

2018 Predictive Analytics Symposium

Session 03: Delphi - The Time Tested Non-Quantitative Prediction Tool

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Delphi Study - Accelerated Underwriting

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Delphi Study

- The Delphi technique is a method for obtaining consensus. It consists of a series of questionnaires that are developed and refined in sequential stages until agreement is reached
- The SOA and RRC conducted this study on Emerging Underwriting Methodologies and their Impact on Mortality Experience
 - 33 experts
 - 3 rounds

Underwriting Methods

Traditional

- Collection of fluids (blood, urine, and saliva)
- Attending Physician Statement (APS)
- Long-form application
- Relatively extensive medical information

Underwriting Methods

Accelerated

- Reduction in the requirements of traditional underwriting if certain minimum demographic or health-related requirements are met by the applicant
- Alternative approaches and data used to segregate applicants by risk, and those with a lower risk can be underwritten with a lesser amount of medical information
- Price may be higher than under the traditional approach, but many programs are designed to enable similar pricing using alternative approaches and data

Underwriting Methods

Simplified (SI)

- Limited approach to underwriting
- Information only, without the collection of fluids
- Assumption is that mortality will, therefore, be higher, and the price reflects that mortality

Efficacy of AUW

The question is not ...

how well statistical algorithms or underwriting rules engines are able to predict mortality outcomes

but ...

how well a specific implementation performs at predicting mortality outcomes

Efficacy of AUW

For some applicants ...

one or more elements may provide the underwriting information needed

while for another applicant ...

another avenue may provide the information needed

Data Elements

- Rx Data
- Credit Based Scores
- Consumer Marketing Data
- APS
- Facial Recognition
- Other Data Elements (voice recognition technology, social media checks, and data from wearable devices)

Qualification Percentage

The responses from the panelists regarding the percentage of applicants that would meet the necessary criteria to be considered “accelerated” had the following statistics:

1. Minimum of 10%
2. Maximum of 80%
3. Average of 42%

Qualification Percentage

Examples of factors that impact the percentage :

- Age
- Face Amount
- Mix of business
- Target Market
- Distribution Channel
- Socioeconomics

Qualification Percentage

	CURRENTLY	IN 10 YEARS
UPPER BOUND (starts to insure worse risks and companies will limit)	Minimum 25% Maximum 90% Average 49%	Minimum 45% Maximum 100% Average 84%
LOWER BOUND (too many customers upset about not qualifying)	Minimum 0% Maximum 40% Average 15%	Minimum 5% Maximum 80% Average 41%

Applications % AUW

According to the panelist responses, the percentage of applications that will be submitted through accelerated underwriting will be as follows:

- In 5 years – minimum 20%, maximum 95%, average 57%
- In 10 years – minimum 40%, maximum 100%, average 79%

Where AUW May Fail

Older ages (and perhaps the very young)

Higher face amounts

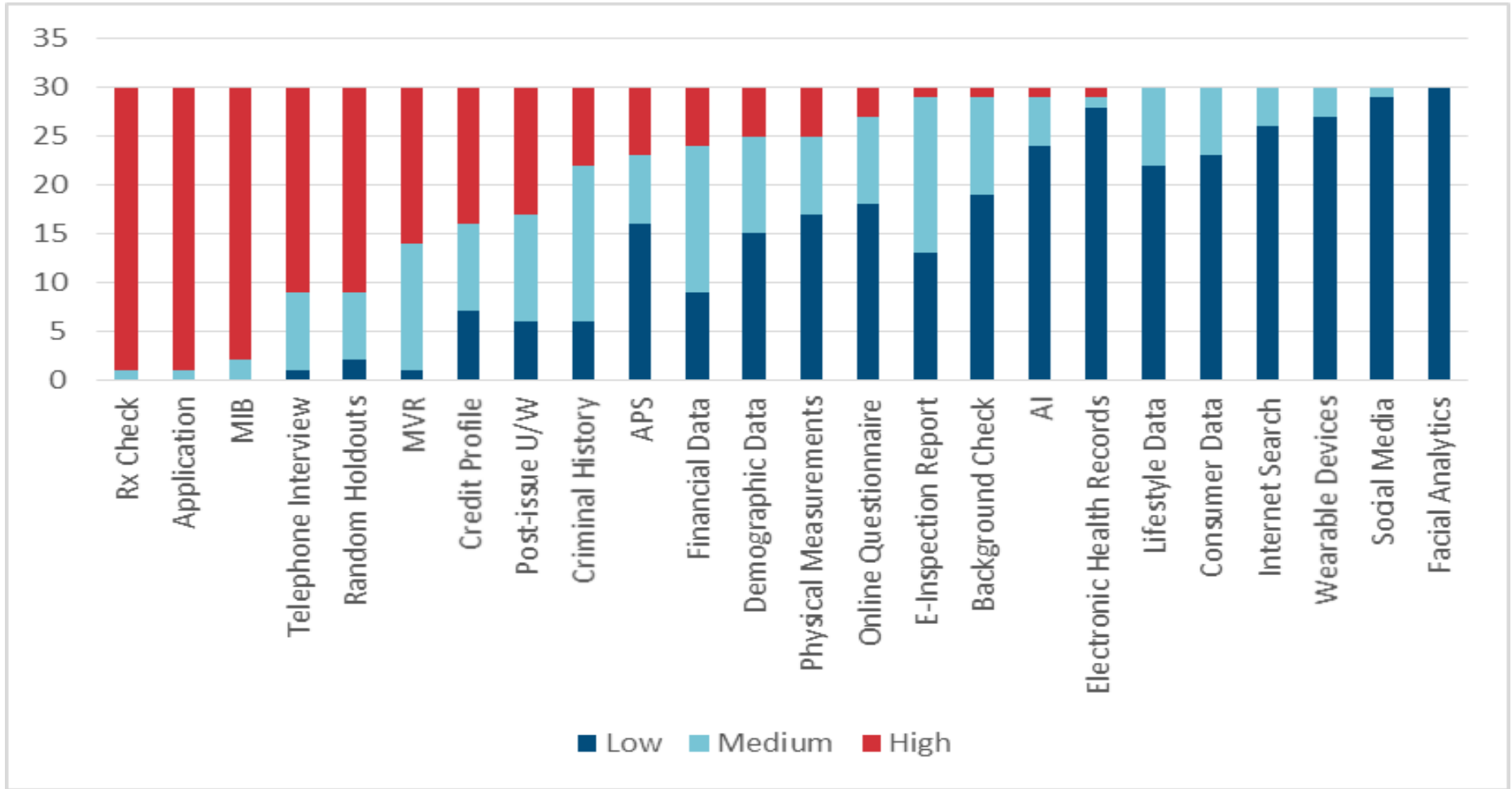
Foreign nationals

Complex or unusual medical history

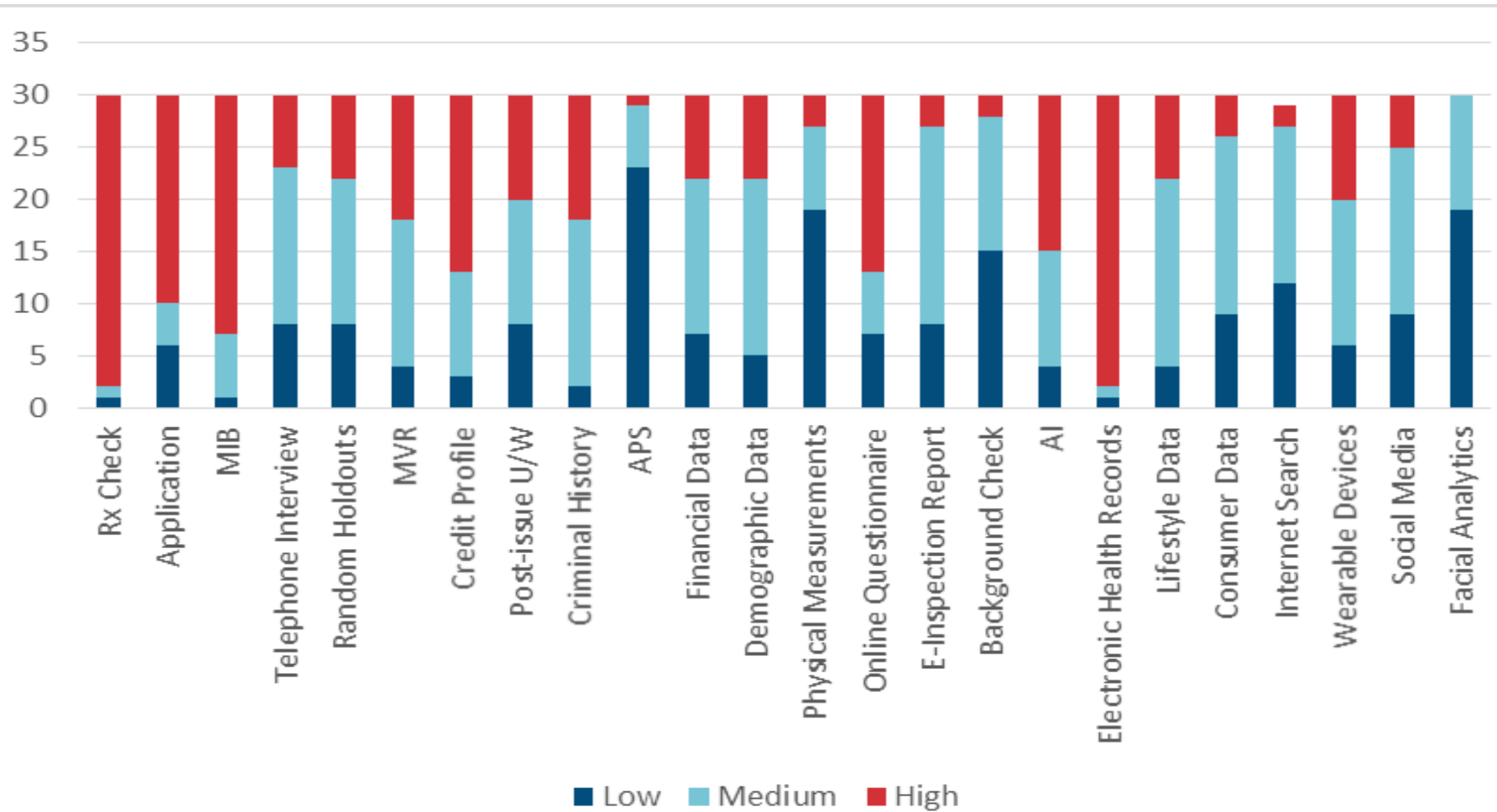
Target markets with high misrepresentation

Substandard or impaired risks

AUW Data Elements - Now



AUW Data Elements In 10 years



Comparing AUW Programs

Above Average

- Uses several data sources and underwriting requirements
- Customer interaction and operations are seamlessly integrated
- May have digital application capabilities
- Reflexive application
- Process involves sentinel effect
- Machine-learning models are used instead of generalized linear models
- Has the same top underwriting class
- Contains a predictive analytics model
- Eventually adding electronic health records
- Has strong rules for triaging applicants
- Program is designed to change over time
- Uses a holdout process to calibrate

Comparing AUW Programs

Average

Has some combination, but not all, of the factors described in "above average," which may result in more applicants being eligible for accelerated underwriting that qualify for the age and amount parameters.

Comparing AUW Programs

Below Average

- Uses fewer data sources, and will likely be quite slow to deploy electronic health records
- Uses limited or unreliable data
- Uses paramedical or paper application for medical data
- Relies on one or two pieces of information to make the acceleration pathway decision
- Has a short application
- Does not use random holdouts or post-issue checking
- Relies on a small volume of data
- Focuses on achieving cost savings

Risk Exposures

Non Disclosure/Smoking	Pricing risk, standard as Preferred
High blood pressure	IT risks
High cholesterol	Data risks - quality, definition, and timeliness
Diabetes/pre-diabetes	Risk of being too cautious
Regulatory risk /new data sources	Poor algorithms or rules
Legal / discrimination	High body mass index (BMI)
Unknown medical conditions	Overly aggressive programs

Substandard Risks

% of applicants that are accepted that would have been declined under full UW, and the associated increase in mortality

ACCELERATED PROGRAM	PERCENT (MIN, MAX) AVERAGE	INCREASE IN MORTALITY (MIN, MAX) AVERAGE
Above Average	(0,15) 3	(200%, 600%) 375%
Average	(0.75,20) 5	(250%, 600%) 386%
Below Average	(2,40) 10	(250%, 600%) 395%

Mortality Risk Indicators More Difficult to Capture

- Tobacco and non-prescription marijuana use
- Undiagnosed hypertension, hyperlipidemia, and/or diabetes/pre-diabetes
- Alcohol/substance abuse and illicit drugs
- Kidney and liver function problems; Proteinuria
- HIV
- Coronary Artery Disease markers
- Basically, any misrepresented or undiagnosed condition that can be routinely discovered on labs or in a routine APS, including cholesterol and liver enzyme tests, weight and other vital statistics currently gathered by paramedical examiners. Anything related to non-disclosure that takes considerable time to test or determine.

Underwriting Class Distribution

- Highly dependent on the program design
- In a well-designed program, proportions should not change much
 - Only better risks would be accelerated, and worse risks would still be manually underwritten
- Any accelerated program is likely to make a small number of poor underwriting decisions, both cases where a better class is offered and where a worse class is offered. The latter may be viewed as problematic from a regulatory perspective, while the former is very costly to the company.

Mortality Relative to Traditional Underwriting

On accelerated business only, based on panelist responses, it is anticipated that the overall increase in mortality rates will be:

- Minimum -5%
- Maximum 25%
- Average 4%

Impact on Mortality Curve & Grading

ACCELERATED UNDERWRITING PROGRAM-ROBUSTNESS/ACCURACY	SLOPE OF CURVE			LENGTH OF SELECT PERIOD			# OF YEARS TO GRADE INTO FULLY UNDERWRITTEN (MIN, MAX) AVG	MORTALITY % DIFFERENTIAL (+ IF WORSE/-IF BETTER) (MIN, MAX) AVG
	Similar	Flatter	Steeper	Similar	Shorter	Longer		
Above Average	Similar			Similar			(0,15) 8	(+0,15) 3
Average	Similar to Flatter			Similar to Shorter			(5,20) 13	(+4,25) 8
Below Average	Flatter			Shorter			(15,25) 20	(+7,35) 17

Impact on Mortality Curve & Grading

For those who believe that accelerated underwriting mortality will grade into traditional underwriting mortality, the expected timeframes are as follows:

- Minimum 0 years
- Maximum 50 years
- Average 14 years

Emerging Mortality Experience

- One panelist pointed out that, if the results were demonstrated immediately after issue, then the program was deeply flawed
- The long term is where the true impact will be accurately measured for a well-constructed program

Sentinel Effect

- In general, panelists agreed there is a sentinel effect loss, but there are also offsetting factors
- More anti-selection will be seen, especially with tobacco usage, which may be harder to detect through traditional means in accelerated programs
- There are emerging triage tools, such as smoker prediction models, that may help offset this effect by redirecting the high likelihood smoker applicants to the traditional route

Sentinel Effect

Offsetting Factors:

- Addition of other tools, such as Rx histories, non-medical credit, and lifestyle models could offset this a bit
- Random holdouts
- Post-issue APS auditing program
- Agent monitoring

Measuring Performance

Approaches to measuring performance include:

- Random holdouts
- Post-issue monitoring
- Review of mortality experience
- Review of acceptance percentages

Measuring Performance

- Early lapse rates
- Early claims
- Speed to issue, including comparison of speed to expectations for the program
- Distribution monitoring and, in particular, looking at the prior distributions of the business (i.e., by risk class, smoking status, BMI, etc.) and comparing to the new distribution with accelerated underwriting.
- Cost and efficiency savings, including comparison to expectations

Impact of New Customers

Panelists' views on the percent of the AUW program customers that are new from a previously underinsured market, and what their mortality is as a percentage of the historic traditional underwriting customers' mortality.

(MIN, MAX) AVERAGE

Percent of New Customers	(3%,39%) 14%
Relative Mortality	(100%,190%) 114%

Automation and Confidence

- In the long run, automation will add confidence
- Refining underlying rules, along with knowledge gained from experience, will improve underwriting decisions and overall mortality
- Automation increases the consistency of underwriting decisions, and can more efficiently synthesize all the data that is available on the applicant
- It will take many years for the automated systems to be able to handle rules that are more complex than what humans are doing today

Automation and Confidence

- For the home office, there is more confidence, but for the agent and consumer, this is not always true
- A big issue for the consumer is whether they are being treated fairly
- Transparency and communicating effectively with field partners and customers is important

Exceptions

- The transparency and consistency of how the underlying model is used to waive underwriting requirements is critical to regulators
- There are codified ‘stretch’ guidelines that still apply for accelerated underwriting. True exceptions would be much rarer, although not beyond the realm of possibility for any type of underwriting program
- The mortality impact is driven by the frequency and severity of the exceptions and whether they are expected or unexpected. For example, if there are pre-defined “stretch criteria,” then that can be factored into the mortality expectation

Industry Tables as a Starting Point

- The current industry tables are a reasonable starting point, but the slope and ultimate level of mortality likely needed adjustment
- Most accelerated underwriting processes are simply trying to set parameters to predict the current underwriting decisions and risk classes
- To the extent a somewhat conservative approach is taken to setting up these AUW programs and the company is monitoring and controlling the risks being accelerated such that the mortality stays very close to existing traditional underwriting mortality, the current structure of mortality tables makes sense

Industry Tables as a Starting Point

An Alternate Opinion:

- Current industry tables were built from data that relied on traditional underwriting requirements and traditional agent/client engagement models
- Both of those are changing significantly and are likely to impact the level, slope, and length of the select period
- In addition, to the extent these new accelerated programs are successful in attracting new customers and reaching the underinsured middle market, the demographic, lifestyle, and medical characteristics of these new customers may be different than historical life insurance customers, which could impact mortality results

Principle-Based Reserve Mortality Assumption - Approach

1. Determine the most severe impairment for each applicant in the sample population
2. Assign a relative mortality to each applicant
3. Overweight the population toward impaired lives (adjust for loss of sentinel effect)
4. Compare decision mix and relative mortality

Concluding Remarks

- Underwriting is evolving with newer underwriting techniques that are reaching more potential applicants
- How well these practices are implemented, and the quality of data sources used, will go a long way to providing predictable mortality outcomes
- The quality of many currently available data sources is good and will only improve with time

Concluding Remarks

- For the companies surveyed, accelerated underwriting appears to be leading the charge in today's current state of underwriting
- Traditional underwriting will still have its place for applicants who are not triaged into an accelerated underwriting process
- Most companies' goal is to maintain similar mortality outcomes and pricing with what is offered today

Concluding Remarks

- It may, in fact, turn out that those who do not innovate may be subject to anti-selection due to a drawn out underwriting process
- They may end up experiencing higher mortality if all of the good risks tend toward products and companies that offer accelerated underwriting
- They are also more likely to lose market share

Questions?

Accelerated Underwriting Update

