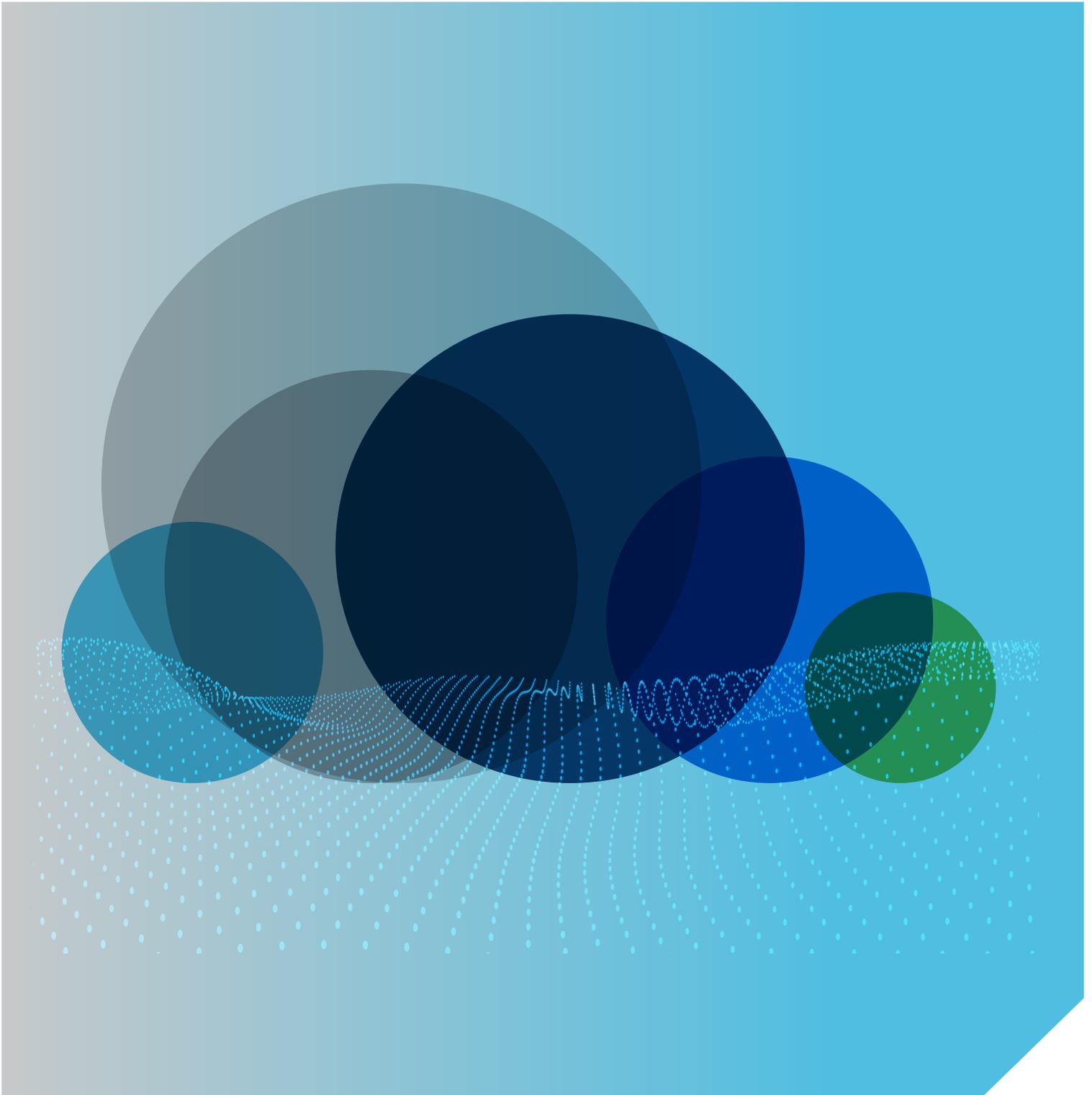


# Milliman Claim Variability Benchmarks

Industry guidelines to assess the quality of unpaid claim estimates



OVERVIEW

Milliman's Claim Variability Benchmarks™ help you better understand your unpaid claim estimates.

## Product highlights

Milliman Claim Variability Benchmarks are new industry standards to help assess the quality of stochastic unpaid claim distributions used for ERM and DFA, including correlations for aggregate distributions.

The benchmarks also stochastically support a wide variety of deterministic reserving methods.

The benchmarks include six new guidelines:



Loss development patterns



Severity patterns



Mack functions



Frequency patterns

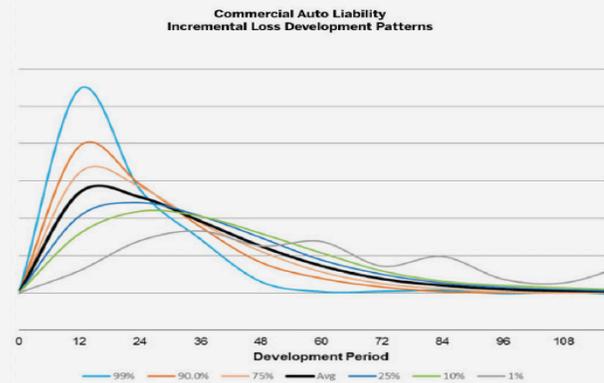


Unpaid distributions

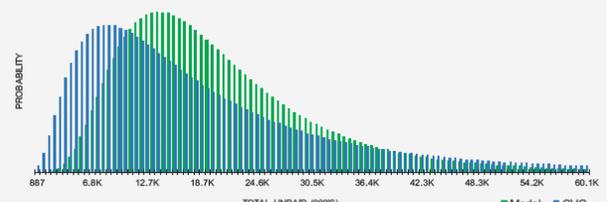


Correlation values

### Development pattern distribution



### Aggregate capital estimates



	Mean	Std Dev	CoV	75.0%	90.0%	95.0%	99.5%
Model Results*	20,953	11,265	53.8%	25,925	35,202	42,273	67,577
CVB Guidelines*	20,953	18,860	90.0%	26,184	41,796	55,294	113,278
<b>TVaR Estimates</b>							
Model Results*				36,229	45,758	53,197	80,190
CVB Guidelines*				45,106	63,824	80,008	148,765
<b>Capital Required</b>							
Model Results*				15,276	24,805	32,244	59,237
CVB Guidelines*				24,153	42,871	59,055	127,812

\* Model Results based on weighting of 4 different models for each LOB.

THE CHALLENGE

## Avoid the costs of mis-estimating risk

- The variability of unpaid claims is a key metric in any risk model used for Enterprise Risk Management (ERM)
- These claims typically have a large impact on risk transfer and solvency considerations
- Insurers typically lack industry benchmarks to gauge the quality of unpaid claim variability estimates

## Benefits



**Adequate risk-based capital for operating activities**



**Match reinsurance to risk profile**



**Compliant with Board-determined risk profile**



**Accurate estimate of risk margin for technical provision**



**More accurate pricing**

## Key features



**Adaptable**

Automatically adapts results to company size.



**Customizable**

Adjusts for different development patterns, currencies, and variance assumptions.



**Proven**

Can provide reasonableness tests for stochastic estimates. Can be used with deterministic estimates to provide distribution information from industry data.



**Global**

Based on US data, but designed to be used worldwide.



**Flexible**

Microsoft Excel add-in.



**Data-driven**

Massive amounts of data used to back test models and adjust for biases; most major lines, all sizes of companies.

# About Milliman

Milliman is a leading consultant to the insurance industry, advising most of the world's largest insurers.

We combine more than 70 years of risk expertise with advanced data analytics and market-leading technology solutions to help our clients:

- navigate increasingly volatile markets;
- drive product innovation and efficiency;
- protect assets from complex and interconnected risks;
- create groundbreaking solutions to some of society's greatest challenges.

With offices across the globe, we have in-depth knowledge of the local regulations in every market we serve, and actively invest in research to keep our clients one step ahead in a rapidly changing world.



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Every day, in countries across the globe, Milliman works with clients to improve healthcare systems, manage emerging risks, and advance financial security, so millions of people can live for today and plan for tomorrow with confidence.

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