Accelerated Underwriting

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Background Information

- **Underwriting** in general is the process of classifying entities (bonds, insurance applicants, financial derivate instruments, etc.) into risk categories to determine the appropriate rate to charge for transferring the financial risk associated with the entity.
  - It is te process of evaluating risks, selecting which risks to accept, and identifying potential adverse selection
  - Note: Underwriting is intrinsically discriminatory in the non-pejorative sense in that it is used to discriminate or distinguish between risk classes

- **Underwriter in Insurance** : Individual who decides whether to insure exposures on which applications for insurance are submitted.

Life Insurance

Life insurance is based on three concepts:

➢ Pooling many similar risk exposures into a relatively homogeneous group

➢ Accumulating a fund through contributions (premiums) from the members of the group, and

➢ Paying from this fund for the losses of those who die each year.

➢ Essentially, insurance (and life insurance in particular) is a future performance contingent claims contract between the insurer and the insured and is similar to other future performance financial contracts

Life underwriting is process of deciding which life insurance applicants to accept, how to group them, how to charge them appropriate premiums for their risk class. Usually this involves assessing the person's physical health, usually by blood work, urine analysis, doctor's notes, physical exam, etc.

How Life Insurance Works: Other Premium Elements

- The yearly cost of mortality is the probability a person dies during the year times the face value (or amount of insurance) In addition to covering mortality costs, a life insurance premium which must be paid upon death. This is discounted back to the present for interest received on premiums received. Depending on the type of life insurance product, this is aggregated over the length of the contract.

- The premium actually charged must reflect several adjustments.

- Premium are based on the following:

> Projected losses, + commissions and administrative expenses + risk charge + taxes – investment income on premiums.

Characteristics of Major Types of Life Insurance Policies

	Distinguishing Feature	Premiums	Cash Value	Death Benefit
Term life	Provides protection for a specific period (term)	Fixed, but increase at each renewal	None, thus no provision for loans or withdrawals	Pays face amount of policy if death occurs within term
Whole life	Lifetime protection: as long as premiums are paid, policy stays in force	Fixed	Guaranteed	Pays face amount if policy is in force when death occurs
Universal life	Guaranteed minimum interest rate on the investments accumulated in the accounts. Interest rates are based on bonds only (not stocks) and can be higher than the minimum guaranteed	Flexible, set by policyholder; used to pay mortality rates and expenses, then remainder is invested	Depends on the account value minus surrender charges	Option A: maintains level death benefit Option B: face amount increases as accumulated cash value grows
Variable life	The "mutual fund" policy, intended to keep death benefits apace with inflation; technically, a security as well as insurance	Fixed	Not guaranteed; depends on investment performance of stocks	Minimum face amount that can be greater as cash value changes
Variable universal life	Combines the premium and death benefit flexibility of a universal life policy with the investment choices in stocks of variable life	Flexible, as in universal life	Not guaranteed; depends on investment performance of stocks	Same options are universal life

What is Accelerated Underwriting?

What is 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." (Klein & Rudolph, SOA 2019)

▶ Accelerated Underwriting generally makes use of new data together with algorithmic tools and modeling techniques to risk-group applicants quickly without the necessity of bodily fluids, physician's' notes, etc.

▶ For those who qualify, the use of available digital data can reduce the underwriting decision time from 2-12 weeks down to no more than 48 hours.

Accelerated Underwriting typically…

- Issues a regular term life policy

- Policyholder pays the same rate as standard underwritten policies but underwriting decision is much faster

  - Could be more expensively priced product for the applicant than would be obtained using standard underwriting if he/she is in very good shape and would qualify for preferred rates with standard underwriting.

Accelerated Issue Insurance is not the same as Guaranteed Issue Insurance

Guaranteed Issue refers to insurance coverage that is "*guaranteed to be issued*" to applicants - regardless of their health status, age, or income. You are not guaranteed coverage with accelerated underwriting. Different actuarially.

Accelerated Underwritten Insurance is not the same as Simplified Issue Insurance

- Simplified issue insurance means that there is no requirement for a physical exam. With Accelerated Underwriting there is an assessment of physical fitness, just obtained from digital data, not a physical.

  - Simplified issue premiums are expected to be more expensive than if the applicant had undergone a full underwriting process. If underwritten with accelerated underwriting, have standard rates.

Who offers Accelerated Underwriting?

A plethora of companies offer Accelerated Underwriting

How does AU differ from standard underwriting?

- (a)   Technology (algorithms) used in place of bodily fluids for assessment
- (b)   No requirement that applicant's doctor give written statement
- (c)   Data Sources often used by Insurer:
  - Prescription Histories
  - Motor Vehicle Records (MVR)
  - Medical Information Bureau (MIB)

    Checking Service and Insurance Activity Index can see hidden risks and stacking behavior of applicant (e.g., using many lower level policies limits to get excessive risk without running into a maximum coverage limit constraint)

  - Applications and Interviews
  - Consumer Data
  - Credit scores

How does AU differ from standard underwriting? (continued)

- (d)   Certain non-health factors also matter and vary by insurer:
  - No history of bankruptcy in the last 5- 10 years
  - No history of driving recklessly or DWI within five years
  - No more than two moving violations in the past three years
  - No felony charges or convictions.
- (e)   Minimum benefit amount is usually on the order of $100,000
- (f)   Maximum benefit is usually on the order of $1,000,000

Data Sets Used in Algorithms for AU

TOP 10 UNDERWRITING TOOLS	WAIVE REQUIREMENTS	DETERMINE RISK CLASS
Prescription histories	23	22
MIB	23	19
MVR	21	23
Electronic application	20	19
Tele-underwriting interview	18	19
Credit data	18	9
ID authentication	11	4
Consumer data	10	5
Paper application	9	10
ID verification	8	3

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

Results From Preliminary SOA Sponsored AU Study of 27 insures using AU by Klein & Rudolph June 2019. Available at https://www.soa.org/globalassets/assets/files/resources/research-report/2019/accelerated-underwriting-preliminary-results.pdf

What if you don't qualify for Accelerated Underwriting

▶ May need to go with full underwriting to get approved if certain negative risk factors show up during the information-gathering or not enough positive risk factors are present.

▶ May need to go with full underwriting especially if you want preferred or super preferred rates.

▶ You'll then have to complete a medical exam (including bodily fluids) and get a doctor's statement. This will lengthen the application process.

What are the positives of AU?

- ▶ Faster to the underwriting decision
- ▶ Cost reduction
- ▶ Less invasive to client
- ▶ Ease of doing business
- ▶ Standard or better underwriting
- ▶ More electronic, easier to file data.
- ▶ Possibly more accurate underwriting
- ▶ Attract younger clients via digital underwriting process
- ▶ Bias removal?

What are limitations of AU?

- The insurance industry and procurement data are mainly regulated by state laws (natlawreview.com)

  - As a result, underwriting practices will be more difficult to streamline.

- Increased digitalization opens insurers up to new data for underwriting use, but also possibly more fraud.

- Careful attention will have to be given to data privacy/security concerns

- Care must be taken when using machine learning and AI techniques to avoid "learned" statistical biases

- Models will have to be continuously updated to maintain accuracy.

Possible Areas of Controversy

- The use of social data in the underwriting process
  - Example: The use of credit scores is widely accepted now in the P&C industry, and certain aspects of financial history have long been used in life insurance (e.g., the applicant will have to justify if the amount of insurance desired is very much more than their income level). Other uses of credit history variables in life insurance may require further study to show it is a new (not already incorporated) predictor variable, and that it has independent predictive value. Never-the-less, better credit scores correlate with a longer life, so it may be a useful predictor. Credit-mortality score can be created just like credit insurance claim score was created for auto insurance.
  - Use of complicated underwriting algorithms does raise the possibility of unknown or unrecognized proxy discrimination, and makes underwriting decisions more difficult to explain to clients and regulators.
  - Social data is more susceptible to high variances and heteroskedasticity in estimated model weights.

- Foregoing certain fluid testing might result in adverse selection.

Preliminary Results from SOA Sponsored AU Study Klein & Rudolph June 2019

➤ 27 life companies and 5 reinsurers responded to a survey on their AU programs.

➤ Related to data between 1/1/2017 to 9/30/2018.

YEAR PROGRAM BEGAN	NUMBER OF COMPANIES	STILL IN TEST MODE
2011	1	
2014	2	
2015	1	
2016	5	
2017	8	3
2018	10	2

Note: There will be an Expert Panel Discussion on AU on Dec 11, 2019 at SOA Offices (by O'Hare)

Which Products Use AU?

AU PRODUCTS	
PRODUCT	**NUMBER OF COMPANIES**
Term	23
Equity Index Life	10
Whole Life (Par/Nonpar)	9
Other UL (Other than ULSG)	9
UL with Secondary Guarantee	8
Variable UL	5
Interest Sensitive Whole Life	1

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Which Risk Classes Are Eligible?

RISK CLASS LIMITATIONS	NONSMOKER	SMOKER
Available for all risk classes (i.e., no restrictions)	19	16
Available for a limited number of risk classes	8	2
Not available for any risk classes	0	9

AU Algorithms

AU ELIGIBLE APPLICATIONS	
NUMBER OF ALGORITHMS	NUMBER OF COMPANIES
1	14
2	12
> 2	1

WHO CREATED THE ALGORITHM?	
RESOURCE	NUMBER OF COMPANIES
Internal underwriting	23
Internal actuary	22
Reinsurer	15
Internal data scientist	11
Vendor	7
Consultant	4

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How Does Mortality Experience Perform (vs. Expected) When Standard Underwriting Requirements Were Waived?

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	0
1%-10% Higher	2	6
> 10% Higher	4	2

Thank You

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