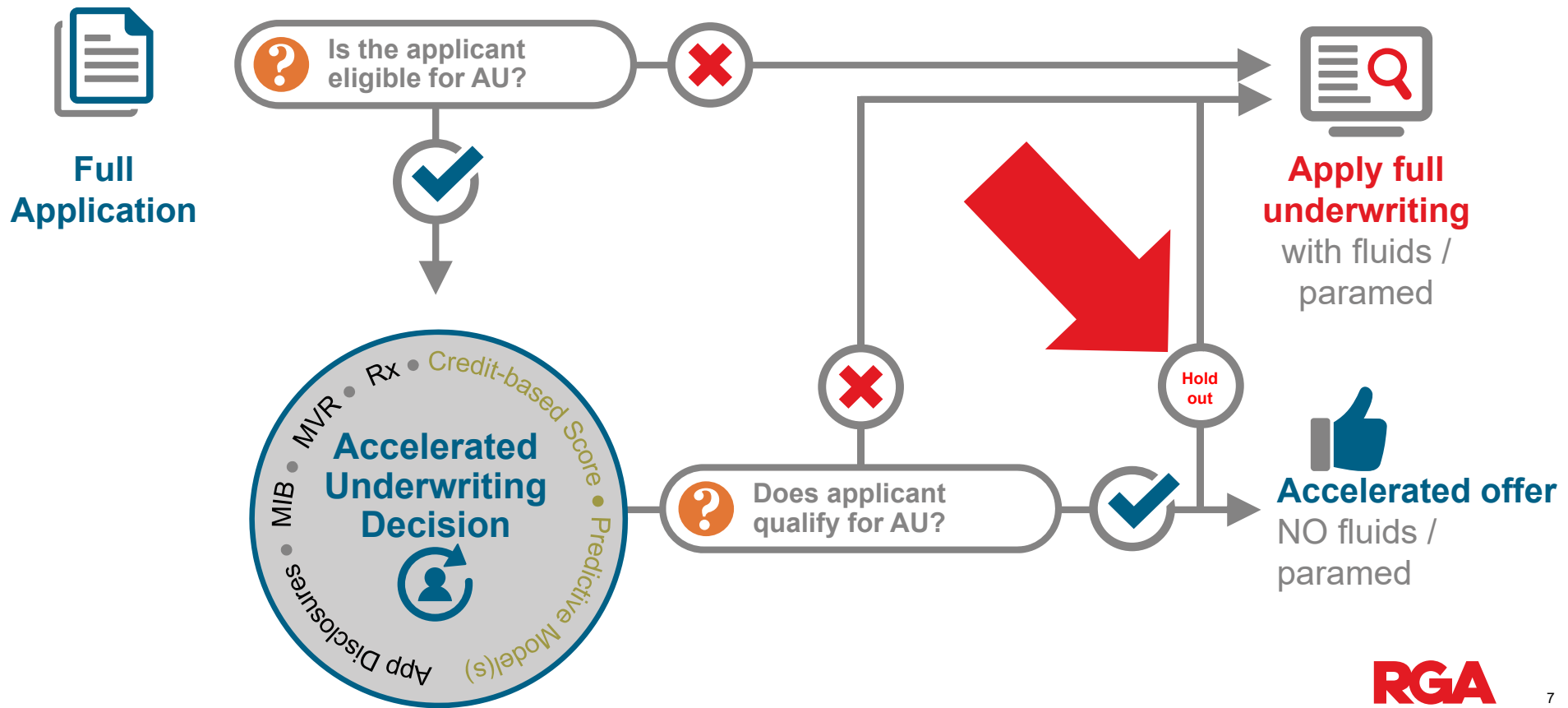


**RGGA**

# Monitoring Process

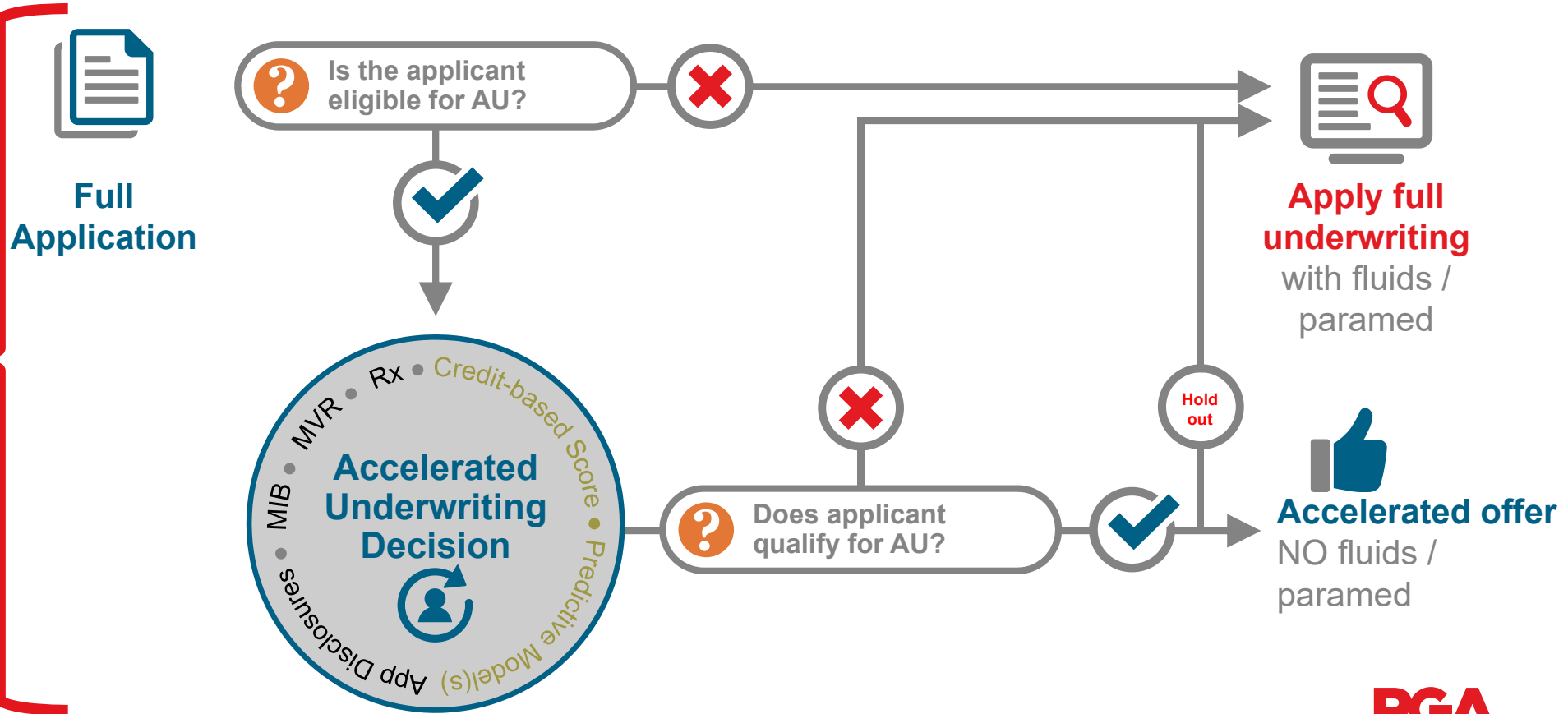
# Monitoring Process

Where does monitoring happen?



# Monitoring Process

Where does monitoring happen? (cont.)



# Monitoring Process

## Sources of information

- Application
  - Disclosures, demographic information, agent information
- Third-party evidence
  - MIB, MVR, Rx, credit-based scores, other predictive models
- Case processing
  - Cycle times, dropout rates, acceleration rate, placement rate
- Audit information
  - Comparison of accelerated underwriting and a fully underwritten decision, reasons for discrepancies, lab tests



**RGIA**

## **Auditing Approaches**

# Auditing Approaches

## Pre-issue (e.g., random holdouts)

- Pull a sample of accelerated underwritten approvable cases for full requirements
- Pros
  - Allows the population of a live confusion matrix
    - True comparison of accelerated underwritten and fully underwritten decisions
  - Helps preserve sentinel value
  - Always get results (except dropouts)
- Cons
  - More invasive
  - Slows down the policy-issue process
  - Less agent/applicant friendly

# Auditing Approaches

## Post-issue

- Common tools: post-issue APS, MIB Plan F, Rx Recheck
- Pros
  - Non-invasive
  - More agent/applicant friendly
- Cons
  - Not guaranteed to get results (e.g., specific authorization needs for APS)
  - True apples-to-apples comparison not possible (e.g., APS rarely includes key tests like cotinine)
  - Less consistency from case to case (e.g., every APS can be different)
  - Requires deliberate action to address any misrepresentation found



# Auditing Approaches

To holdout or not to holdout – that is the question

- Both approaches have benefits
- Both approaches have drawbacks
- **Best practice – use a combination**





**RGGA**

## Reporting

# Reporting

## What can I do with monitoring results?

- Validate assumptions
  - Mortality relative to pricing expectations
    - Misrepresentation contributes to this
- Inform course corrections (if needed)
  - Tighten up holes in the application
  - Adjust criteria as necessary if attracting different applicants
  - Amend expectations
- Enable prudent expansion
  - Highlight any areas of concern with the current program (e.g., by agent, size, age, etc.)
  - If current program performance is satisfactory, confidence is increased in the process and philosophy
- Successful reporting will meet these objectives

# Reporting

## What data do I need?

- New data elements to capture
  - Fully underwritten class and accelerated underwriting class (from pre-issue audits)
  - Lab tests / physical measurements and corresponding disclosures
    - (e.g., smoking disclosure and cotinine test result)
    - Can come from audit cases and cases sent to fully underwritten class
  - Number of cases accelerated
  - Total number of eligible cases
  - Withdrawn cases
    - Timing of the withdrawal should also be tracked
  - Anything else needed to recreate your assumption framework
- Traditional data elements to capture
  - Risk class distributions
  - Trends by agent (e.g., admitted smokers)
  - Cases on the fringes (e.g., highest ages and face amounts)
- Need a pre-accelerated underwriting expectation for context

# Reporting

## Confusion matrix example

- Answers “What?”
  - X% mortality impact vs. Y% expected
- Answers “Why?”
  - More smokers than expected
  - More severe misclassifications than expected

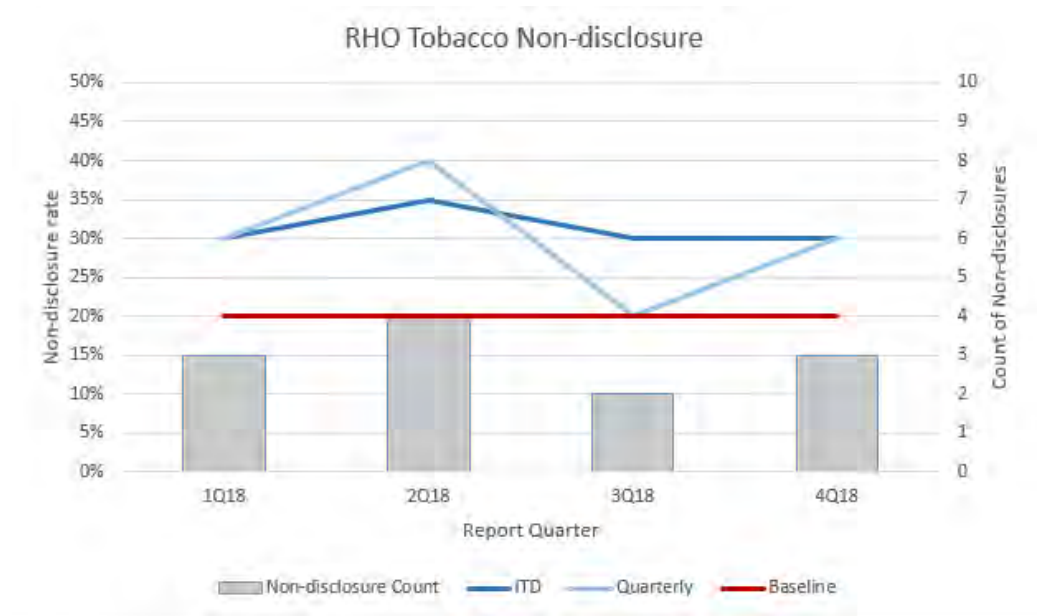
<i>Expected</i>	AU Decision		
	Audit Decision	Best NT	Preferred NT
Best NT	70	0	0
Preferred NT	15	70	0
Standard NT	7	20	80
Rated NT (Tables 1-4)	2	2	10
Rated NT (Table 5+)	1	2	2
Preferred Tobacco	1	1	1
Standard Tobacco	0	1	2
Rated T (Tables 1-4)	0	0	0
Rated T (Table 5+)	0	1	0
Decline	1	0	2
Cancel/Withdrawn	3	3	3

<i>Actual</i>	AU Decision		
	Audit Decision	Best NT	Preferred NT
Best NT	68	0	0
Preferred NT	12	72	0
Standard NT	8	15	75
Rated NT (Tables 1-4)	2	2	11
Rated NT (Table 5+)	0	1	1
Preferred Tobacco	3	2	2
Standard Tobacco	1	2	4
Rated T (Tables 1-4)	0	1	1
Rated T (Table 5+)	0	0	
Decline	0	1	2
Cancel/Withdrawn	6	4	4

# Reporting

## Non-disclosure example

- Answers “How?”
- More smoking non-disclosure → more smokers sneak into accelerated underwriting non-smoker classes
- Similar analysis for any verifiable impairment



# Reporting

## Other miscellaneous reports

- Agent trends
  - Admitted smoking, clean sheet applications, cases at max age/face
- Policy trends
  - Risk class distribution, age distribution, average face amount
- Third-party evidence trends
  - Score distribution pre- and post-accelerated underwriting



**RGGA**

## **Conclusion**



## In Conclusion



**RGIA**

# Accelerated Underwriting Program Development Seminar

Laura Morrison CLU, ChFC & Nathan Eshelman FSA, MAAA

Sagicor

Protective

May 22, 2019



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# Distribution



Agency



Agent



Consumer

# Know Your Audience

*What motivates decision making and behavior?*



Agency

- Recruiting
- Time
  - Focus on sales, not processing
- Overhead
  - Case Manager
  - Underwriter
  - APS/paramed ordering
  - Shipping
- Ease of doing business
  - Fear of losing agent to competitor
- Differentiation

# Know Your Audience

*What motivates decision making and behavior?*



Agent

- Prospecting
- Time
  - Focus on sales, not follow up
  - Buyers remorse
- Asking underwriting questions to client
- Control
- Commissions – amount and speed
- Fear of not losing other business from client
- Fear of looking foolish
  - Going back to client multiple times



# Know Your Audience

*What motivates decision making and behavior?*



Consumer

- Cost
- Time
  - Multiple steps in underwriting process
  - Comparison to car insurance
- Answering medical questions
- Paramed
  - Fasting
- Who can I trust?

## How is Accelerated Underwriting Positioned?

- QUICK
- Less invasive to client
- Ease of doing business
  - Drop ticket
- Standard or better underwriting
- Electronic
- Save time and money



## Accelerated Underwriting Reality – for the field

- QUICK
  - Agent completed app or drop ticket
- Less invasive to client, unless.....
  - Frustration from field if paramed becomes necessary
- Forgot about that medication 5 year ago? – SURPRISE!
- Comfort for agent and consumer
  - Medical questions asked over telephone interview
- Use of ‘big data’ – now how do I explain it???
  - Triage or data directed decisioning program?

# Sales Concepts for Accelerated Underwriting

- New generation of life insurance buyers
- Business Owners
- SBA loans
- Divorce Decrees
- Client in different location

## Accelerated Underwriting Reality *As product manufacturers*

- Reinsurance
- Pricing and IRR – same as fully underwritten?
- Mortality
- Use of ‘big data’
  - Triage or data directed decisioning program?
- Technology and legacy systems
- Underwriting review
- System implementation
  - Legacy systems

## **Accelerated Underwriting Reality** *As product manufacturers*

- Automated field communication
- Competitor differentiation
- Does automation reduce new business/underwriting workflow?
- Next steps for innovation.....

Questions

*and Thank You*







# Accelerated Underwriting Program Development Seminar

## Regulatory Changes

Sue Bartholf, FSA, MAAA  
Mary Bahna-Nolan, FSA, MAAA, CERA  
May 22, 2019



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# Regulatory Changes

- Amendment Proposal Form (APF) 2018 – 17
- New York Circular #1 (2019)
- Emerging topics

# Valuation Manual - Amendment Proposal Form (APF) 2018 – 17

Sue Bartholf, FSA, MAAA



Someone has to go first.



## 2017 PBR Review Report Goals

- Provide companies with regulator expectations
- Guidance to regulators not involved in the reviews

## What did regulators find?

- Missing documentation
- Documentation needing expansion/clarification
- Incomplete or incorrect reporting of results
- Appeared to be misunderstanding of requirements



## Thank you, early adopters!

- Appreciated by regulators
  - Allowed regulators opportunity to review and evaluate
  - Provided companies feedback for future filing
- Blazing a trail for the industry



Amendments to  
the Valuation  
Manual

## APF 2018 – 17

- Proposed by the Academy's Life Reserves Working Group
- Adopted by LATF
- Adoption expected by NAIC Exec/Plenary

## APF 2018 – 17

Clarifies requirements for aggregating segments

Requires annual mortality analysis separately

Allows for top down or bottom up aggregation

# APF 2018-17 clarifies guidance for aggregation.

Modifies  
VM-20  
Section  
9.C.2

Permits  
aggregation  
if SAME or  
SIMILAR  
underwriting

Addresses  
how to handle  
different  
underwriting  
with similar  
E(mortality)

What is required when segments use different underwriting processes?

- Retrospective demonstration to support aggregation
- Demonstrate that similar mortality is expected
  - statistical analyses
  - predictive model back-testing
  - other modeling methods
- At least once every 3 years

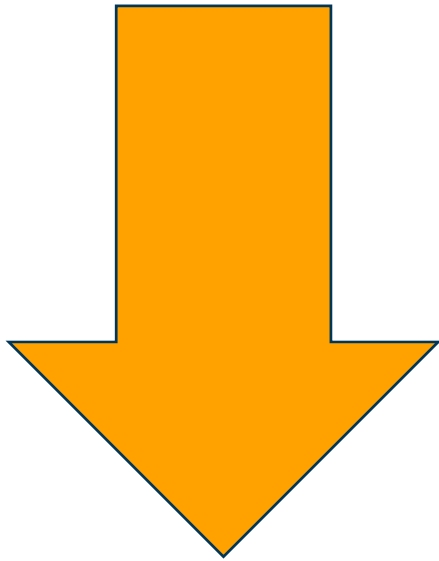
# Annual mortality assessment is required.

Modifies VM-31  
Section 3.C.3.m

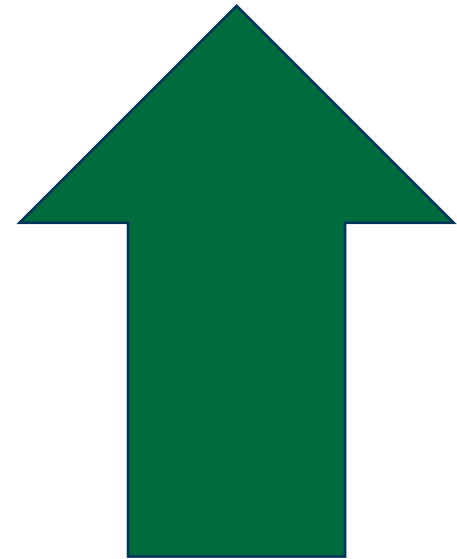
Requires annual  
mortality  
analysis by  
mortality  
segment

Mortality  
analysis must  
continue until  
stable  
 $E(\text{mortality})$

## Top-Down vs. Bottom-Up Aggregation



Either is allowed as long as the aggregate experience is reflected accurately



## Where to go from here?

- What are potential sources for retrospective analysis?
- What does a tool need to do?
- What might the retrospective analysis look like?





# Potential sources of analysis

Internal models

Vendors

Reinsurers

Society of Actuaries

## Tool needs to produce $E(\text{mortality})$ by segment.

- Mortality insight is needed before credible experience
- Policies separated into accelerated and fully underwritten
- Retrospective demonstrations are needed
  - initial and on-going aggregation of mortality segments
  - annual actual to expected mortality analysis.
- Assessed at least annually

# Assessing Accelerated Underwriting Programs

**Baseline: before acceleration**

**Annual review of experience:**

**E(Aggregate Mortality)  
100%**

**Accelerated Segment  
E(mortality) = 116%**

**Fully Underwritten Segment(s)  
E(mortality) = 100%**

- **Retro demonstration**

- Support aggregation
- Annual mortality analysis
- Statistical analysis
- Predictive model back-testing

- **Valuable tool for AU program assessment**

# What $E(\text{mortality})$ variations should be considered?

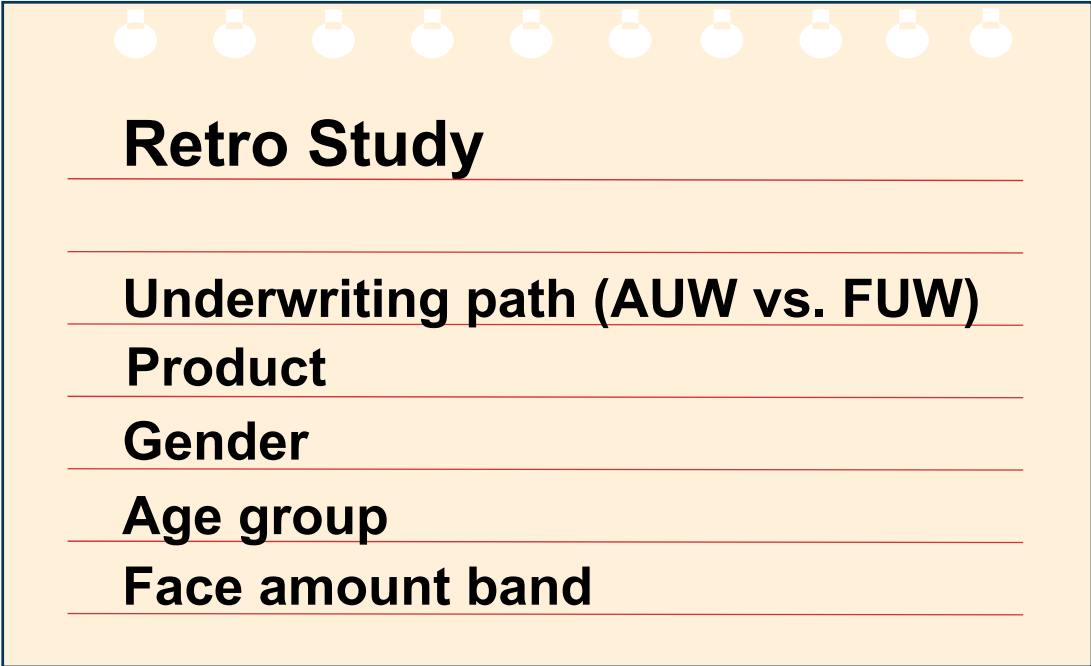
Between segments,  
including between  
FUW segments

Distributions by  
segment

By duration  
By issue year

Measures of  
dispersion

Let's design a study.



**Retro Study**

**Underwriting path (AUW vs. FUW)**

**Product**

**Gender**

**Age group**

**Face amount band**

# Sample Results



scored as of 9/30/2019	All Issue Years			
<b>Duration 1</b>		2017-2019		
	Policy Count	Score	95th %tile	95 CTE
Total	93,904	1.08	1.13	1.24
FUW	42,938	1.00	1.14	1.20
AUW	50,967	1.15	1.12	1.28



<b>Duration 2</b>	Policy Count	Score	95th %tile	95 CTE
Total	82,015	1.08	1.11	1.24
FUW	38,895	1.00	1.06	1.16
AUW	43,120	1.15	1.16	1.32



<b>Duration 3</b>	Policy Count	Score	95th %tile	95 CTE
Total	37,311	1.08	1.15	1.36
FUW	18,179	1.00	1.07	1.22
AUW	19,132	1.15	1.23	1.50

January 1, 2020 is right around the corner!



# New York Circular No. 1 (2019)

Mary Bahna-Nolan, FSA, MAAA, CERA





# Happy New Year!

- NYDFS issued Circular Letter #1 (2019)

“New York Takes the Lead on Insurers’ Use of Big Data and Algorithms” (Faegre Baker Daniels, January 22, 2019)

“New York Circular Letter No. 1 (2019) takes aim at accelerated underwriting” (Eversheds Sutherland (US) LLP, February 27, 2019)

## Advise use of external data in life insurance underwriting

- Driven by emergence of unconventional external data sources
- Results of investigation started in 2017
- External data includes data not directly related to the applicant's medical condition
- Also excludes MIB, MVR and criminal history search

# Using external data sources has benefits.

- Potential benefits to insurers and consumer
- Simplify and expedite sales and underwriting
- Result is more accurate underwriting and pricing

BUT

## There are also concerns, regulatory concerns.

- Variance in accuracy and reliability
- Not all sources are subject to regulatory oversight & consumer protections
- Clarity on consumer consent

# Use of external data has requirements

Non-  
discriminatory

Valid rationale

Established  
guidelines &  
practices

Transparency

Independently  
verified

# Unlawful Discrimination

- May not use external data that uses prohibited information
- External data has “potential” to reflect disguised and illegal race-based underwriting
  - Geographical data (incl. community-level mortality, addiction or smoking data)
  - Homeownership data
  - Credit information
  - Educational attainment
  - Licensures
  - Civil judgements and court records

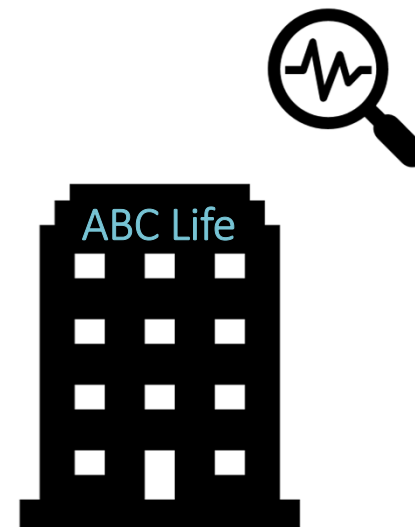


# Adverse Action

- Includes requiring a more robust underwriting path
- Reasons for adverse action must be provided
- Specific source for adverse underwriting decision must be disclosed



Burden of proof  
is on insurer



# Closing

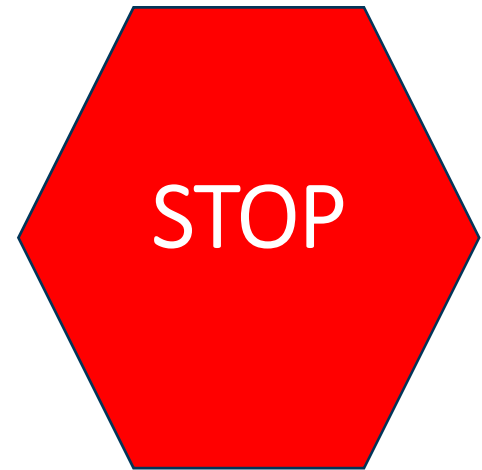
- Use ONLY if insurer has determined no prohibited criteria
- Algorithms/predictive models cannot unfairly discriminate
- Must be based on sound actuarial principles
- Must have valid explanation or rationale
- Must disclose content and source of data
- Department has right to audit u/w criteria, programs, algorithms, and models
- Disciplinary action can result.

# Emerging topics



# Rumblings and Restrictions

- Use of genetic testing
- Wearables
- Use of sex / gender identity
- Data collection and privacy
- Algorithmic accountability



# Genetic testing – Can we or can't we?

- Florida leading the way but they are not alone
  - CT, DE, IL, ME & NC also expanding prohibitions
- Family history still allowed, for now
- So is this an issue for AUW?

# What about wearables?

Regulator Concerns:

- Not regulated
- Data not subject to HIPAA
- Accuracy in the data
- Some regulators want to regulate its use similar to genetic and health data



# Gender identity – Not specific to AUW

- Gender vs. Sex
  - More and more states recognizing non-binary identities
  - Carriers may not make inquiry towards identity
- Gender neutral rates
  - Some momentum on P&C and DI, will we see on life?



# Data collection and privacy

## Regulator Concerns:

- How and what data is collected
- Knowledge of collection
- Consent to collect and purpose of use
- Social media and purchase data
- Disparate impact
- Ability to dispute and correct
- EU GDPR ?

VM-51 additional Data Elements





# Algorithmic accountability

## Algorithmic Accountability Act of 2019

- How to regulate automated decision-making
- Concerned around:
  - Fairness and accuracy;
  - Ability to dispute/correct errors
  - Mistakes around anti-discrimination and bias
- Requires a Data Protection Impact Assessment (DPIA)
  - Relative benefits and costs of the automated decision system in light of its purpose

Gives FTC the power to monitor and audit algorithms of covered entities via third party auditors before allowed to use

Covered entities include companies:

- Under FTC jurisdiction under Section 5(a)(2) of the FTC Act
- With \$50 million+ average annual revenue in past 3 years
- Posses data on 1 million+ consumers or 1 million+ consumer devices

# Questions ?





**SOCIETY OF  
ACTUARIES®**

# Accelerated Underwriting Program Development Seminar

Ron Schaber  
The Future of AUW  
May 22, 2019



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# Electronic Health Records – EHRs

- EHRs vs. traditional APSs
- Vendors
- Content
- Costs, turnaround times, hit rates
- How to leverage for AUW
  - Fully underwritten
  - AUW – Dx codes
  - Automated predictive models

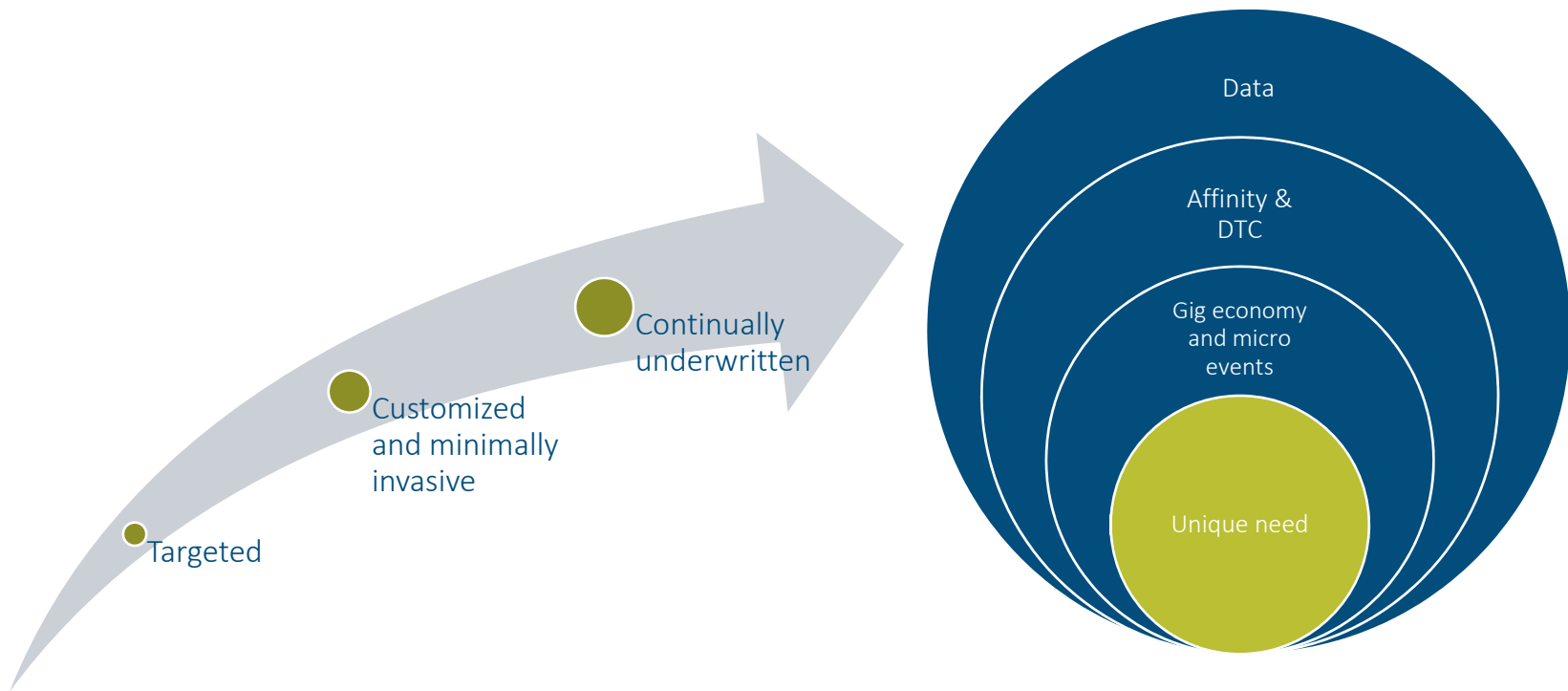
# Big Data – predictive models

- “We all need a seat at the table”
- Data scientists, actuaries, medical directors, underwriters
- Reason codes and how they match mortality



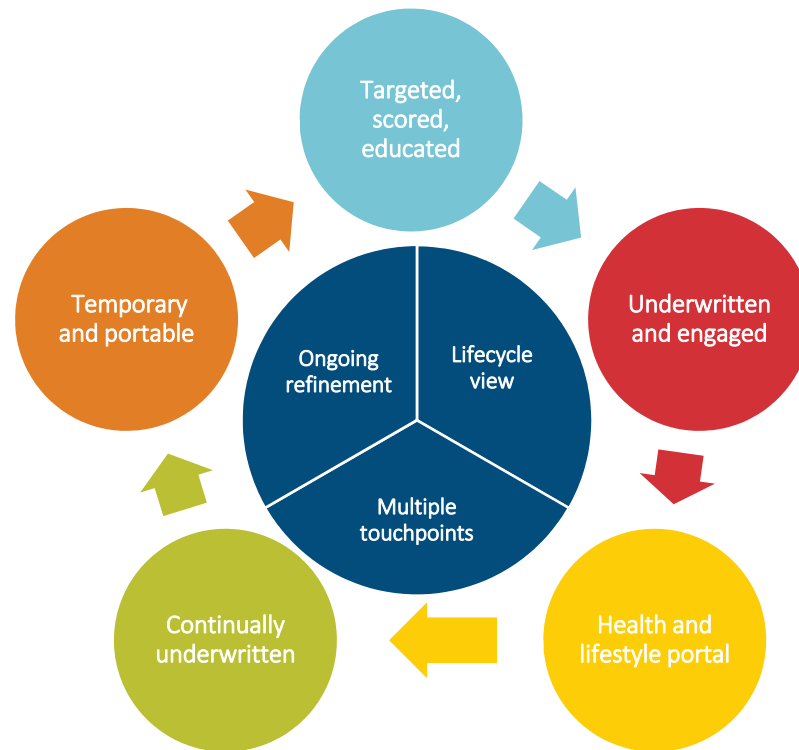
Developments and predictions

# The rise of the engaged consumer



Developments and predictions

# The rise of the engaged consumer

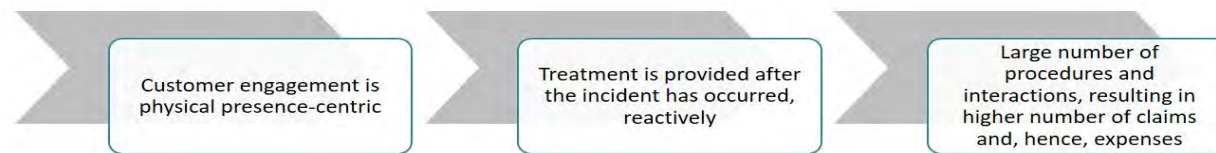


# AI and healthcare

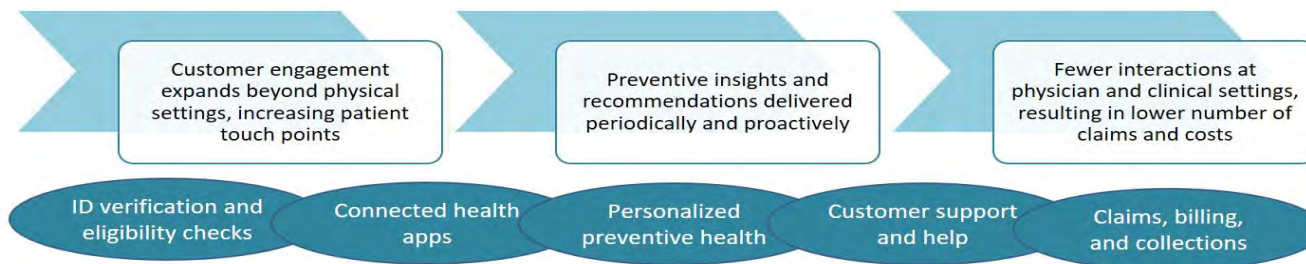
## Comparing the Traditional Healthcare Delivery Model With the AI-Enhanced Delivery Model

Source: Aite Group

### Traditional healthcare delivery model



### Healthcare delivery model enhanced with AI



Source: Aite Group, LLC (2015) [www.aitegroup.com/report/artificial-intelligence-healthcare-forging-path-ahead](http://www.aitegroup.com/report/artificial-intelligence-healthcare-forging-path-ahead)

# Underwriting requirements -



Developments and predictions

# Underwriting – evolving tools and changing roles

Electronic health records – time to test and pilot

Vendor	Competition APS replacement?	Format Fees?
Content	3 -5 years history Clinical notes? How much?	Need to pilot Compatibility w/rules engines
Coverage	Interoperability Hit rates < 10% / 50% in 1-2 years?	

- Stronger ties to pricing and data science
- Understanding models and non-medical data

# Future underwriting requirements?

## Potentially valuable

- Average hours of sleep
- Physical activity
- Pet ownership
- Hours of TV per day
- Coffee consumption
- “Life space” for the older applicant

## Potentially problematic

- Location – Zip codes
- Education levels
- Marital status
- Social media
- Personal purchase records

# Future risk assessment tools

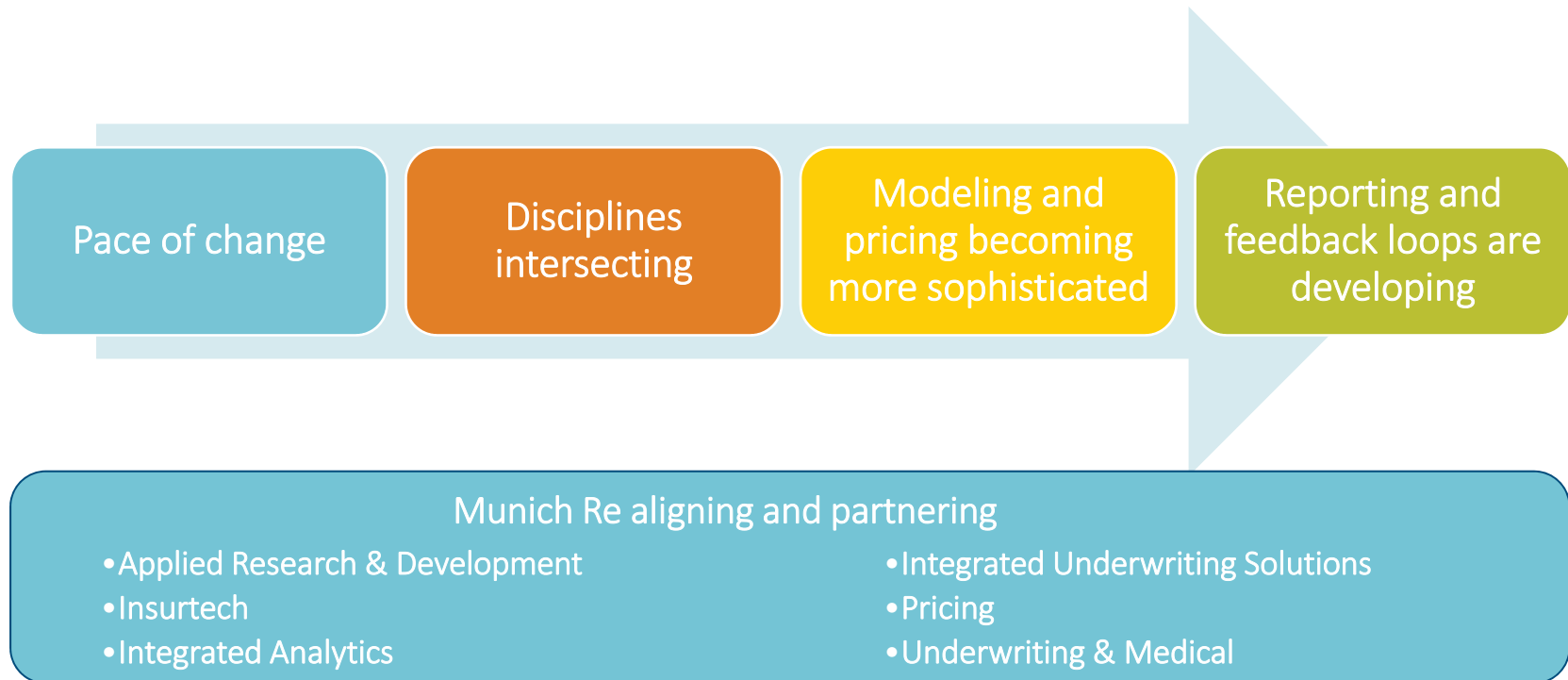
- Artificial intelligence
- Optical character recognition
- Natural language processing
- Machine learning

# The future of AUW

- Product design - issue ages and face amounts
- Customer experience – “one click and you’re done”
- Risk assessment – traditional requirements vs. data
- Pricing – “better” than fully underwritten?
- Models – “likelihood to buy”, “risk assessment” and “persistence”



# Wrap-up





# Accelerated Underwriting Program Development Seminar

**Taylor Pickett** FSA, MAAA

**RGA**

The Future of Accelerated Underwriting

5/22/19



**SOCIETY OF  
ACTUARIES®**



**RGA**

## SOA Antitrust Compliance Guidelines

Active participation in the Society of Actuaries is an important aspect of membership. While the positive contributions of professional societies and associations are well-recognized and encouraged, association activities are vulnerable to close antitrust scrutiny. By their very nature, associations bring together industry competitors and other market participants.

The United States antitrust laws aim to protect consumers by preserving the free economy and prohibiting anti-competitive business practices; they promote competition. There are both state and federal antitrust laws, although state antitrust laws closely follow federal law. The Sherman Act, is the primary U.S. antitrust law pertaining to association activities. The Sherman Act prohibits every contract, combination or conspiracy that places an unreasonable restraint on trade. There are, however, some activities that are illegal under all circumstances, such as price fixing, market allocation and collusive bidding.

There is no safe harbor under the antitrust law for professional association activities. Therefore, association meeting participants should refrain from discussing any activity that could potentially be construed as having an anti-competitive effect. Discussions relating to product or service pricing, market allocations, membership restrictions, product standardization or other conditions on trade could arguably be perceived as a restraint on trade and may expose the SOA and its members to antitrust enforcement procedures.

While participating in all SOA in person meetings, webinars, teleconferences or side discussions, you should avoid discussing competitively sensitive information with competitors and follow these guidelines:

- -**Do not** discuss prices for services or products or anything else that might affect prices
- -**Do not** discuss what you or other entities plan to do in a particular geographic or product markets or with particular customers.
- -**Do not** speak on behalf of the SOA or any of its committees unless specifically authorized to do so.
- -**Do** leave a meeting where any anticompetitive pricing or market allocation discussion occurs.
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# The Future of Accelerated Underwriting



# Future Tools

- Digital health data
- Clinical lab results
- Combination models/evidences
- Behavioral science

# Future Process

- More electronic data collection and processing
- Greater focus on agents *not* ordering tests (e.g., labs) unless required
- Additional automation
- Increased sales through non-traditional channels (e.g., DTC)



# Future Program Design

- Expansion
  - Higher age and face amount limits
  - More risk classes can be accelerated
  - Increased acceleration rates
- Optimization
  - Combination of evidences
  - Sequence of ordering evidence
  - Dynamic requirements

# Future Regulatory Impacts

- Appropriate evidence sources and methodologies
  - We can, but should we?
  - Be able to justify new tools and approaches
- Principle-based reserves
  - Will more studies be needed?
  - What will be used to support key assumptions?



## Conclusion/Questions



**RGA**