



somewhat
different

Current Trends in SI & Accelerated Underwriting

Brian Boger, FSA, MAAA, Mortality Solutions - Pricing

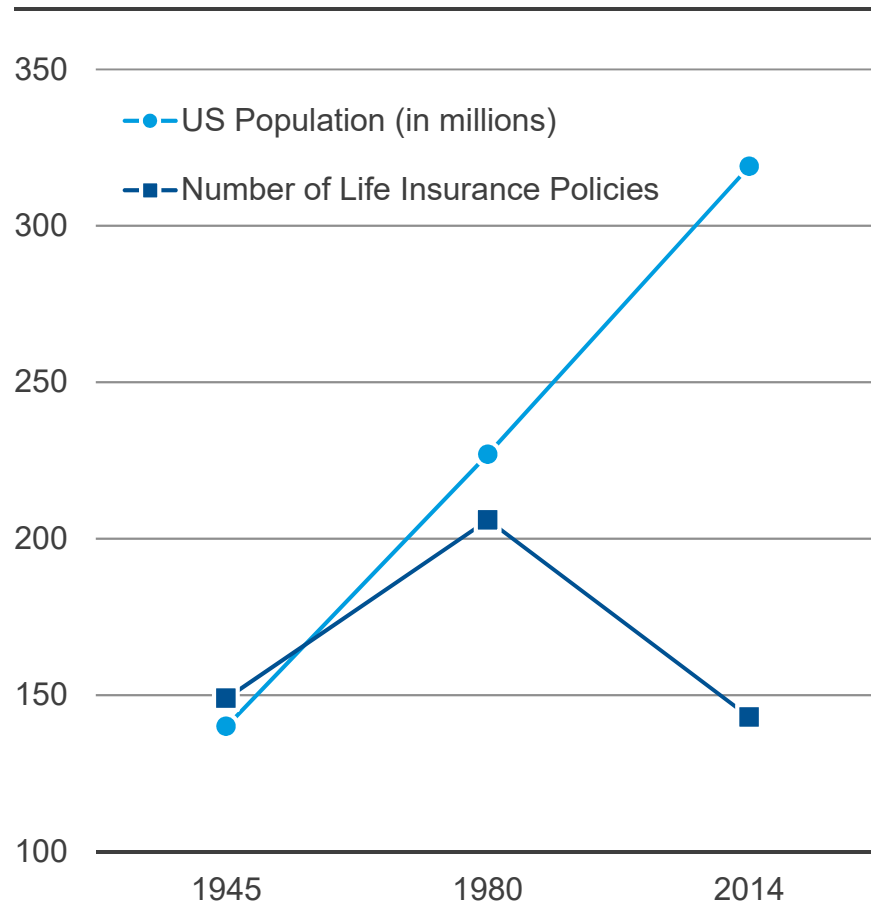
Actuaries Club of the Southwest Spring Meeting
Fort Worth, Texas - June 17, 2017

hannover **re**[®]

The Life Insurance Challenge

Will we remain relevant in the 21st century?

US Population and Number of Life Policies



People want more life insurance, but don't buy it:

- ▶ 40% of Americans who **HAVE** life insurance don't think they have enough.
- ▶ 70% of households with children under 18 say they do not have enough life insurance. Yet they insure their cell phones!
- ▶ LIMRA estimates the unmet life insurance need at over \$15 trillion.
- ▶ 83% say they don't buy life insurance because it is too expensive.
- ▶ But they overestimate the cost by more than a factor of 3.

LIMRA 2015

Back to the Future

The more things change, the more they stay the same.



1986

- ▶ Music on Albums and CDs
- ▶ Movies on VHS or Beta
- ▶ Dozens of TV Channel Choices
- ▶ On Cable & Antenna
- ▶ Travel Agents
- ▶ AAA Triptik
- ▶ Banking in branches



2016

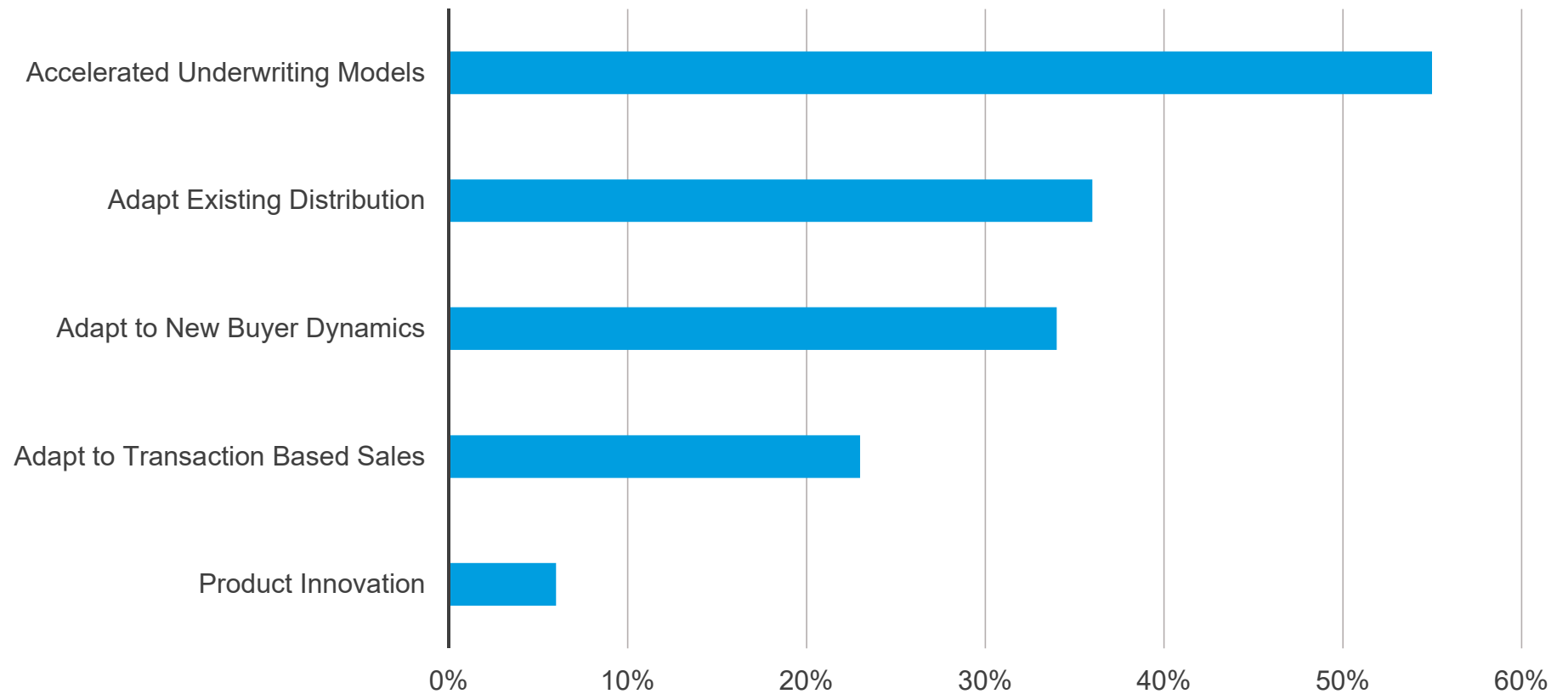
- ▶ Music on iTunes and Spotify
- ▶ Movies Netflix and iTunes
- ▶ Thousands of TV Choices On
- ▶ Satellite, YouTube, Amazon, etc.
- ▶ Expedia
- ▶ Google Maps
- ▶ Banking online

Yet buying life insurance hasn't meaningfully changed in 30 years...

- Meet with an agent and answer pages of health and avocation questions.
- Meet with paramed - provide blood & urine sample and have your height & weight taken.
- Wait weeks to months for a decision on a product that may or may not meet your needs

Managing Change is Critical to Successful Growth

Issues to grow business effectively

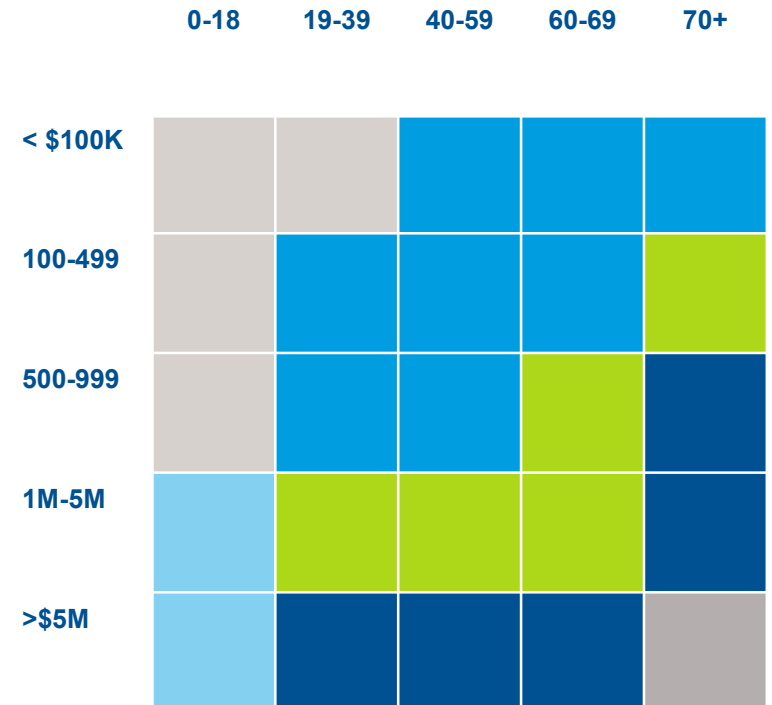


NMG Survey 2015

Accelerated Underwriting

Goals and Considerations

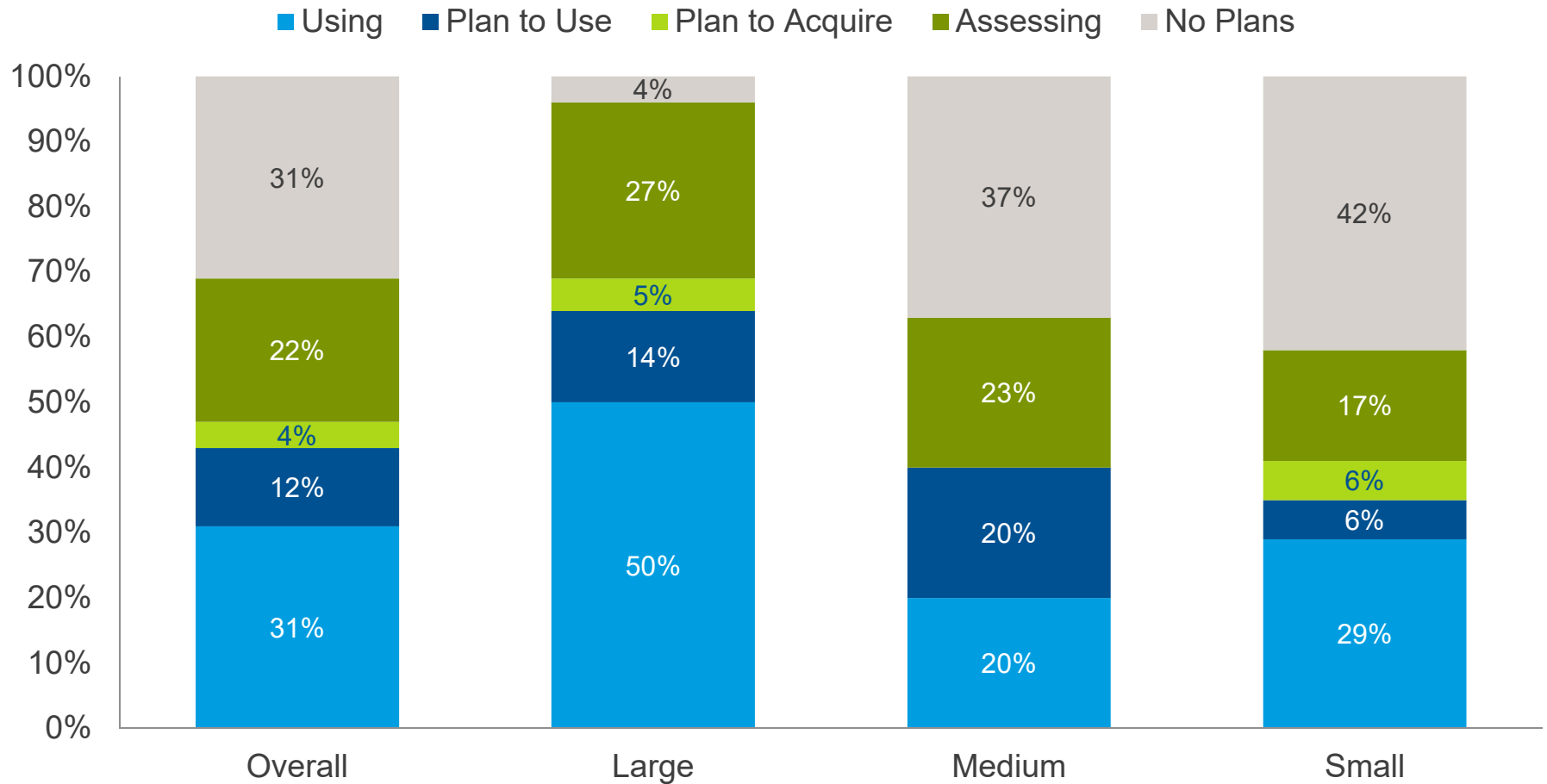
- ▶ **Penetrate Underserved Markets**
 - A Distribution Challenge for Middle Market
 - Generationally Changing Expectations
- ▶ **Underwriting Process Ideally Aligns**
 - Faster travel time
 - More transactional
- ▶ **Industry Focus Today**
 - Predictive Analytics
 - Automated Rules Engines
- ▶ **Need to Balance**
 - Desired improvements in process
 - Protective value of underwriting
 - Cost savings
 - Retail rate that is sellable for market / approach



Most Companies Looking at Automation as Well

Life Insurers' Current and Future Automation Plans

in %



NMG Survey 2015

What's Happening in the Market Today?

Defining Accelerated Underwriting

- ▶ Fluidless underwriting
- ▶ Issue ages up to 55 or 60
- ▶ Face amounts up to \$500k or \$1M
- ▶ Underwriting based on:
 - Self-reported height and weight
 - Family and personal history
 - 3rd Party Data (MVR, MIB, Rx and other predictive models)
- ▶ Applicants can earn best non-tobacco rates, not just residual standard
- ▶ Retail premiums consistent with fully underwritten product are offered

Predictive Modeling

- ▶ Predictive modeling is a targeted area of focus for the life insurance industry
- ▶ Hannover research indicates that it can provide significant benefit to risk selection and stratification for life insurance
- ▶ Hannover has worked with LexisNexis to develop solutions
 - Transunion is another vendor in this space

Predictive Modeling: Hannover Re/LexisNexis

Model Validation



- ▶ LexisNexis (LN) has developed a predictive model that uses FCRA data to estimate relative mortality risk
 - Model produces a score from 200-997 with low scores=higher mortality
- ▶ Key attributes of model include:
 - Public records (felony, criminal, derogatory records, court filings, etc.)
 - Lifestyle (property ownership, home value, wealth index, professional licenses, etc.)
 - Behavioral (credit, bankruptcies, foreclosure, eviction, motor vehicle record*, etc.)
 - Not using consumer data (magazine subscriptions, credentials, etc.)
- ▶ LN provided data so that we could validate the results of their model

Dataset

- ▶ Includes over 4.5 million records representing 'P&C insurance shoppers'
 - LN appended FCRA data and calculated a mortality score for each record
- ▶ Initial records October 2006 followed through first half of 2013
 - More than 140,000 deaths
- ▶ Mortality analysed relative to US population mortality, then adjusted to baseline referent to reflect relative risk

Predictive Modeling: Hannover Re/LexisNexis

Total Model Results

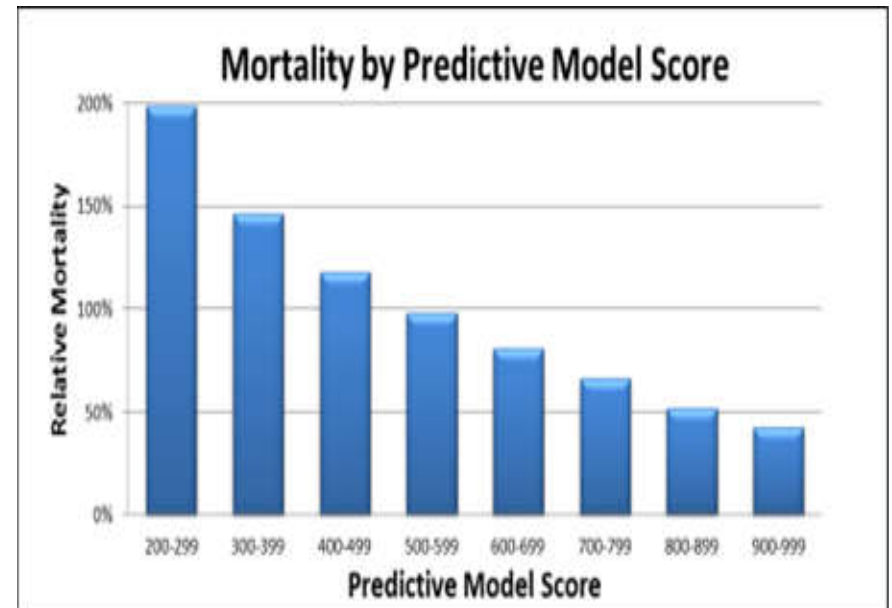


- ▶ The high level results of the analysis on the predictive model score were as expected

Higher Scores = Lower Mortality

- ▶ But we also wanted to understand those relationships at a more granular level to feel comfortable that the model wouldn't "break down"

	Exposure Years	% of exposure	Observed Deaths	Relative Mortality
Grand Total	22,955,453	100.0%	140,585	100%
Predictive Model Score				
200-299	2,060,220	9.0%	15,532	199%
300-399	2,150,535	9.4%	15,347	147%
400-499	3,308,535	14.4%	28,285	118%
500-599	4,559,388	19.9%	38,088	98%
600-699	4,768,445	20.8%	27,725	81%
700-799	3,550,238	15.5%	11,892	66%
800-899	1,847,540	8.0%	3,099	52%
900-999	710,551	3.1%	617	43%



Predictive Modeling: Hannover Re/LexisNexis

By Wealth Level



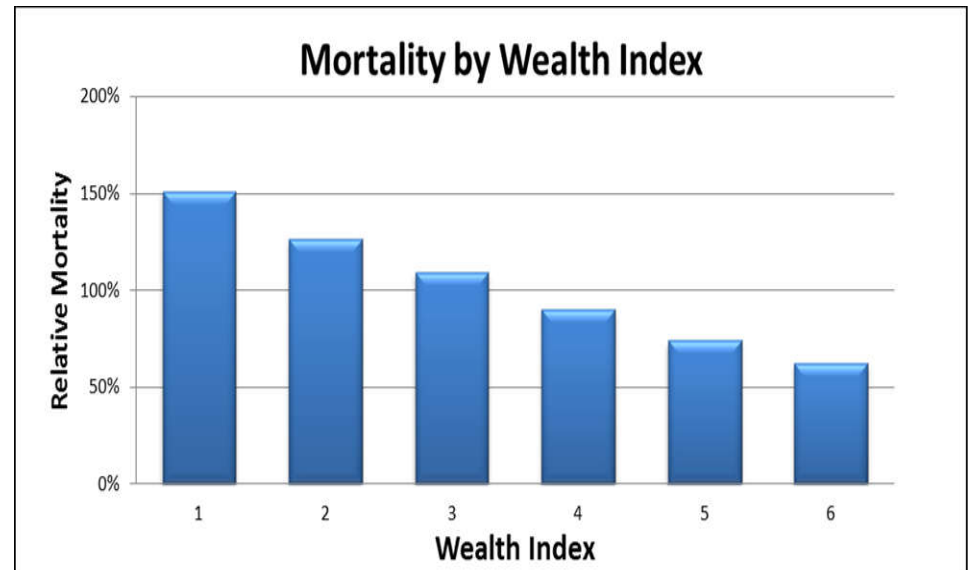
For example, we know that mortality and wealth tend to be inversely correlated

Higher Wealth = Lower Mortality

But wealth is also correlated with smoker prevalence, obesity, etc...

...so we wanted to be able to see that the predictive model score “worked” even when controlling for wealth

	Exposure Years	% of exposure	Observed Deaths	Relative Mortality
Wealth Index				
1	420,505	1.8%	2,291	151%
2	1,279,506	5.6%	11,664	126%
3	3,503,437	15.3%	22,398	109%
4	3,867,085	16.8%	22,032	90%
5	2,755,533	12.0%	13,753	74%
6	684,466	3.0%	3,095	62%
Unknown	10,444,922	45.5%	65,352	107%

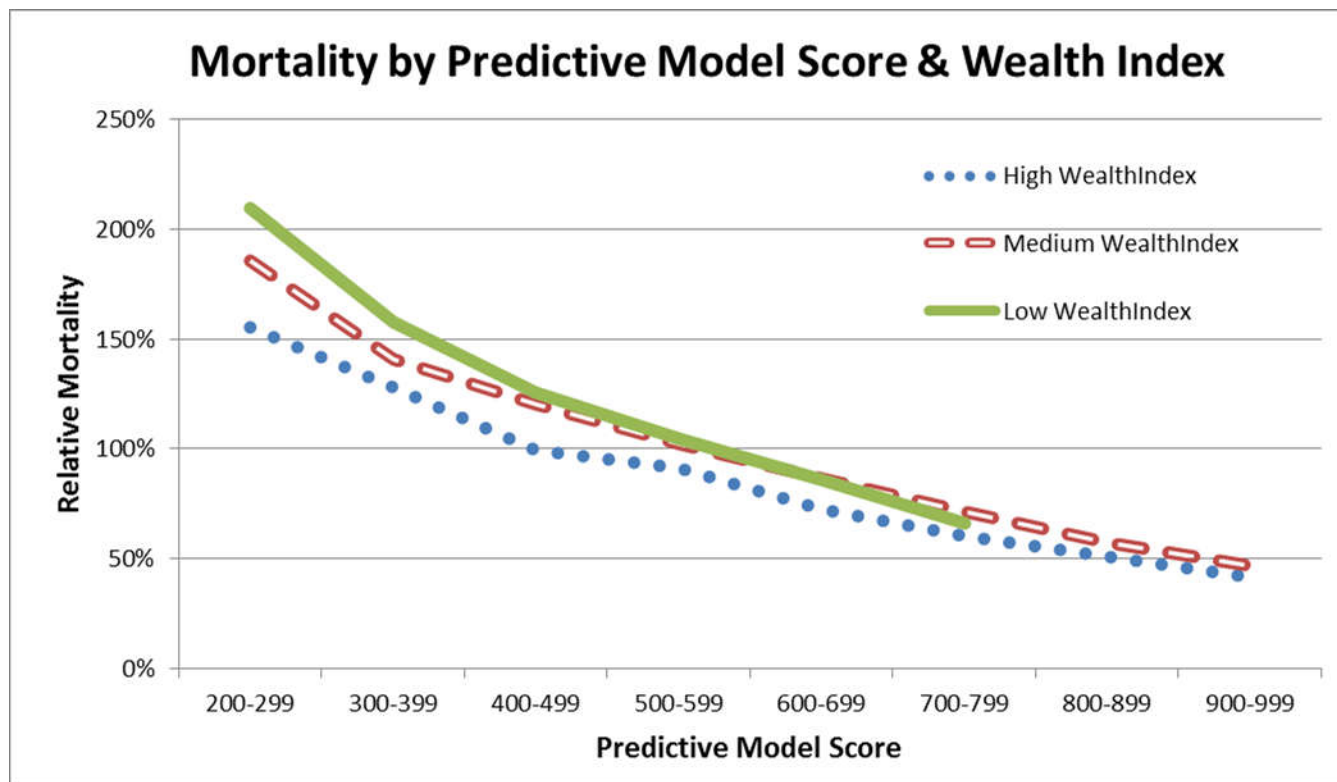


Predictive Modeling: Hannover Re/LexisNexis

By Wealth Level



- ▶ The predictive model score shows a strong relationship with mortality, even when holding wealth constant

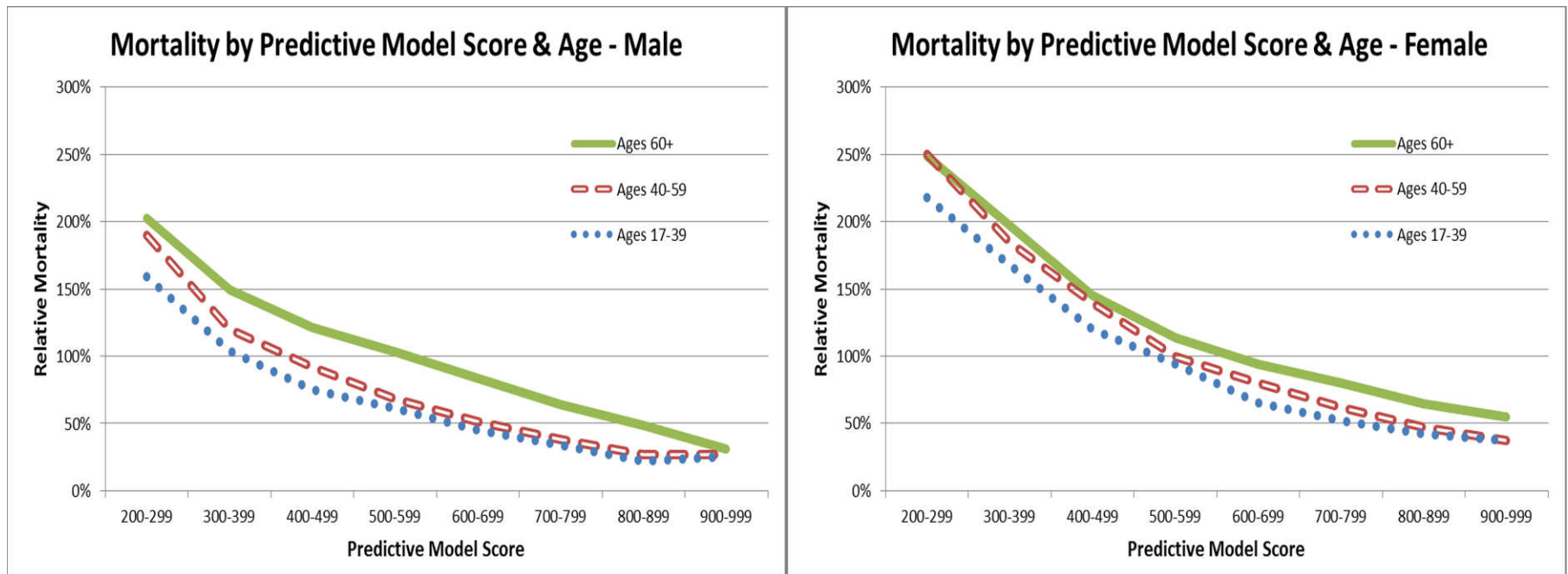


Predictive Modeling: Hannover Re/LexisNexis

By Age and Gender



- ▶ The shape of the curve is consistent by age group and gender, suggesting it does not break down at this level of granularity

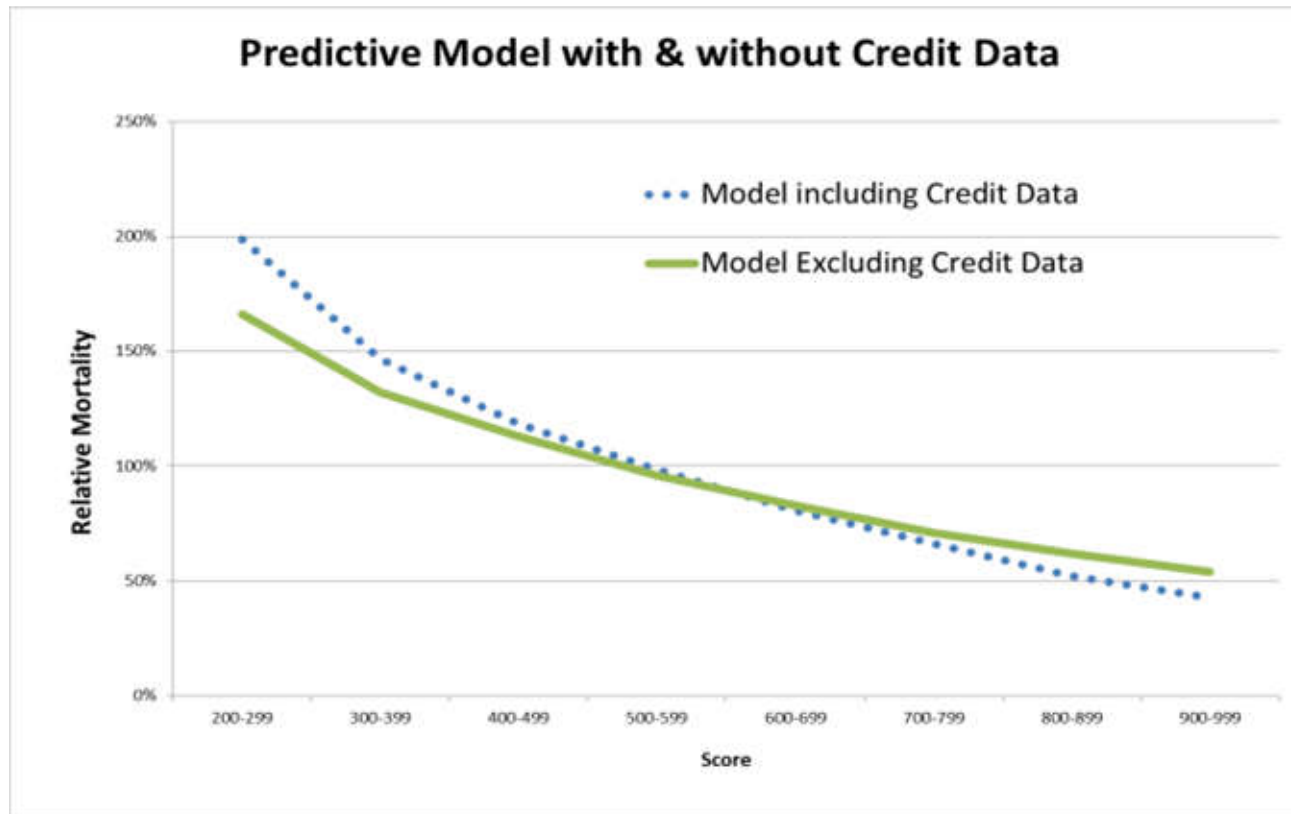


Predictive Modeling: Hannover Re/LexisNexis

Comparison of Model with & without Credit Data



- ▶ Predictive model score has predictive value even without using credit data
 - So score w/o credit could be used in states where credit data not allowed for life UW
- ▶ Credit data provides additional predictive value to score (i.e., steeper slope)



Predictive Modeling: Hannover Re/LexisNexis

Stratifying Risk



A/E relative to 2008 VBT S&U table

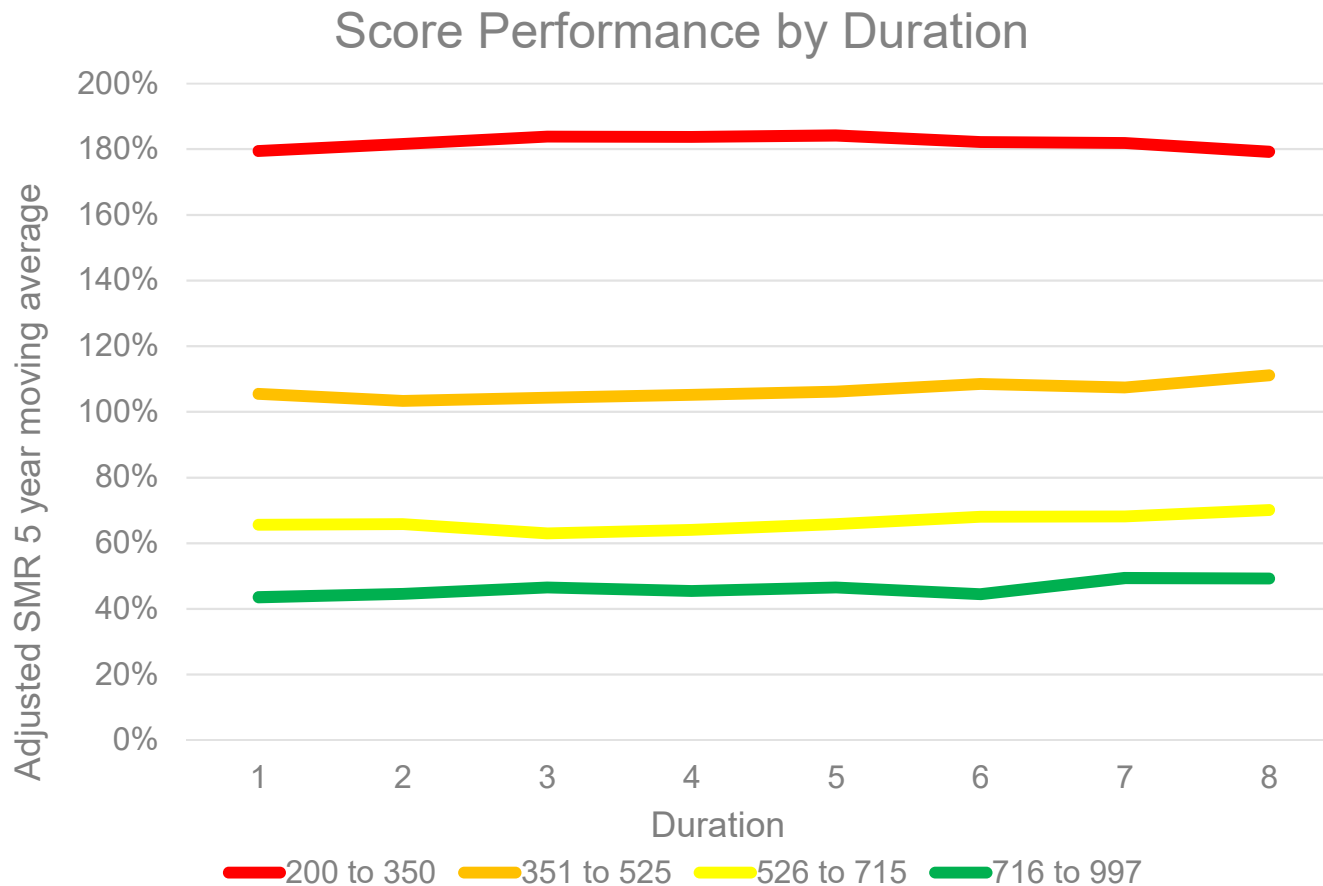
PM Score Range	Total	All Risk Classes Excludes Declines	Risk stratification based mainly on medical info			
			Preferred Plus & Preferred	Standard Plus & Standard	Tobacco	Declines
200-299	219%	166%	138%	184%	171%	371%
300-399	142%	118%	105%	116%	144%	280%
400-499	107%	93%	77%	104%	107%	233%
500-599	89%	80%	67%	85%	98%	195%
600-699	75%	67%	57%	72%	86%	169%
700-799	71%	64%	55%	69%	78%	183%
800-899	65%	57%	46%	65%	73%	192%
900-997	57%	51%	45%	62%	26%	202%
Total	95%	82%	68%	86%	105%	229%
# of deaths	11,983	9,326	3,161	4,346	1,1819	2,657

Risk stratification based on non-medical info

Predictive Modeling: Hannover Re/LexisNexis by Duration



- ▶ Results are consistent by duration suggesting the LN model provides insight into the level of ultimate mortality (vs. an impact that wears off over time)

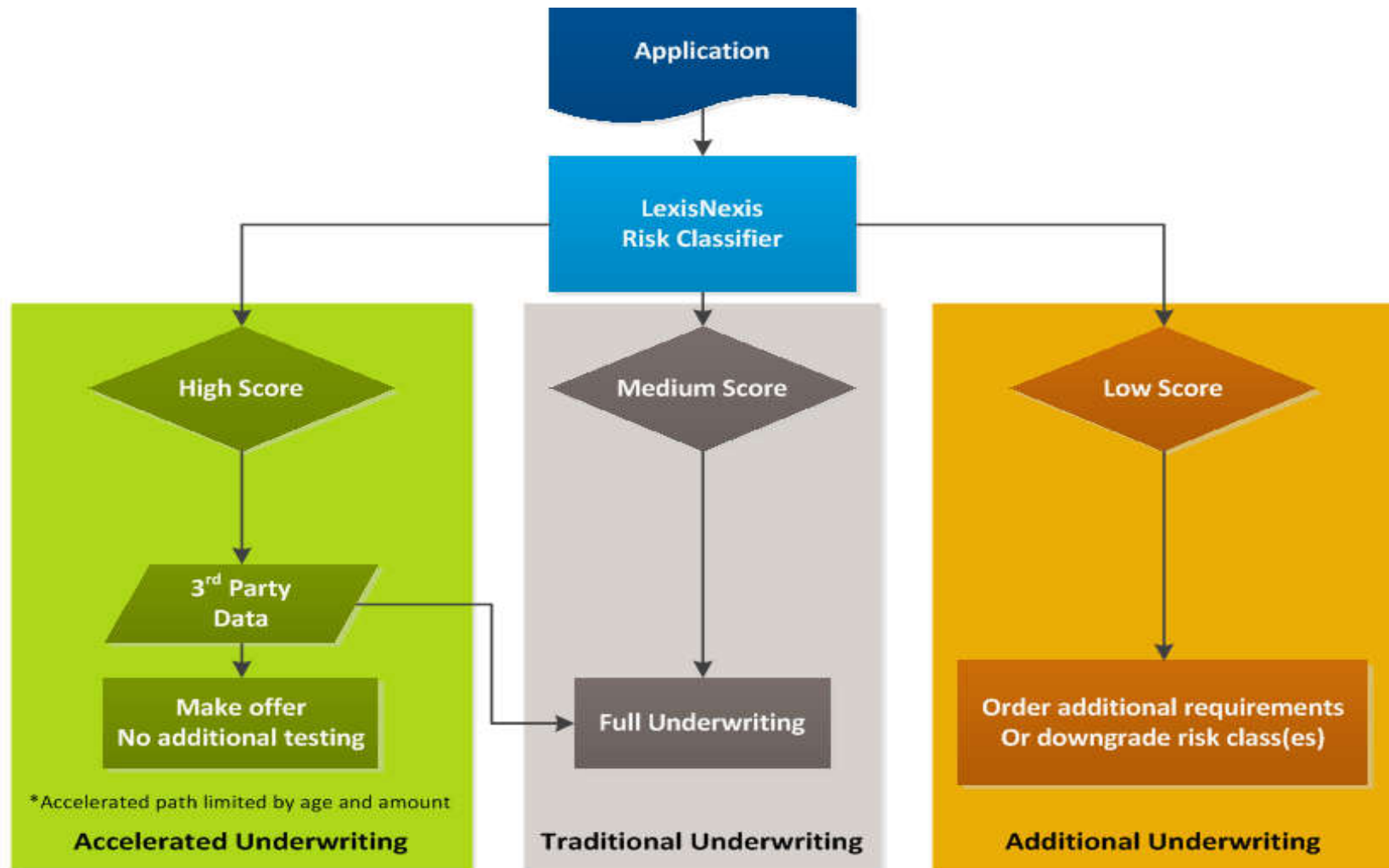


LexisNexis Predictive Model – Potential Applications

- ▶ Accelerated UW program
 - UW triage; identify “good risks” eligible for less UW
 - No paramed/fluids necessary for a subset of lower risk applicants
- ▶ Apply to all new business as additional underwriting tool
- ▶ Managing “incompletes”
- ▶ Help determine preferred risks in “non-med/SI” products
- ▶ Post-issue monitoring/benchmarking

Accelerated UW Program

Illustrative Process Diagram



Implementing an Accelerated Underwriting Program

▶ Economics to support retail product/pricing

- LexisNexis model score thresholds can be set to support overall economics

Mortality increase due to removing paramed/fluids, offset by value of LN score & UW expense savings

Targeting a mortality increase of 5-10% that could be offset by the UW expense savings

▶ Risks associated with change

- New approaches, anti-selection risk, etc.
- Appreciate how low mortality actually is today

▶ Start Slow, Monitor Business, Adjust

- Many dials to set and turn
- Important to monitor data and adjust

Impact of 1 additional death per 1000

Issue Age	1 year	5 years	30 years
25	463%	92%	33%
35	358%	56%	13%
45	139%	24%	6%
55	50%	10%	3%
65	18%	4%	2%

Accelerated Underwriting Monitoring

- ▶ Impacts of a new underwriting regime
 - Protective value removed
 - Underwriting value enhancements
- ▶ Improvements from LexisNexis Risk Score
- ▶ Final mortality assumption under new underwriting regime
- ▶ Ongoing monitoring is critical
 - Post-issue APS
 - Random Holdout Group