



Loss Simulator
 2011 Casualty Loss Reserve Seminar
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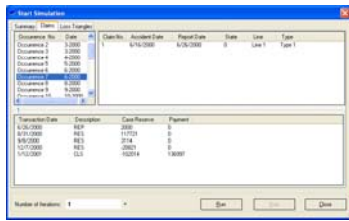


If you cannot explain it simply, you don't understand it well enough
 --Albert Einstein

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What do we try to simulate? **All about raw claims**

- Occurrences
- Claims
- Transactions (such as case reserve, payments, adjustments, etc)

Occurrence No.	Date	Class	Accident Date	Report Date	Case	Line	Type
Occurrence 1	8/1/2000		8/1/2000	8/1/2000	0		Line 1
Occurrence 2	8/1/2000						Line 1
Occurrence 3	8/1/2000						Line 1
Occurrence 4	8/1/2000						Line 1
Occurrence 5	8/1/2000						Line 1
Occurrence 6	8/1/2000						Line 1
Occurrence 7	8/1/2000						Line 1
Occurrence 8	8/1/2000						Line 1
Occurrence 9	8/1/2000						Line 1
Occurrence 10	8/1/2000						Line 1

Transaction Date Exposure Case Reserve Payment


8/1/2000	424	200	0
8/1/2000	813	11719	0
8/1/2000	813	274	0
8/1/2000	813	2000	0
8/1/2000	511	102014	10000

Number of Periods: 1

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Where is the passion (value)?

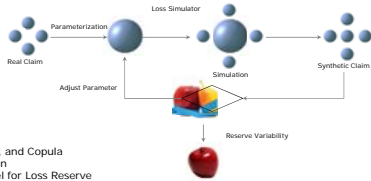
This system will underlie the loss triangles and other statistics used to estimate loss reserves



- A platform that can generate synthetic claims
- The generated claims will have the same statistical characteristic as the company real claim data, in regarding to lags, payments, frequency, case reserves, adjustment, etc, etc.
- The generated claims could be summarized into loss development triangles and complete rectangles, which could then be used to test loss reserving methods and models.
- Aid people in better understanding the underlying loss development process.

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Vision and Enhancement

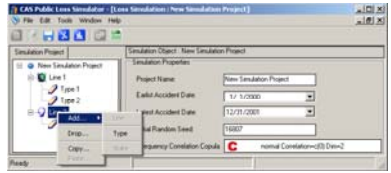


- Copula, Copula, and Copula
- Parameterization
- Predictive Model for Loss Reserve
- Challenges
 1. Real claim process is very complicated
 2. Modeling variance
 3. Parameter variance
 4. Process variance
 5. Unquantifiable variance

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Example

Simulation Project Parameters Setup.



- Windows Standard UI
- Tree Structure
- Accident Year Range
- Random Seed
- Line Level Frequency Correlations from Copula

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Example continue

Line Level Parameters Setup.

- Annual Frequency
- Exposure, Trend, and Seasonality
- Multinomial Claim Distribution

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Example continue

Coverage Level Parameters Setup.

Lags

Order	Color	Label
1	Green	Report Lag
2	Green	Payment Lag
3	Blue	Recovery Lag
4	Blue	Inter-Valuation/Waiting Times Lag

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Example continue

Coverage Level Parameters Setup.

Severity Properties

Case Reserve Interpolations

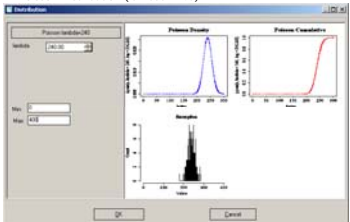
Recovery Properties

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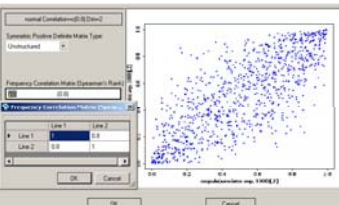
Example continue -- Distribution

A Poisson Distribution (lambda=240)



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Example continue -- Copula



A Normal Copula


Frequencies among lines.
Payment lag and size of claim.

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Complicated Fact of Statistics

The weather forecast:
It has 35% chance to rain tomorrow.

My question is: should I bring my umbrella or not?



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