Enterprise
Risk Management
Symposium

April 20–21, 2017
New Orleans, LA
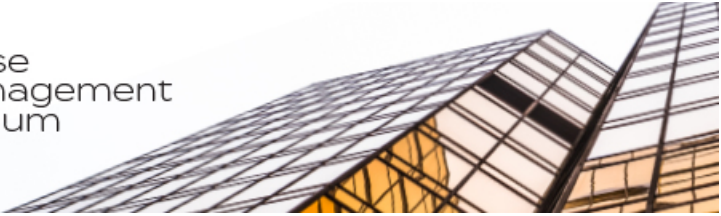
Session 2A: Risk Management Perspective in Predictive Modeling

Moderator:
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Presenters:
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Risk Management and Predictive Analytics

April 2017
Lloyd Milani

Munich RE ®

Agenda

➢ Overview of predictive analytics activity

➢ Risk Management Framework

➢ Risks and considerations

Overview of Predictive Analytics Activity

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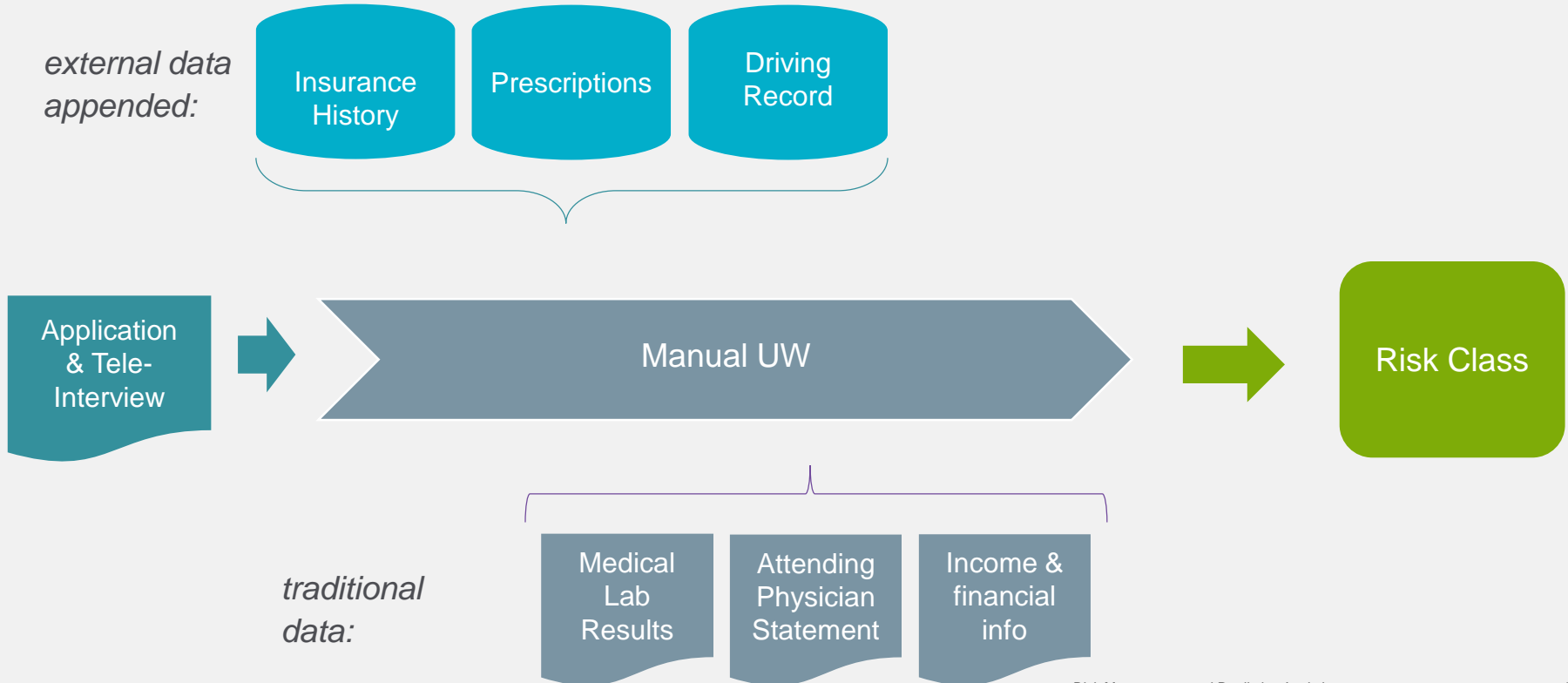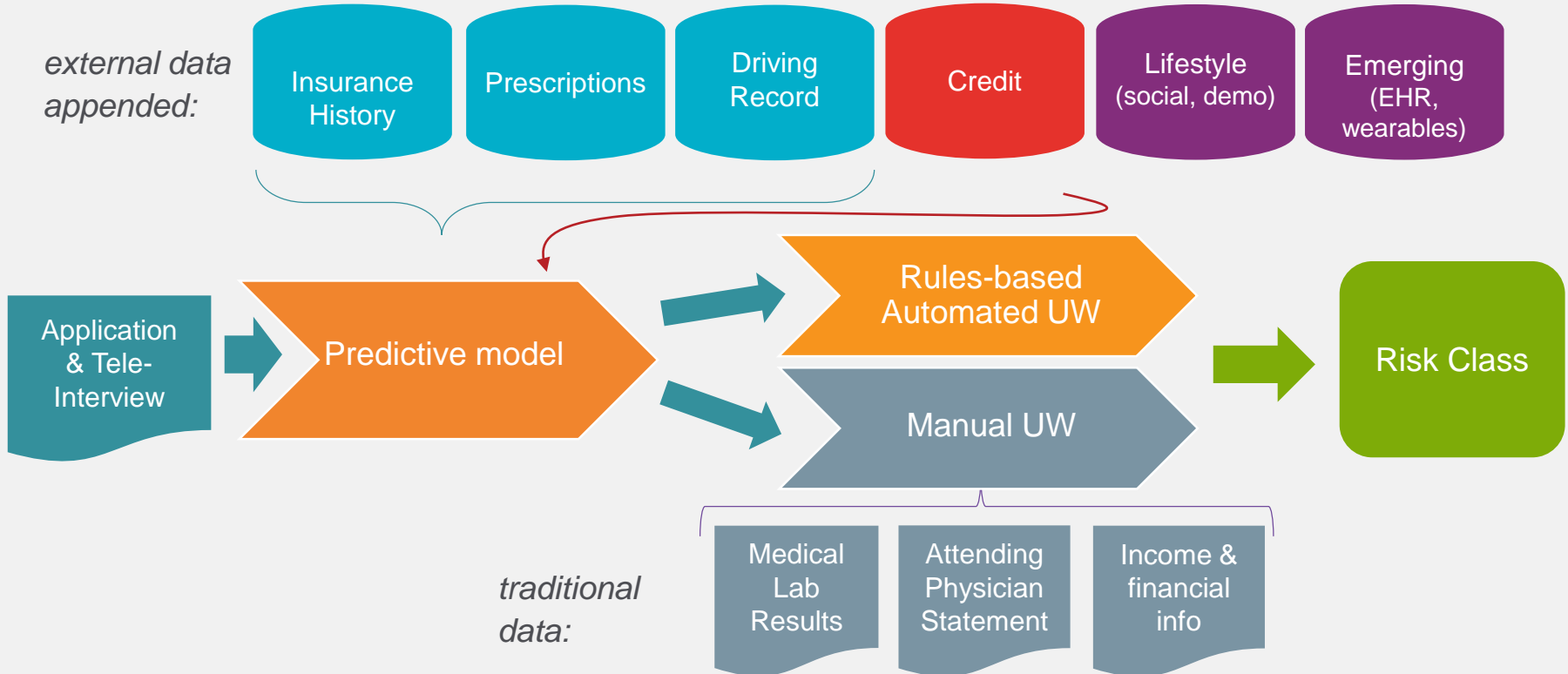|	
Predictive underwriting	Protective value of UW tactics
	Predictive models for risk class assignment
	Smoker identification
	Cost/benefit & program monitoring
Cross-selling	Use of customer data for segmentation & targeting of insurance
	Selling insurance through multi-channel distribution
	Alignment of target marketing with risk selection
Claims management	Predictive models for triage
	Fraud Detection
	Program improvement

Traditional Underwriting

external data appended:

Insurance History

Prescriptions

Driving Record

Application & Tele-Interview

Manual UW

Risk Class

traditional data:

Medical Lab Results

Attending Physician Statement

Income & financial info

Predictive underwriting
Optimizing accelerated underwriting

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external data appended:

| Insurance History | Prescriptions | Driving Record | Credit | Lifestyle (social, demo) | Emerging (EHR, wearables) |

Application & Tele-Interview → Predictive model → Rules-based Automated UW / Manual UW → Risk Class

traditional data:

Medical Lab Results | Attending Physician Statement | Income & financial info

Quantifying impact

Actual Class by Model Decile
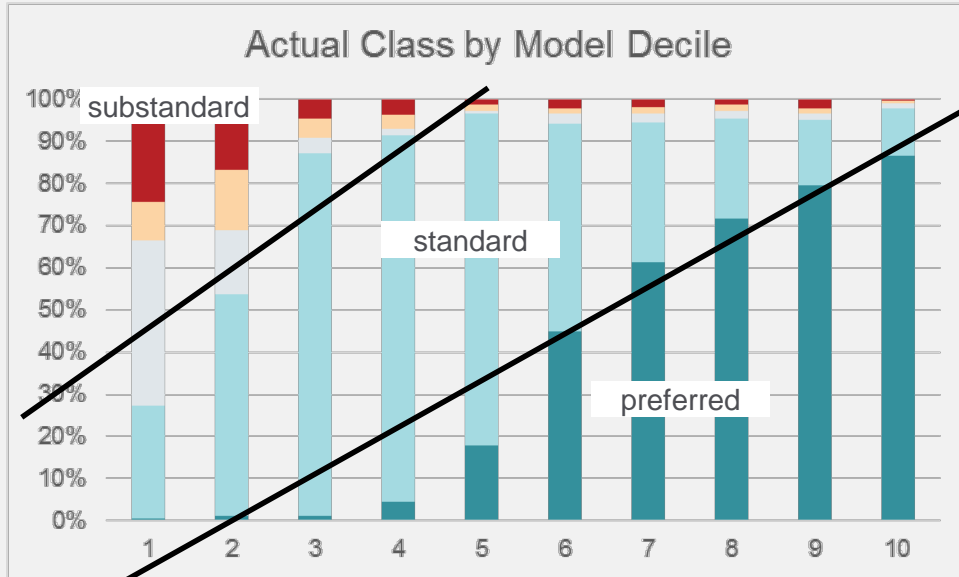
Tradeoff: Mortality cost vs. automation rate
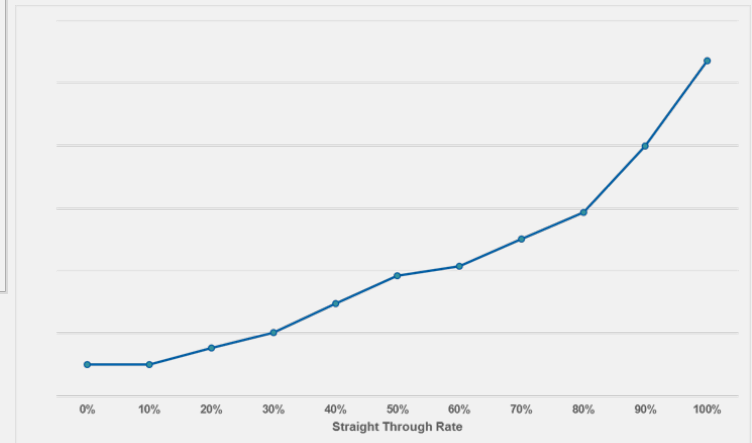
Risk Management Framework

Management
1st line of defense

- Defines business strategy and risk appetite
- Accepts new risks in accordance with the strategy
- Monitors and reports on key risk positions
- Designs and effectively performs internal controls
- Promotes risk awareness

Risk Management
2nd line of defense

- Independent review of strategy and material risk taking activities
- Reviews and consolidates management reports
- Ensures that key controls are up-to-date and documented
- Risk education
- Promotes Risk Culture

Audit
3rd line of defense

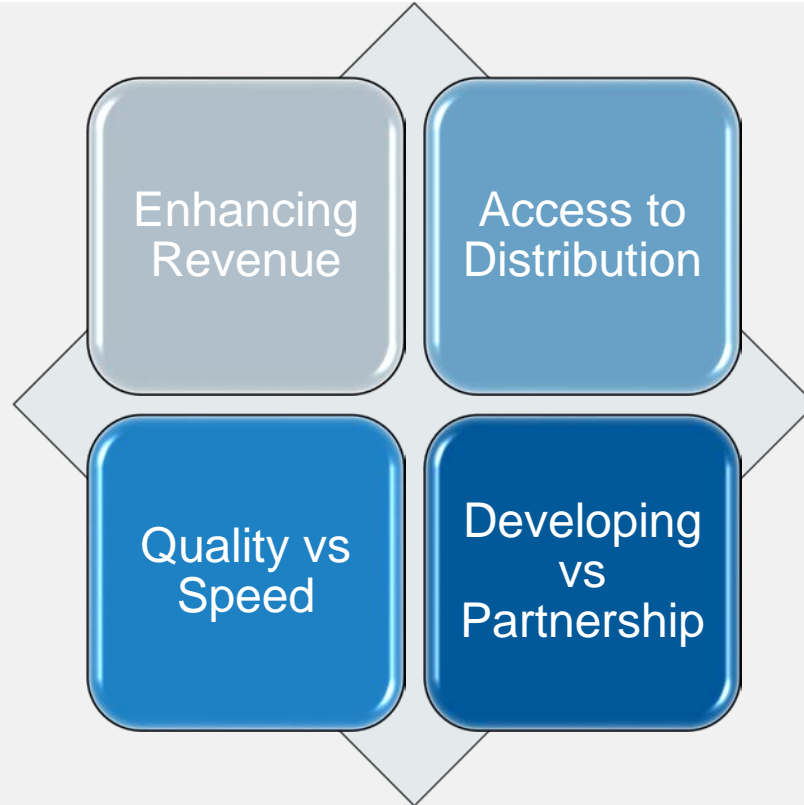- Provides independent assurance that control objectives are met

Predictive Analytics and its Risks

Risk Culture

High Performing Teams

| Self Critical | Knows Limitations | Business Acumen | Ownership | Risk Aware |

Strategic Risk

Data and Modeling

- ➢ Data not directly linked to result

- ➢ Use of own underwriting result to infer expected mortality

- ➢ Linking of unrelated data to infer mortality outcome

- ➢ Reliance on data quality from third party providers/client

- ➢ Projecting of results where there is a lack of data

- ➢ Limited ability to verify results

- ➢ Development models vs production models
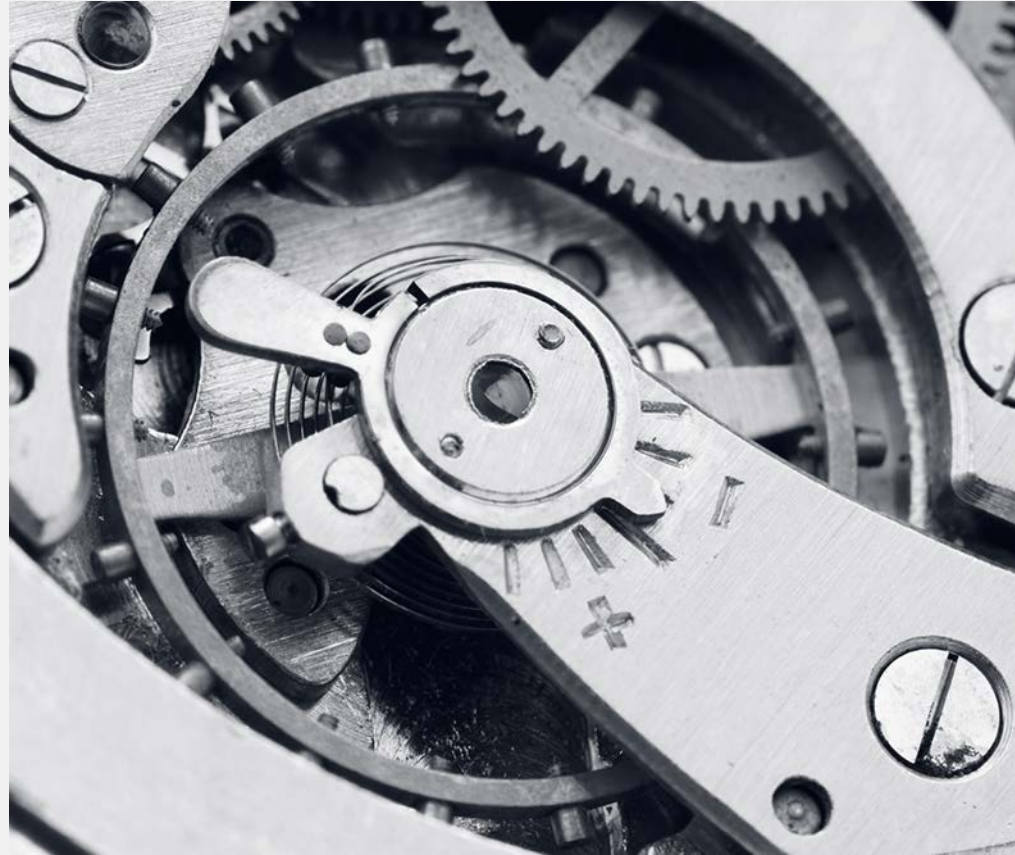
Underwriting

- ➢ Fluids vs Rx vs Credit Scores vs MVRs vs Hx
- ➢ Use of Social Media, wearables, purchase data
- ➢ Sentinel effects
- ➢ On-line sales vs Face to Face
- ➢ Misrepresentation and Fraud
- ➢ Benchmarking
- ➢ Expert Opinion
- ➢ Beta Testing
- ➢ Random Testing
- ➢ Monitor and Adjust

Implementation

➢ Poor service levels and turn around times

➢ Poor implementation of new underwriting model resulting in incorrect underwriting decisions

➢ Operationally need to make sure that systems are updated, people are trained

➢ Determine type of information that you want to collect for future use

➢ Risk controls reassessed and potentially re-designed

Other Risk Considerations

Reputational and Legal

Privacy

Data Protection

Cyber

Talent

Actuaries

Data Scientists

Underwriters

Questions