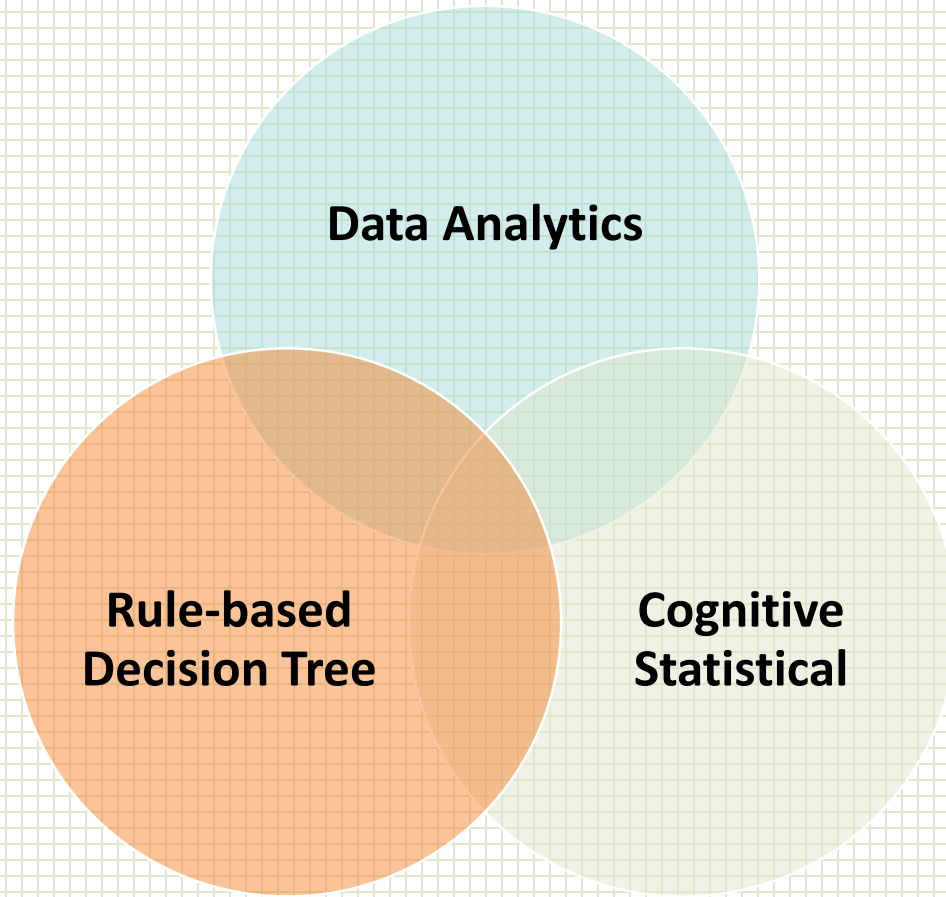
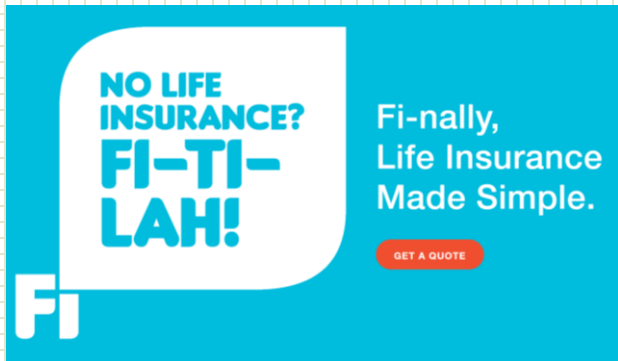


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Kuala Lumpur

Artificial Intelligence in Insurance Case Studies

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AI in Nicholas Actuarial Solutions



Case Study 1

Unemployment Claims

Insurer specialising in payment protection insurance

≈25% of portfolio (in terms of GWP) is involuntary unemployment cover

Covers monthly repayment for underlying finance for up to 12 months following redundancy

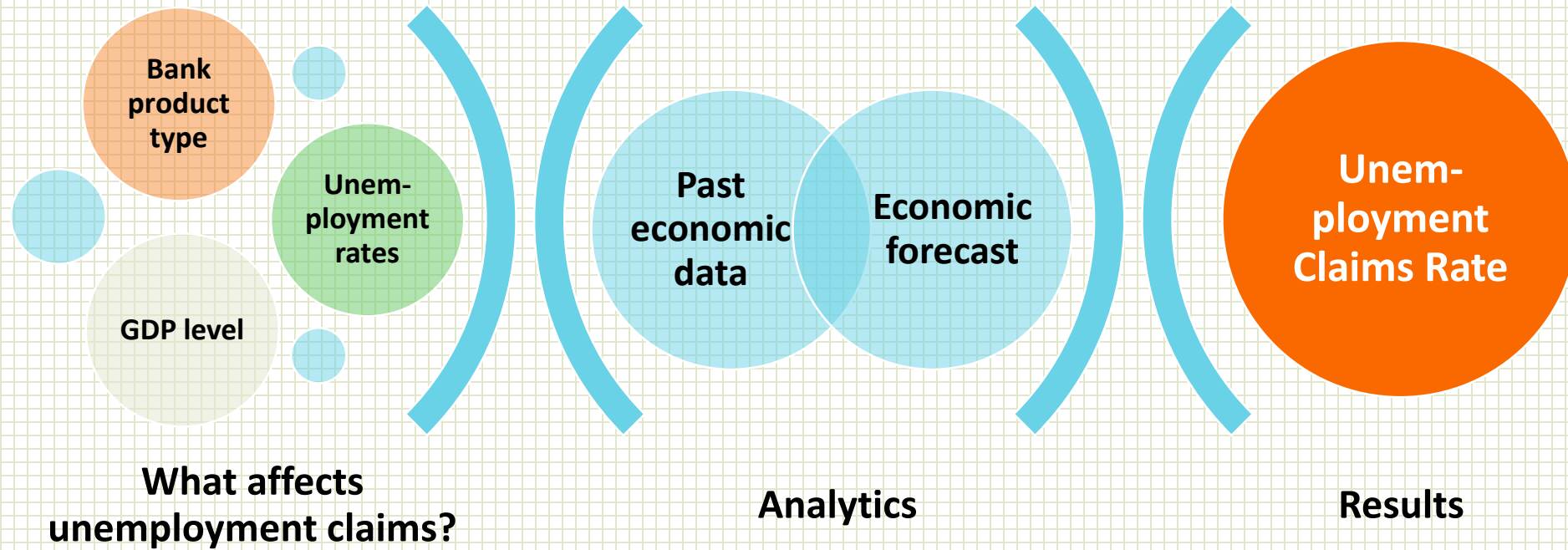
Tied to house mortgage, car loan, commercial loan, credit card, personal finance or overdraft

Case Study 1 Unemployment Claims

Problem statement:

Prospective unemployment claims has little correlation with historical unemployment claims.

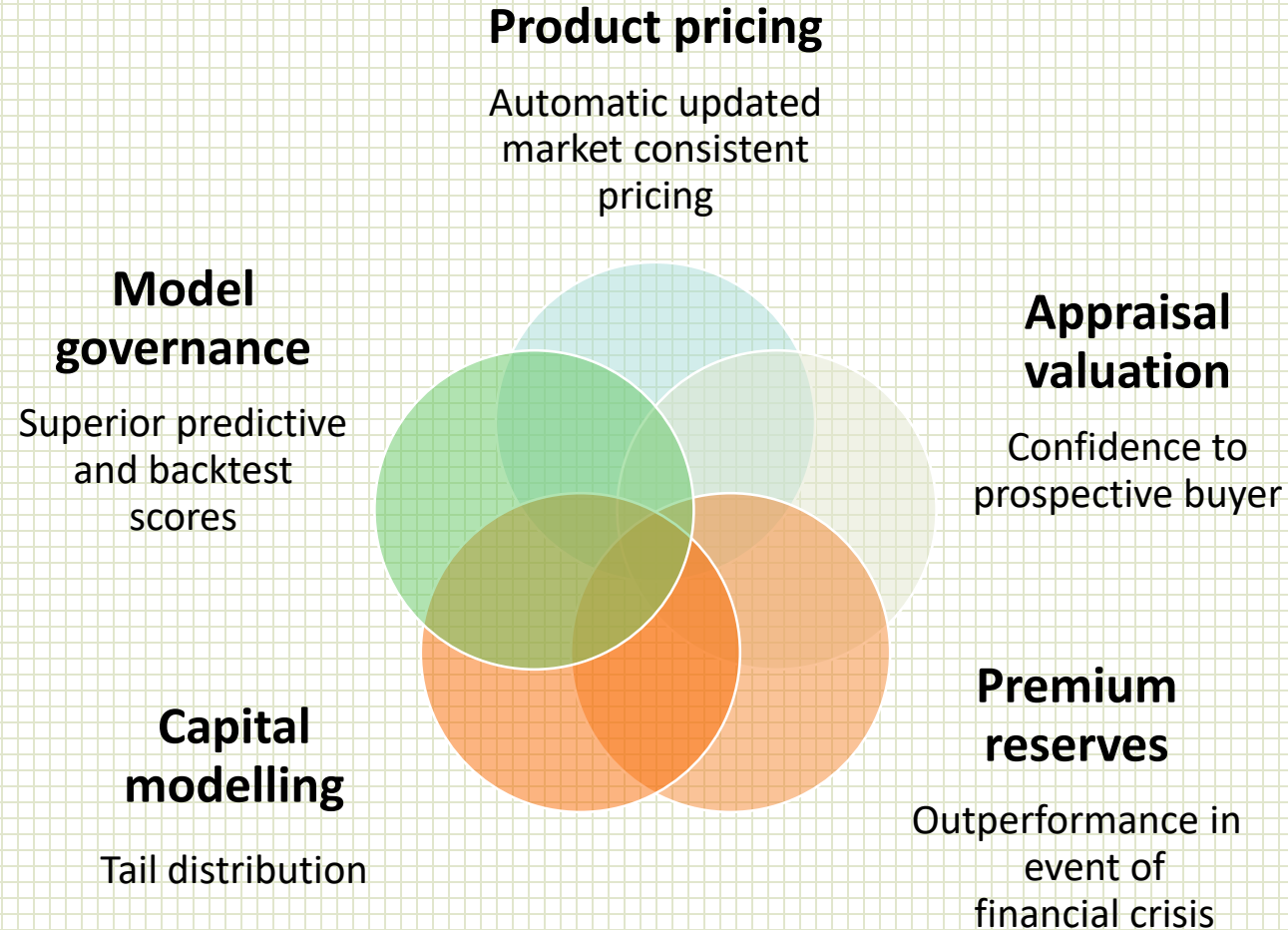
Model Structure



Sample Model Results (For Illustration Purpose Only)

Country	Bank Product	GDP Forecast (USD trillion)	Unemployment Forecast	Best Estimate Unemployment Claims Rate	95% Confidence Level
A	House Mortgage	3.5	4.2%	0.13%	[0.12%, 0.14%]
A	Car Loan	3.5	4.2%	0.15%	[0.12%, 0.18%]
A	Personal Loan	3.5	4.2%	0.22%	[0.15%, 0.30%]
B	House Mortgage	0.2	20.7%	3.12%	[2.58%, 3.66%]
B	Personal Loan	0.2	20.7%	4.01%	[3.43%, 4.59%]
...

Business Case



Case Study 2 Medical Underwriting

Large bank with millions of customers and a bancassurance partnership

Sales of credit life is strong as insurance is tied to the underlying finance

Sales of non-credit related insurance is very low, mainly due to medical underwriting requirements

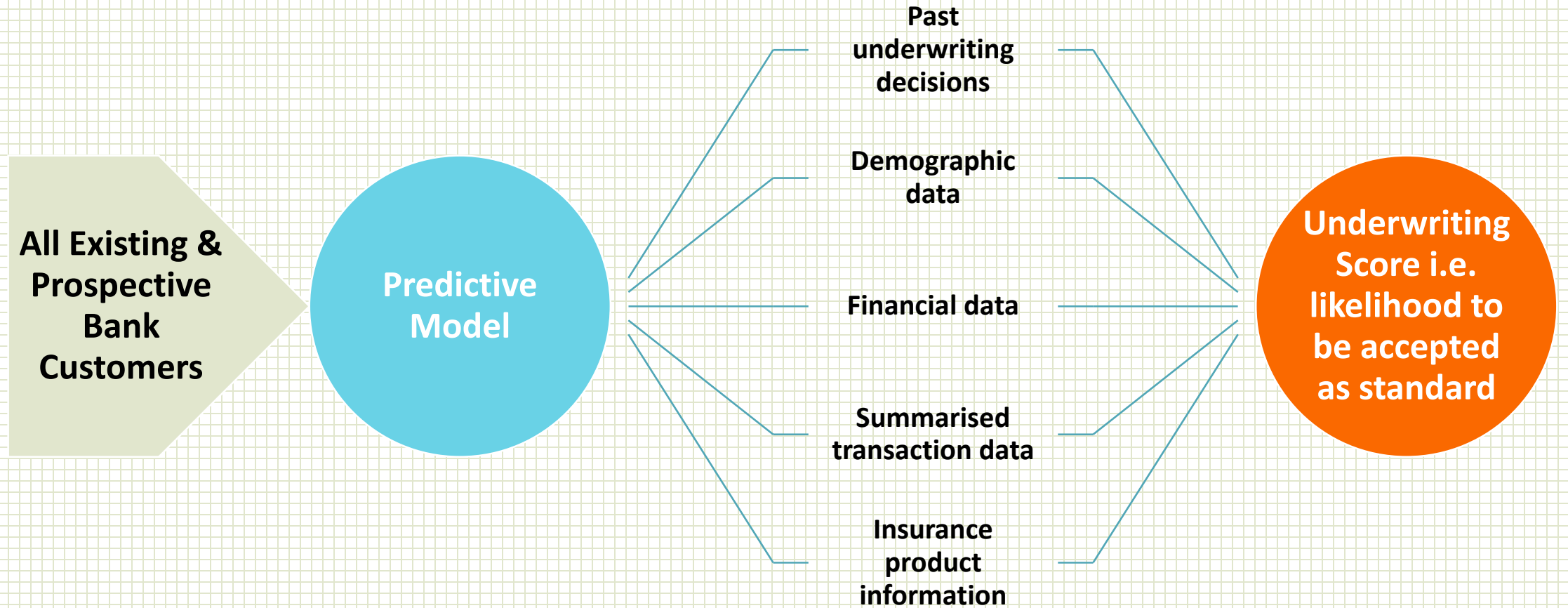
Medical underwriting requirements are tight in the market as anti-selection is prevalent

Case Study 2
Medical Underwriting

Problem statement:

Reduce medical underwriting requirements without increasing anti-selection risk.

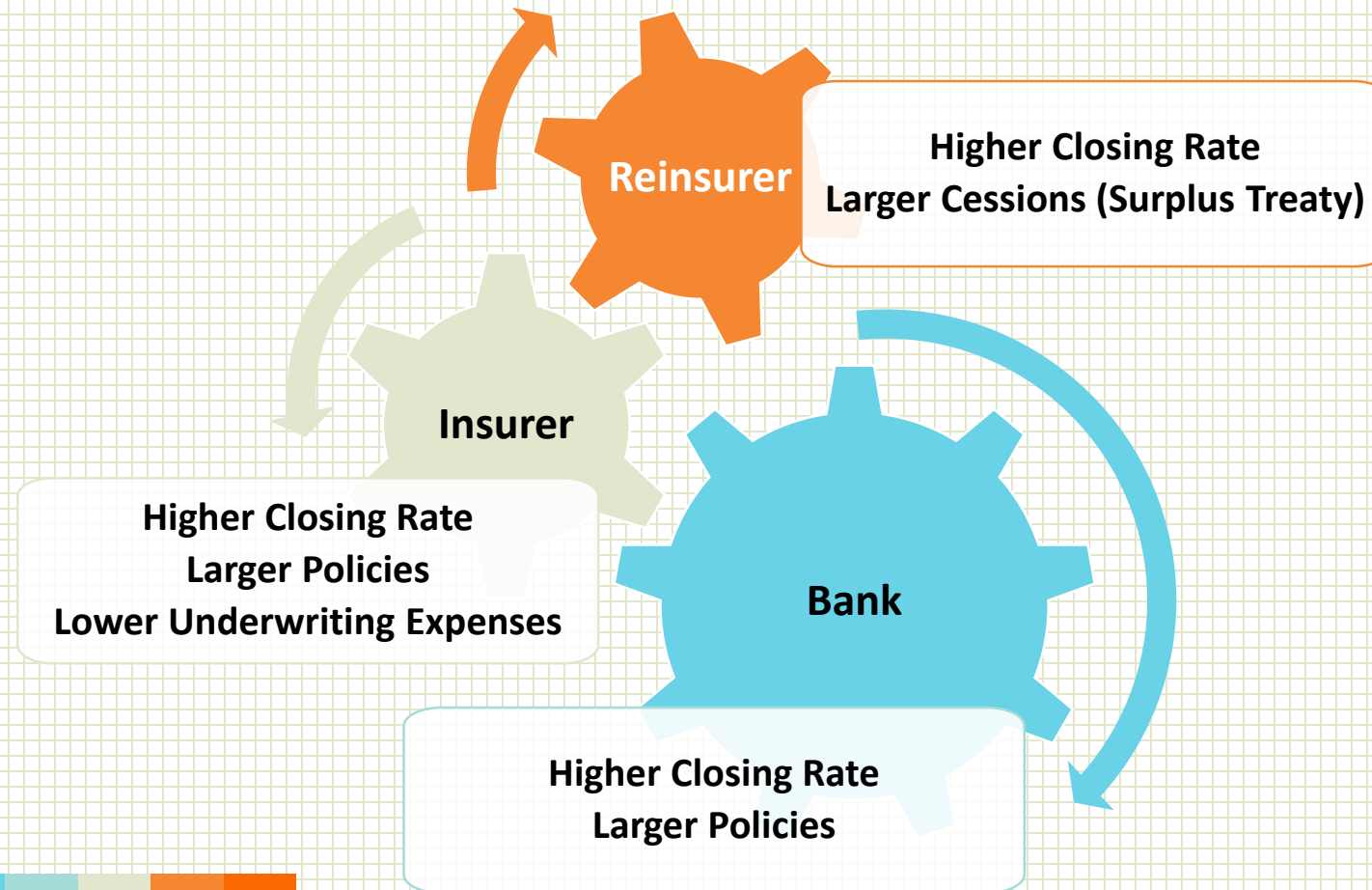
Model Structure



Sample Model Results (For Illustration Purpose Only)

Bank Customer	Insurance Product	Underwriting Score (likely to be rated as standard)	Underwriting Rule (with financial underwriting embedded)
A	Term Life	98%	Simplified underwriting up to \$1m sum at risk
A	Savings	98%	No underwriting up to \$100k sum at risk
B	Term Life	83%	Simplified underwriting up to \$150k sum at risk
B	Savings	83%	Simplified underwriting up to \$150k sum at risk
C	Term Life	67%	Full underwriting i.e. no change
C	Savings	67%	Simplified underwriting up to \$50k sum at risk
...

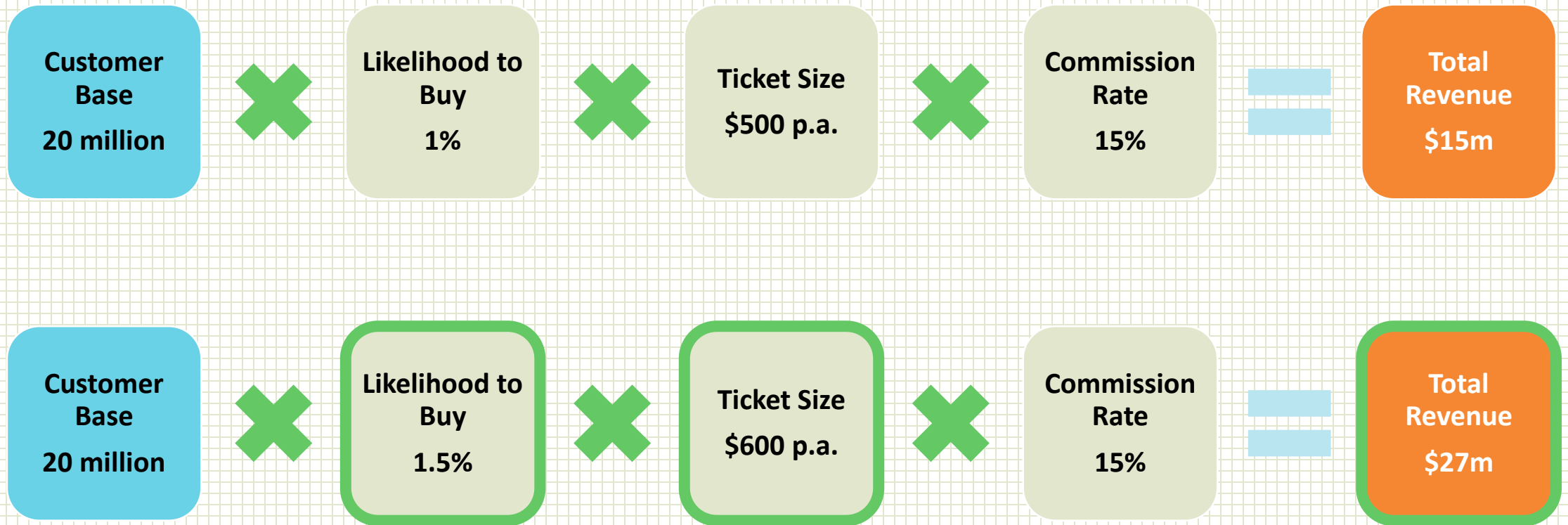
Data Analytics Partnership



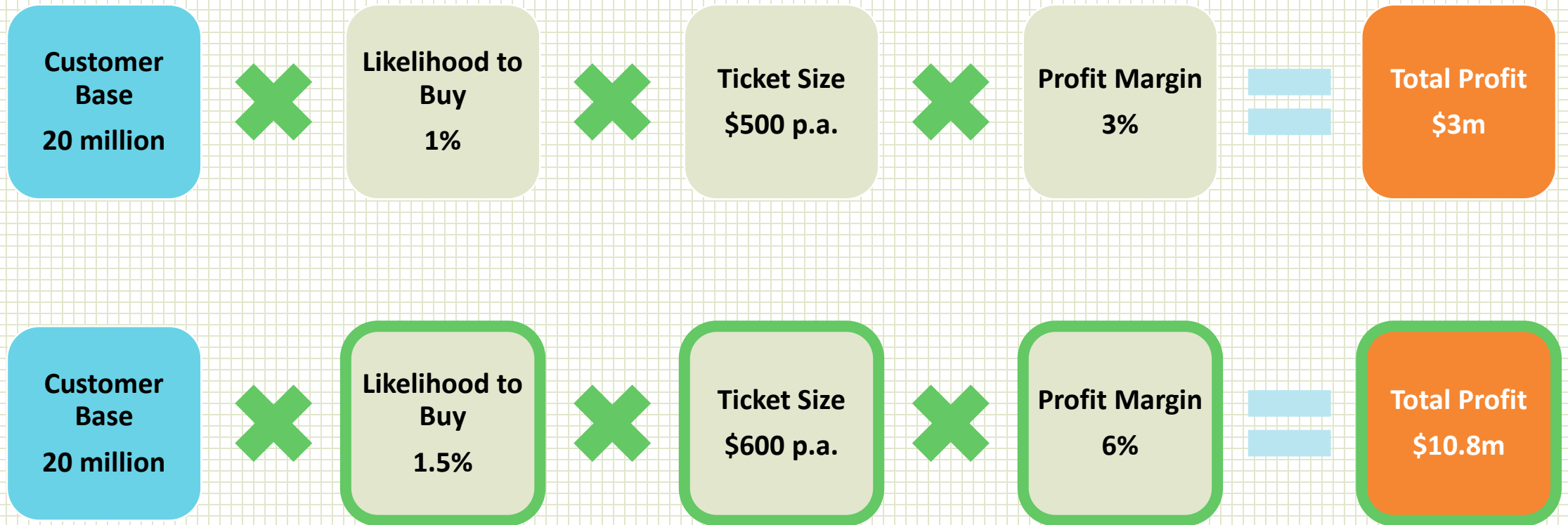
How we look at analytics



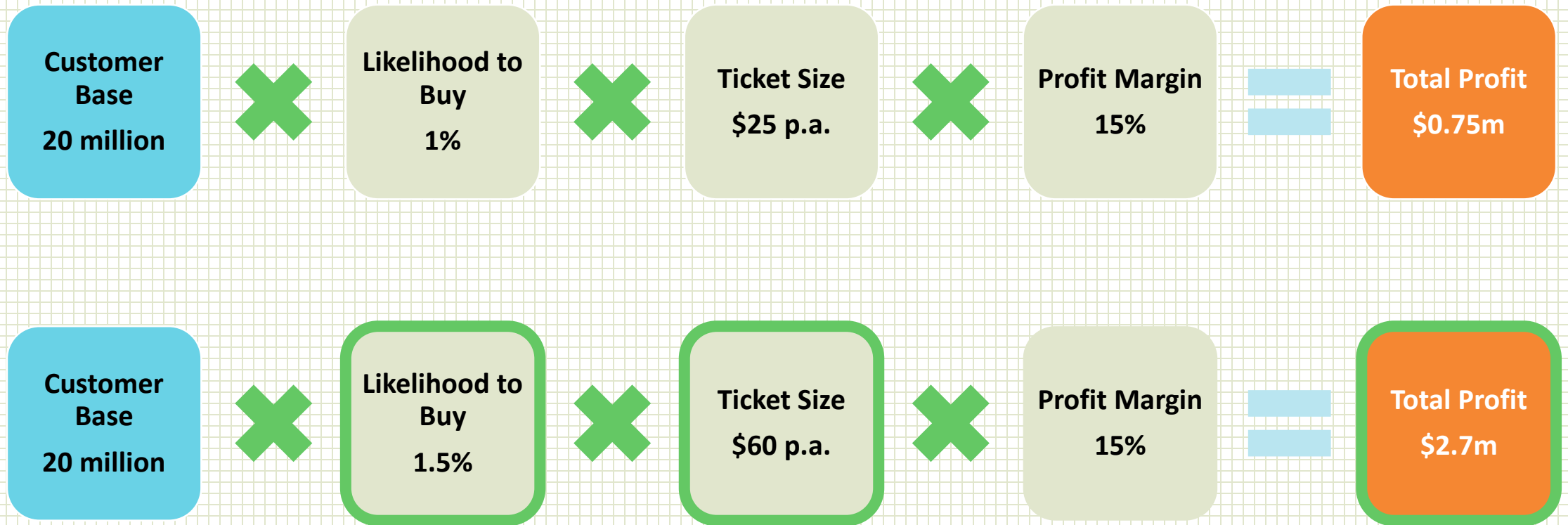
Business Case – Bank



Business Case – Insurer



Business Case – Reinsurer



Case Study 3 Health Insurance

Existing health schemes with varying claims experience

Prospective schemes with no knowledge of claims specific experience

Price competition is significant

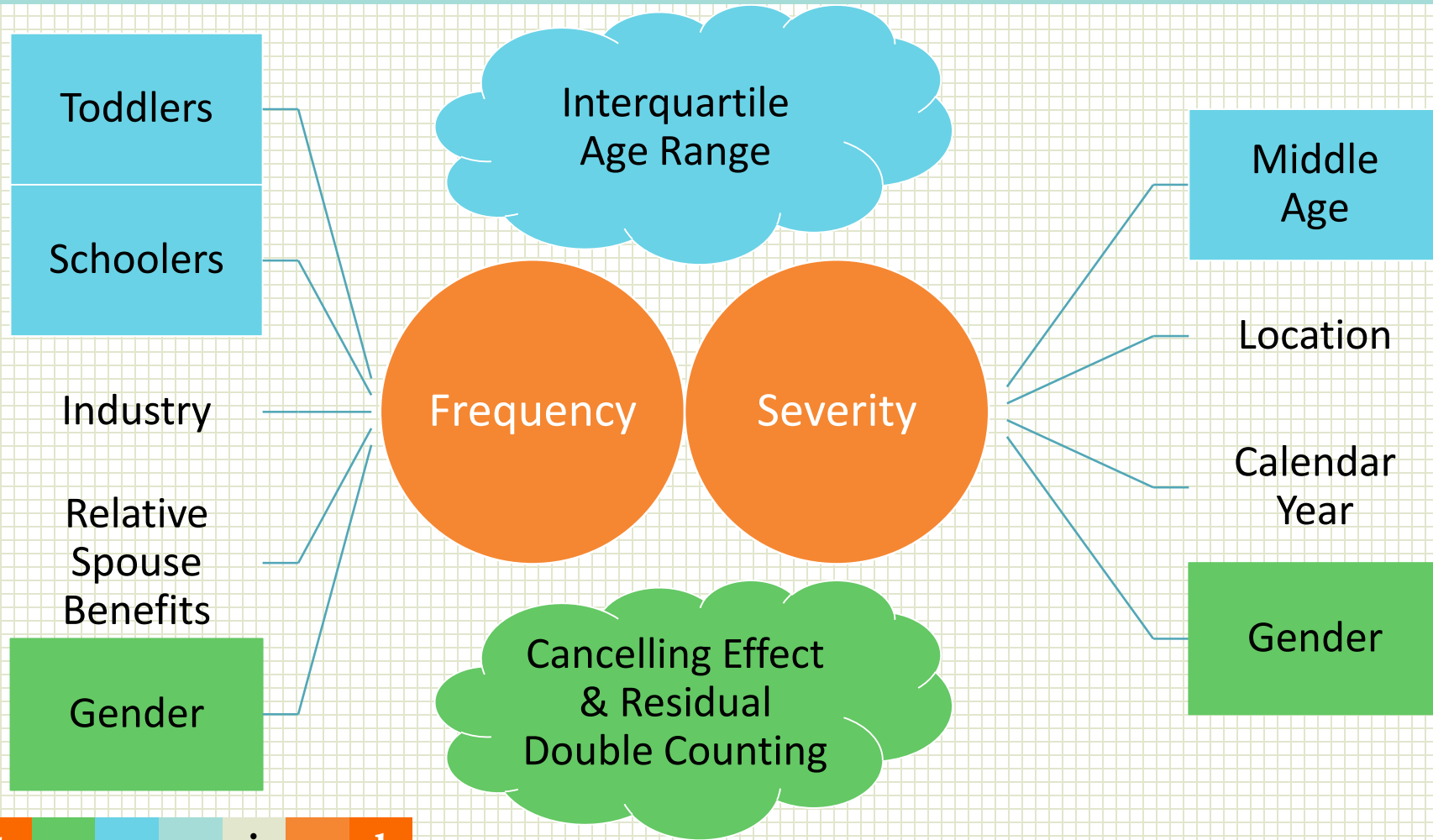
Pricing based on average experience result in anti-selection

Case Study 3
Health Insurance

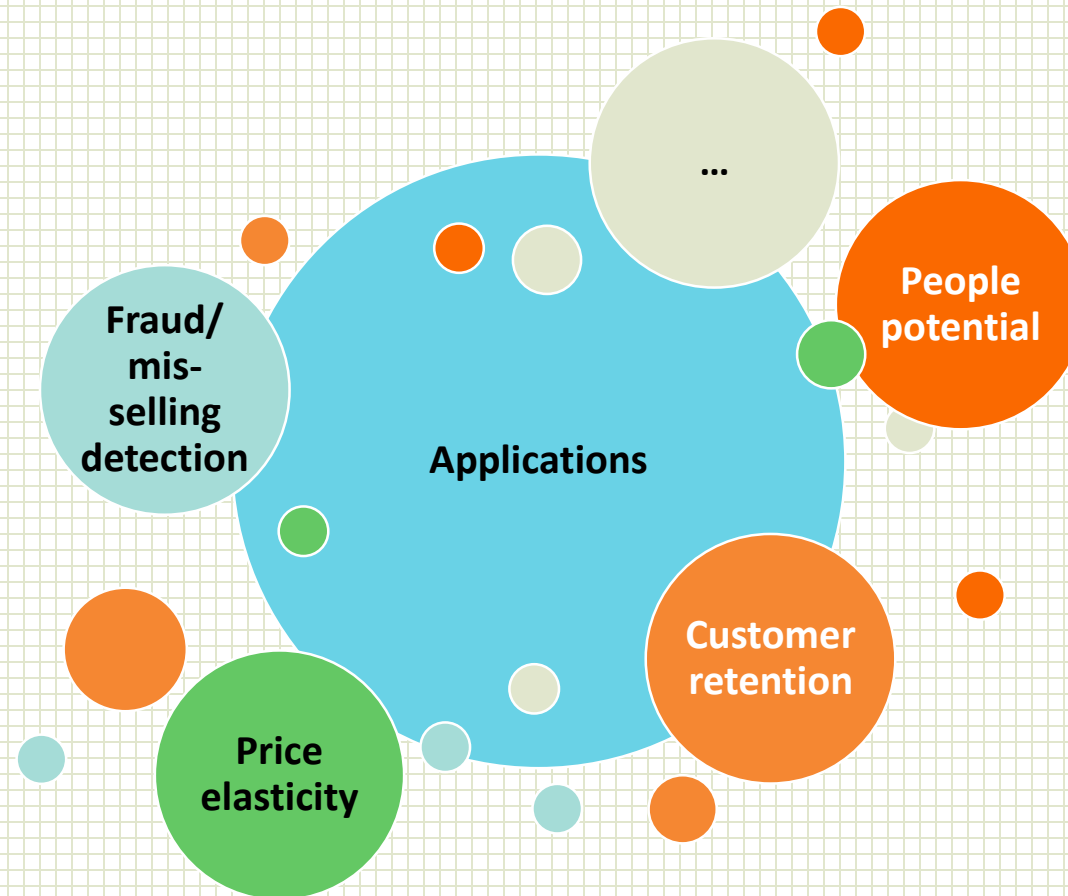
Problem statement:

Accurate health insurance scheme pricing without historical scheme experience.

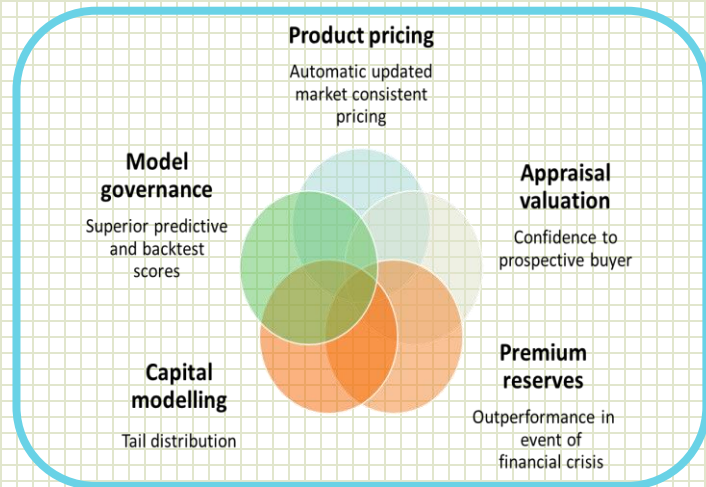
Model Structure



Other Applications



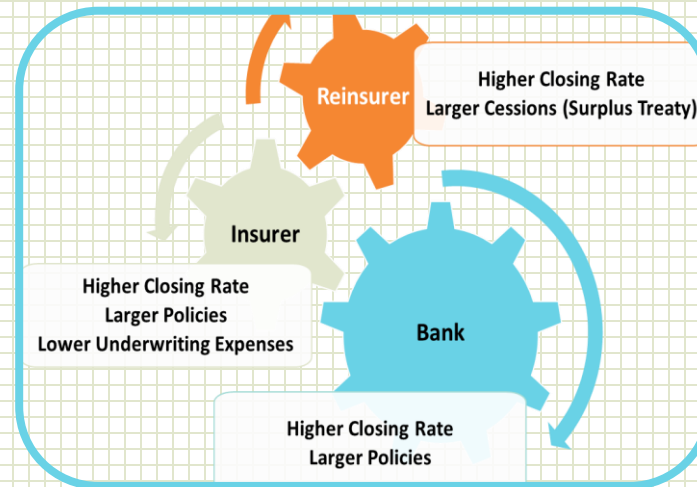
Recap



Case Study 1

Unemployment Insurance

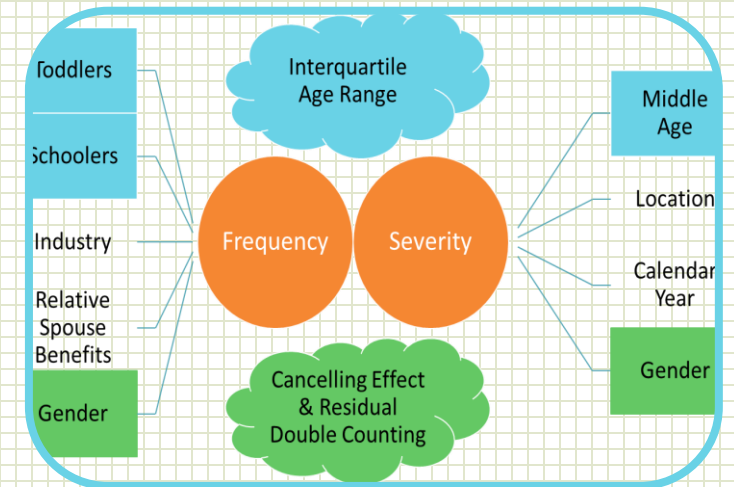
Key to Sound Overall Financial Management



Case Study 2

Medical Underwriting

Significant Revenue & Profit Contribution



Case Study 3

Claims Management

Long Term, Incremental Benefits to Actuarial Models

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Thank You

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