



SOCIETY OF
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2019 **ANNUAL
MEETING**
& EXHIBIT

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Session 179: What Do I Need to Know if I'm Not Implementing PBR?

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WHAT DO I NEED TO KNOW IF I'M NOT IMPLEMENTING PBR?

2019 SOA ANNUAL MEETING
TORONTO, OCTOBER 30, 2019

Wen Liu, FSA, MAAA

1	PBR Overview		
2	Industry insights		
3	Case study		
4	Challenges and opportunities		
5	Key takeaways		

1 PBR Overview

Life PBR became effective on 1/1/2017 with an optional three-year implementation period

Timing and implementation

- Life PBR became effective 1/1/2017 with an optional three-year implementation period
- PBR implementations are heavily back-loaded and only 23 companies moved a product to PBR in 2017
- Many smaller companies have yet to evaluate impact of PBR

Applicability

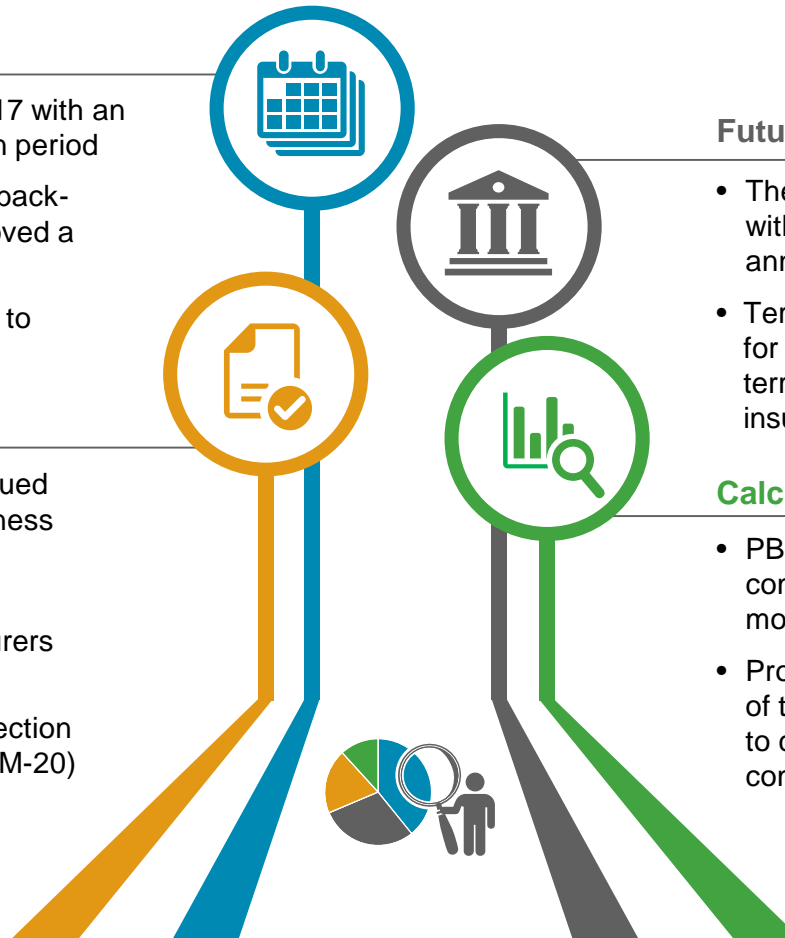
- Applies to all life new business issued after 1/1/2020 as well as any business moved to PBR during the optional implementation period
- Requirements apply to both reinsurers and direct writers
- Requirements are prescribed in Section 20 of the new valuation manual (VM-20)

Future changes

- The valuation manual is a living document with revised requirements released on an annual basis
- Terms for adoption are the same as those for the VM itself (requires 42 states/territories representing 75% of total US life insurance premium)

Calculations

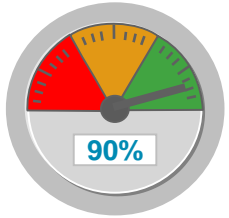
- PBR is the maximum of three reserve components; a formulaic floor and two modeled reserve components
- Products may be exempt from components of the requirements if they are not sensitive to changes in interest rates; smaller companies may be entirely exempt





2 Industry Insights

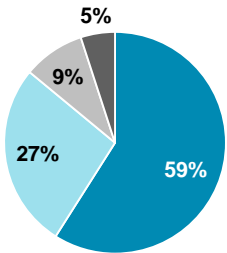
A large majority of writers have analyzed PBR on their Term products and tend to see large reserve decreases



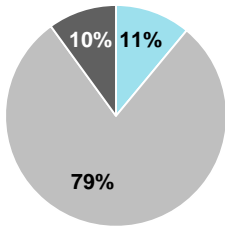
90%

of Term writers have analyzed the impact of PBR on their offerings

Impact on reserves
% of Term writers



Impact on profitability
% of Term writers



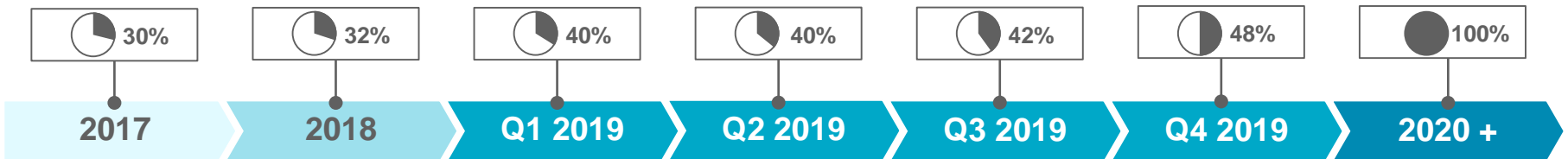
- Large Decrease (-)
- Small Decrease (-)
- Small Increase (+)
- Large Increase (+)

Exclusion testing
% of Term writers

85% of writers anticipate passing stochastic exclusion tests

0% of writers anticipate passing deterministic exclusion tests

% of Term products on PBR
Across all participants%

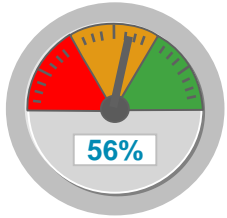


Results from Oliver Wyman's PBR survey, with more than 40 participants covering 85 percent of the individual life market, including 23 of the top 25 life writers and five reinsurers



2 Industry Insights

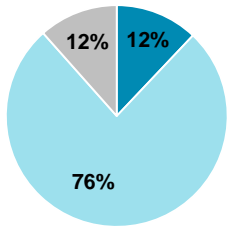
Adoption is delayed to Q4 2019 and beyond for a majority of WL writers and most expect to be exempt from modeled reserve requirements



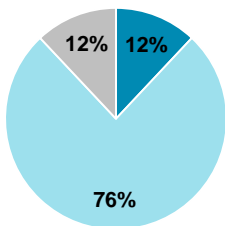
56%

of WL writers have analyzed the impact of PBR on their offerings

Impact on reserves
% of WL writers



Impact on profitability
% of WL writers



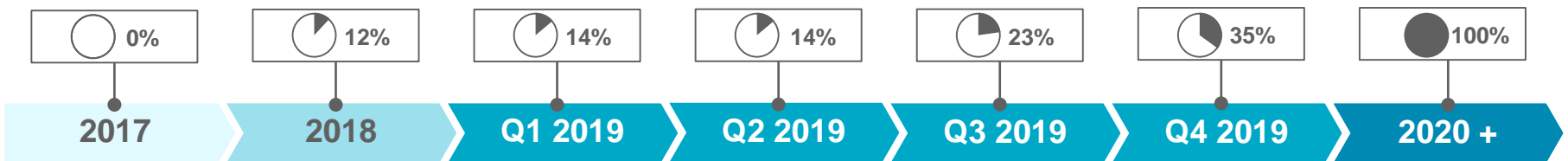
- Small Decrease (-)
- No Change
- Small Increase (+)

Exclusion testing
% of WL writers

87% of writers anticipate passing stochastic exclusion tests

76% of writers anticipate passing deterministic exclusion tests

% of WL products on PBR
Across all participants



Results from Oliver Wyman's PBR survey, with more than 40 participants covering 85 percent of the individual life market, including 23 of the top 25 life writers and five reinsurers



3 Case study

A cohort of new business with \$50MM of first year premium consisting of 10-, 20- and 30-year term products was projected for 30 years

Model

- 30 year projection horizon
- Reserve revalued annually

Best estimate assumptions

- Mortality follows 100% of 2015 VBT
- Mortality experience is 30% credible with 10 years of sufficient data
- Expenses, commissions and lapses set at industry averages

Prudent estimate assumptions

- Mortality is improved up to each valuation date at 1% per year
- 100% shock lapse at end of level term period

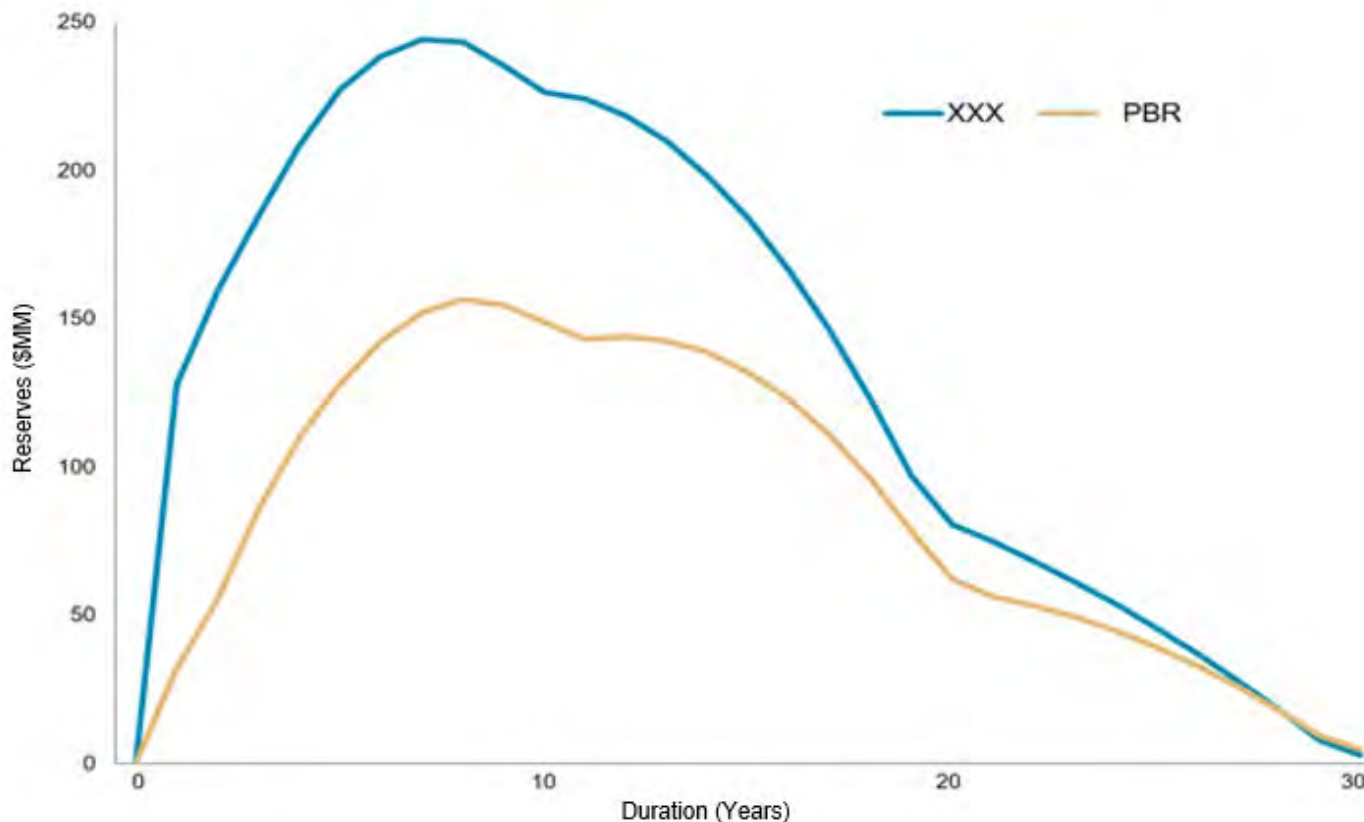
Reserve assumptions

- NPR uses the 2017 CSO and a valuation interest rate of 4.5%
- XXX uses the 2001 CSO and a valuation interest rate of 3.5%
- DR scenarios are re-generated at each valuation date
- Starting assets at each valuation date use the 'direct iteration' approach
- The cohort is assumed to pass the Stochastic Exclusion Test (SET)

Assumptions used and products modeled are for an illustrative term portfolio intended to be reasonably representative of products offered in the market today



3 Case study PBR leads to a significant reduction in reserves for this block of Term business

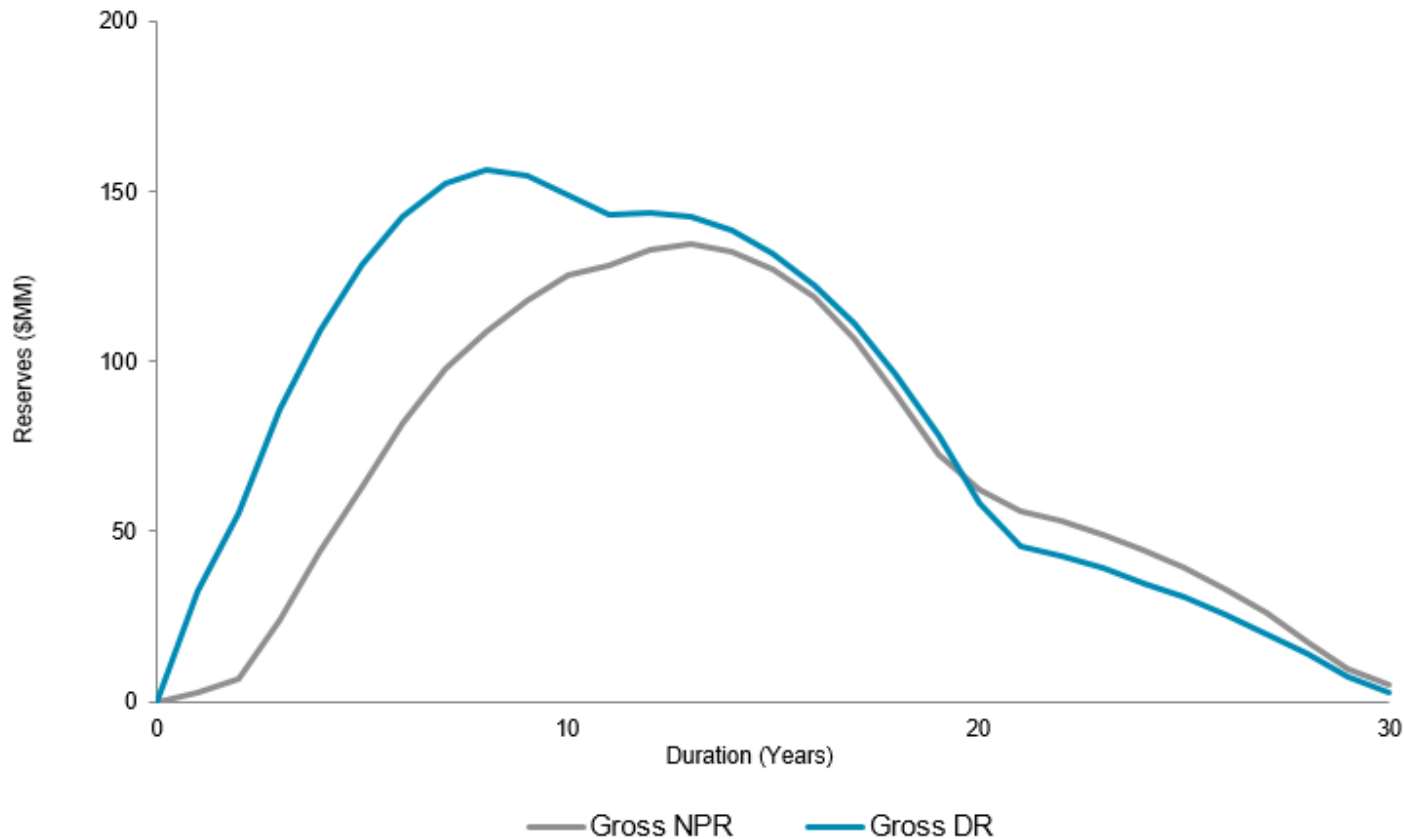


This decrease is driven by calculations that allow for lapses, removal of deficiency reserves and a higher valuation interest rate for formulaic components



3 Case study

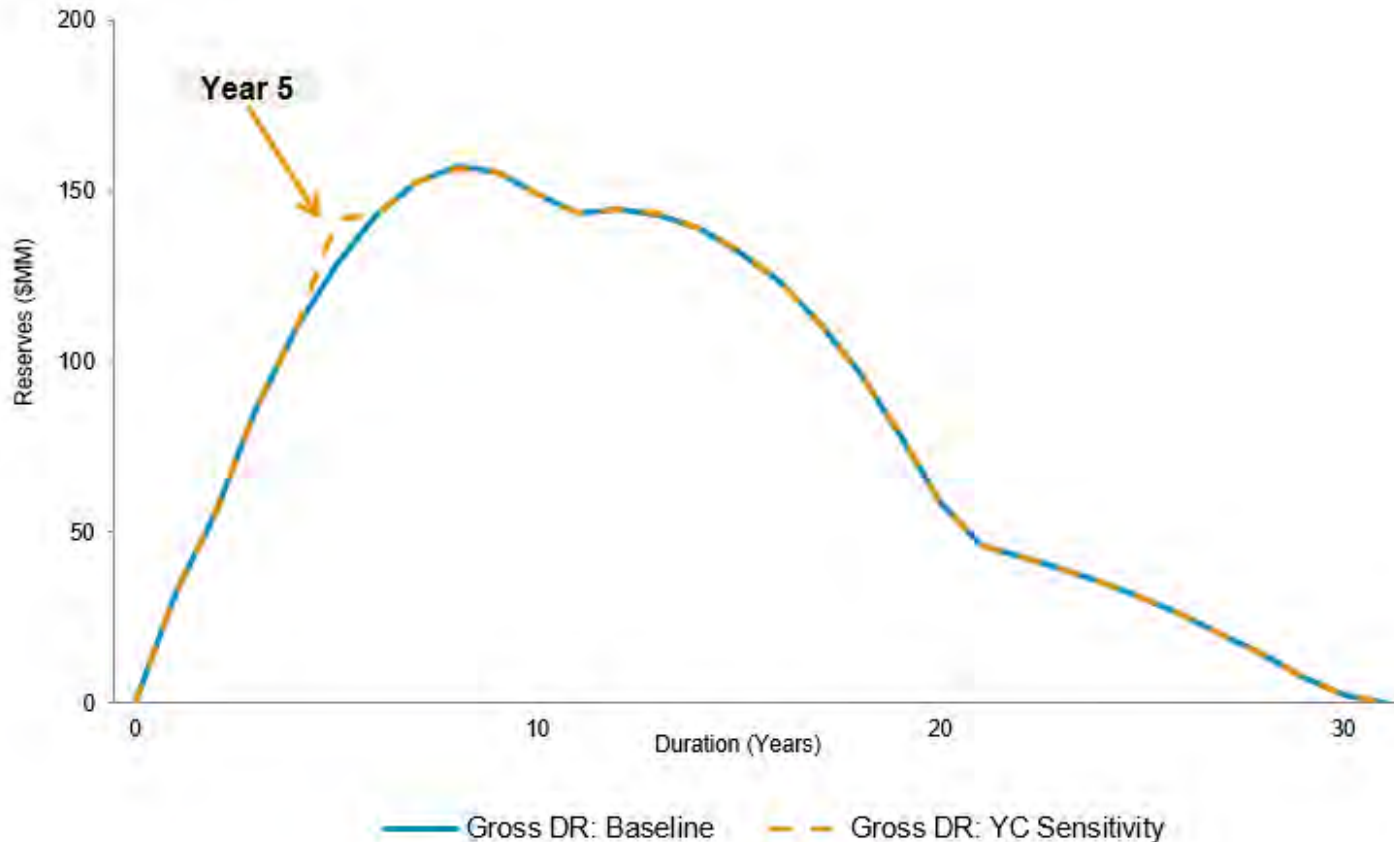
The gross NPR and DR for this cohort of new business are shown below



The DR starts much higher than the NPR, but the gap closes over time, partially because mortality improvement to date is reflected at future valuation dates

3 Case study

A 100 bps decrease in yield was tested in **year 5**

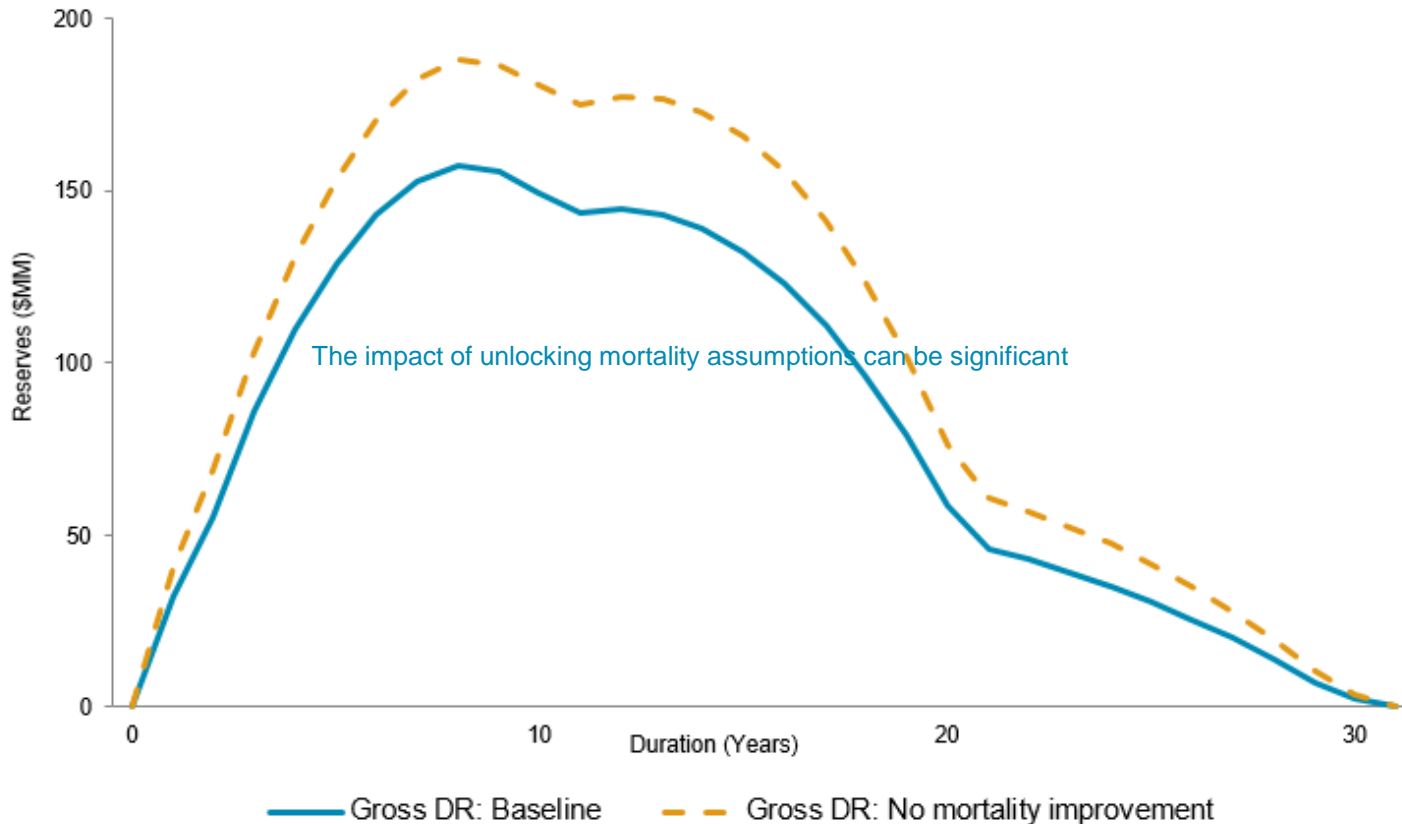


The shift increased reserves by 10% which is substantial for a product with low interest rate sensitivity



3 Case study

The impact of unlocking the mortality assumption for historical improvement up to future valuation dates was evaluated




The impact of unlocking mortality assumptions can be significant

4 Challenges and opportunities

The Valuation Analysis (E) Working Group released a report on observations and findings from 2017 PBR reporting split in four main categories

1


- ASOP 41 requirements
- Content split across multiple sections
- Lack of clarity



ORGANIZATION & COMMUNICATION

2


- Materiality standard
- Values of all assumptions and margins
- Indication of the level of rigor used to validate models



INCOMPLETE REQUIREMENTS

3


- Statements indicating that requirements have been met
- Results of testing for various methodology decisions (e.g. PLT profits, SET)



LACK OF SUPPORTING MATERIALS

4

- Use of simplifications without justification or demonstration of materiality
- Failure to comply with assumption and methodology requirements (e.g. not calculating the DR for Term)



METHODOLOGY, MODELING, AND ASSUMPTION ISSUES

Link to full report: www.naic.org/documents/cmte_e_valuation_analysis_wg_2017



4 | Challenges and opportunities

Many writers have considered changing modeling systems as a result of PBR



50%

of participants considered changing actuarial modeling systems as a result of PBR

Results from Oliver Wyman's PBR survey, with more than 40 participants covering 85 percent of the individual life market, including 23 of the top 25 life writers and five reinsurers

4 Challenges and opportunities

When implementation is optional, the opportunities must be balanced against the challenges to make an informed decision

 CHALLENGES	 OPPORTUNITIES
<p>1 Pricing is more complex; less straightforward process to get granular views of profitability</p>	<p>1 Potential to reduce reserves; allowing for more competitive rates (or increased profitability)</p>
<p>2 Complex actuarial models</p>	<p>2 Evaluate and upgrade actuarial software with new features</p>
<p>3 Legacy shortcuts</p>	<p>3 Remove simplifications and approximations</p>
<p>4 Additional staff effort</p>	<p>4 New experience and engaging work for current staff</p>
<p>5 Automation of processes</p>	<p>5 Less manual work, more time for analysis</p>

5 | Key takeaways

1

The impact that PBR has on reserves and model complexity will vary by product



2

You can go to PBR when you want if you meet the exemption requirements



3

PBR is a lot of work, but it might be worth it





The auditor/regulator perspective

SOA Annual Meeting — Session 179
Kevin Piotrowski, FSA, CERA, MAAA



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Biographies

Kevin Piotrowski, FSA, CERA, MAAA

Insurance and Actuarial Advisory Services, Ernst & Young LLP

Kevin is a Manager in the Insurance and Actuarial Advisory Services practice of Ernst & Young LLP's Financial Services Office. He is based in New York and has 9+ years of consulting experience. He serves as an advisor to large insurance companies and is focused on Financial Reporting.

Kevin spends his time on various aspects of insurance including assumption setting, valuation, reinsurance reporting and capital management. Additionally he has been involved in large scale model validation projects as well as assisting companies to transform their actuarial systems and processes (Actuarial Transformation). Recently, Kevin has focused his efforts on Principle-Based Reserves - managing review of both AG-48 and VM-20 implementations at several companies. He has written articles around PBR implementation and is involved in the SOA's effort to provide more depth/breadth around Principle-Based Reserves.

Kevin is a Fellow of the Society of Actuaries (FSA), a Chartered Enterprise Risk Analyst (CERA) and a Member of the American Academy of Actuaries (MAAA)

Our topics for today

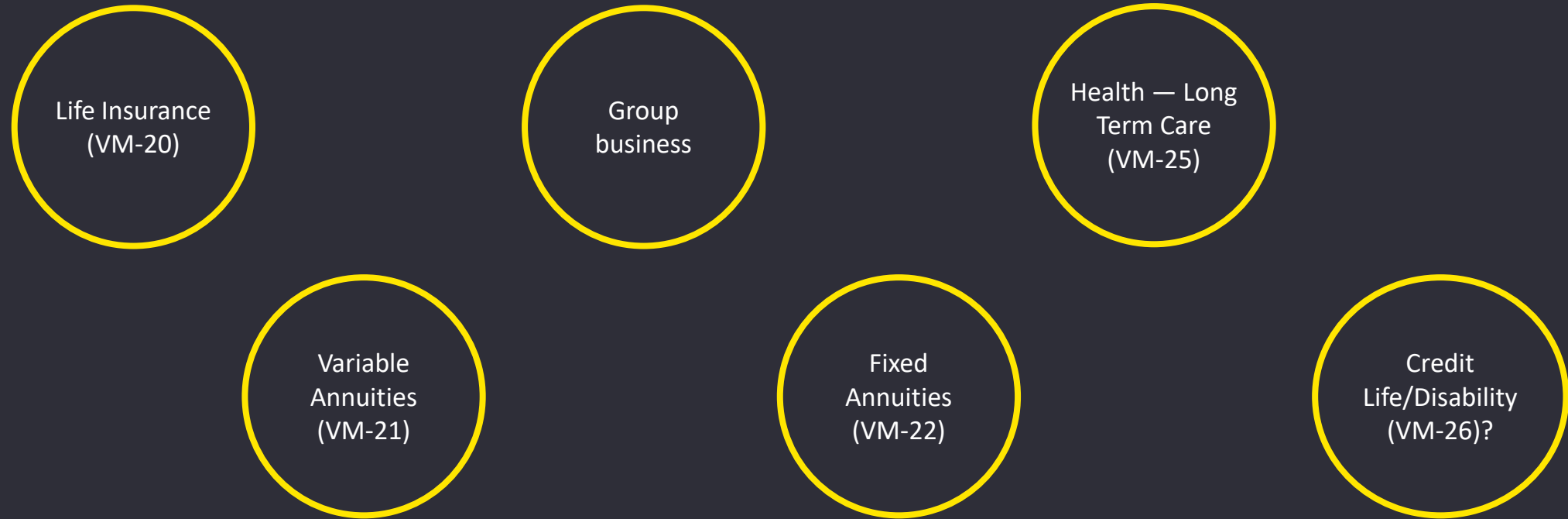


What are the major changes to life insurance reporting?

- Calculation of reserves (all VMs)
- Governance (VM-G)
- Documentation (VM-31)
- Data collection (VM-50/51)
- Statutory reporting (PBR supplement)
- Statutory reporting (Exhibit 5)



What do we mean by Principle-Based Reserves (PBR)?



Current requirements ...

... Potential future requirements?

Can I be exempt from all of the changes?

<p>Only sell certain types of business (either Life and/or Annuity)?</p>	<p>For Life business, only sell certain types of products (no Term/ULSG)?</p>
<p>Meet 'small company' or 'single state' exemption?</p>	<p>Pass exclusion tests?</p>

Areas of emphasis from the auditor/regulator perspective

Model validation



Description of the approach used to validate model calculations

— VM-31 3.D.2.e (life) and VM-31 3.F.2.c (annuity)

How the model results compare with actual historical experience

— VM-31 3.D.2.e

Table showing numerical static and dynamic validation results, and commentary on these results

— VM-31 3.D.2.e

A process exists that reviews principle-based valuations ... to include a regular cycle of model validation ... that includes testing model output against outcomes

— VM-G 3.A.5.e

Clear indication of the degree of rigor applied in validating models

— PBR regulators report: October 2018 *missing information section*

Areas of emphasis from the auditor/regulator perspective

Controls/sign-offs

“

Certification of the effectiveness of internal controls

— VM-G 3.A.6.d

Ensuring the adoption of internal controls ... that are designed to provide assurance ... that all material risks are included

— VM-G 3.A.4

[Missing] specific model controls

— PBR regulators report: October 2018
missing information section

Insurers should be taking steps now to prepare for the changes to the internal control environment

— EY technical line: How principle-based reserving will affect life insurers

Areas of emphasis from the auditor/regulator perspective

Documentation

“

Statement that documents an overall governance policy is in place

— PBR regulators report: October 2018 *missing information section*

The PBR Actuarial Report is meant to capture all the details of the PBR Valuation ... product descriptions and assumptions, modeling systems and characteristics, company risk management, and reinvestment strategy

— Defining the details — September 2017 *Financial Reporter* article

The qualified actuary should develop documentation to support the actuarial certification [on the sufficiency of reserves] clearly and in detail sufficient for another actuary to understand the analysis... and conclusion

— VM-20 Practice Note: January 2019 Q7.21

Document

— shows up 94 times in the current version of the Valuation Manual

Professionalism (ASOPs related to PBR)

- ASOP 1 — Introductory — key definitions “must, should, significant”
- ASOP 2 — Non-guaranteed charges or benefits
- ASOP 7 — CF modeling — analysis of asset and liability cash flows
- ASOP 11 — Financial treatment of reinsurance
- ASOP 12 — Risk classification — designing, changing or reviewing risk classification systems
- ASOP 21 — Assisting auditors and examiners — financial review or audit
- ASOP 22 — Asset Adequacy Opinions
- ASOP 23 — Data quality — using, selecting, reviewing and relying on data
- ASOP 25 — Credibility
- ASOP 41 — Communications
- ASOP 52 — Principle-Based Reserves for Life Products

Note: this is not a comprehensive list but rather a summary of items that have direct relevance in a post-PBR world. Yellow highlights indicate items that are important for both rules-based and principle-based calculations.

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