

Long-tail liability risk management

It's time for a

scientific

Approach > > >



Insureware

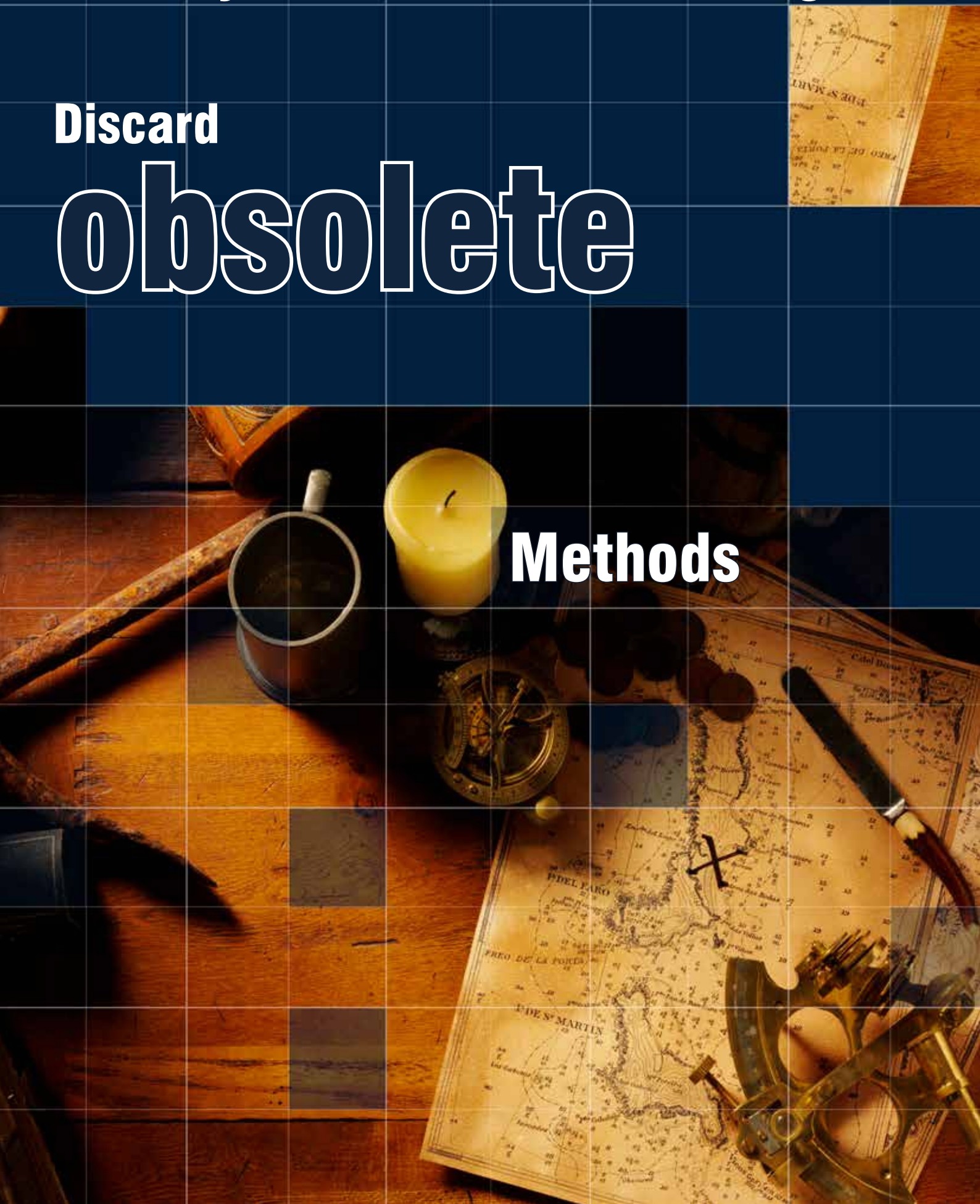
Unique corporate culture of innovation

**Do you need to be confident about
where your business is heading?**

Discard

obsolete

Methods



**Accurate and timely metrics critical
for your financial decisions?**

Embrace

disruptive

Technology



ICRFS™: The world's best long-tail liability risk management system

ICRFS™ is a high-powered analytical and data management system and the only actuarial software which treats insurance data arriving in calendar time as an essential feature of its modeling solutions. Designed with the P&C actuary and senior executives in mind, results are delivered in seconds.

The software is:

- small-footprint,
- intuitive and graphic,
- very fast, and
- rapidly implemented enterprise wide!

Insureware's new versatile technology, ICRFS™ Importer, accelerates the implementation process even further! ICRFS™ Importer builds a bridge between a database holding a mass of transaction records and an analytic engine which can analyse triangle data.



ICRFS™ Importer

Access information instantly

- Connect large repositories of unit record data with ICRFS™
- Extract all database variables
- Create triangles at any granularity for analysis
- Convert claims table data into loss development triangles
- Aggregate:
 - Across all values of a variable
 - By particular values
 - Across multiple categories and values

Relational databases

Access information instantly

- Small footprint
- Fast to implement enterprise wide solution
- Data organized according to your requirements
- Models and forecast scenarios saved in databases
- Simple to navigate
- Easy to monitor, manage, and update



Significant gains to an Insurance organization can be achieved by creating one or more ICRFS™ databases. These databases serve as a repository for all aspects of the company's long tail liability risks. All the information in the database including data, models, and results, are right at your fingertips.

Modeling Frameworks

The identified models in the Probabilistic Trend Family (PTF) and Multiple Probabilistic Trend Family (MPTF) modeling frameworks describe the trends in the three directions (development, accident, and calendar) along with the volatility around the trends. They provide complete loss distributions by accident period, calendar period, and total.

Modeling multiple long tail liability lines

Get the complete perspective

- Introduction to probabilistic modeling frameworks
- Common drivers and measuring trends
- Correlations and their impact
- Long-tail liability risk profiles
- One composite model for the whole company
- Aggregate distributions for accident year, calendar year, and totals
- Quantiles (percentiles), V@Rs, and T-V@Rs
- Economic Balance Sheet and Solvency II metrics
- Real life case studies!



Pricing: Segments, Layers and Reinsurance

- Introduction to probabilistic modeling frameworks
- Pricing future underwriting years including for the aggregate of multiple LOBs
- Pricing segments
- Assessing optimal outward reinsurance
- Layers and High Severity/Low Frequency
- Adverse Development Cover
- Real life case studies!



Understanding correlations and common drivers

- Purpose of correlation measures
- Correlations are model dependent
- Common accident year and calendar year drivers versus correlations
- Impact of accident year drivers on pricing
- Real life case studies!



Solvency II – one year and ultimate year risk horizons for long-tail liabilities

- Economic Balance Sheet
- Solvency II Capital Requirement
- Technical Provisions
- Market Value Margins
- IFRS 4 Phase II
- Fungibility and Ring Fencing
- Consistency of metrics on updating
- One year ahead metrics



Mitigate model risk and see your business in a new light?

Insureware's platform

ICRFS™

can be implemented enterprise-wide in a few days

and gives you:

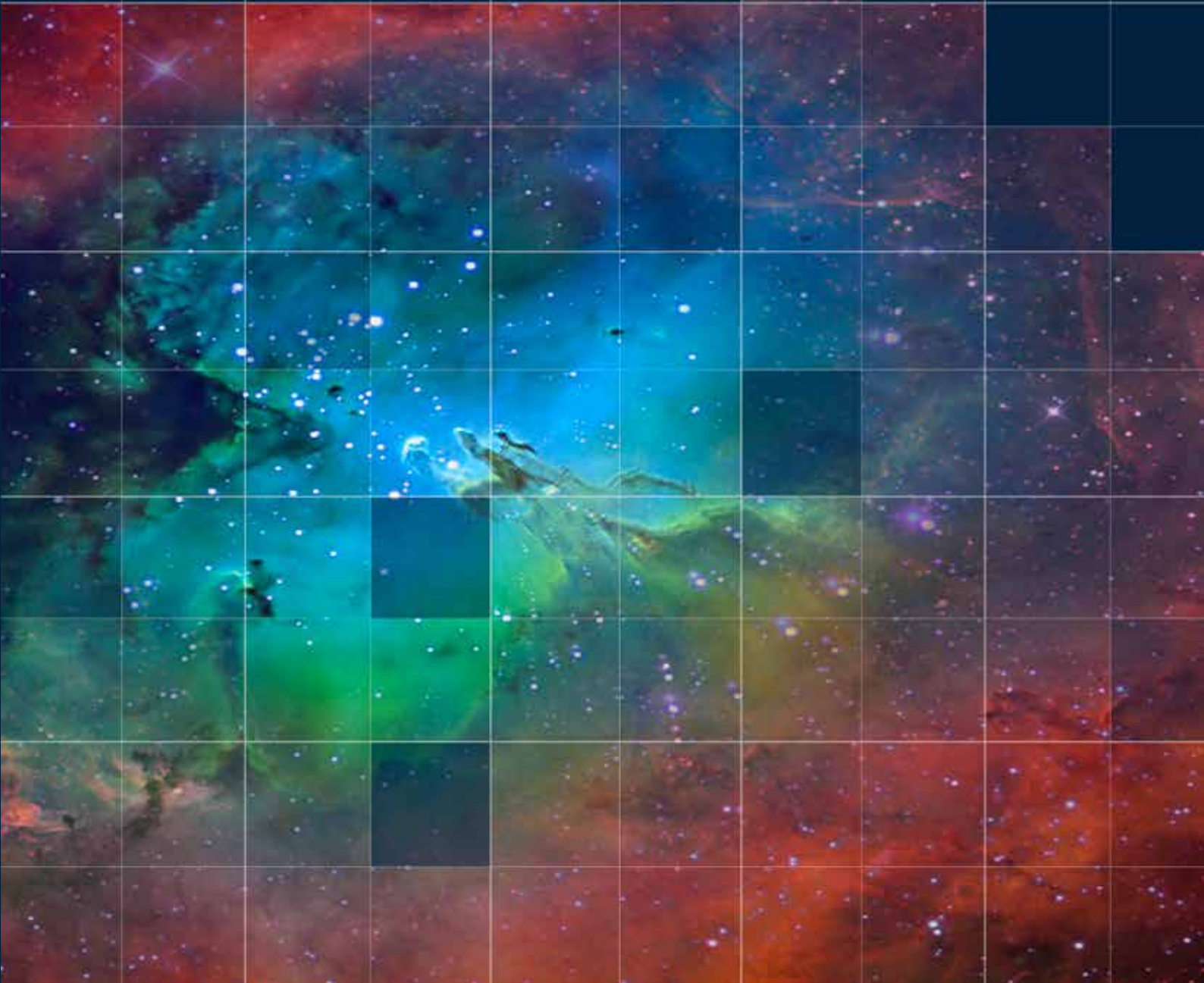
- Long tail liability Enterprise Risk Management
- Unparalleled insight and intelligence
- High powered analytics at ludicrous speed
- Structured databases for managing all risks
- ORSA and Solvency II metrics including the Economic Balance Sheet for the aggregate of multiple LoBs
- Single composite model for multiple LoBs
- Multiple aggregation at different levels of segmentation
- Reserve, pricing and reinsurance risk assessments
- Liability distributions and correlations by calendar year
- Risk capital allocation by LoB and calendar year
- Graphical displays of identified models
 - Trends in three directions
 - Volatility about trends
 - Correlations
- Comprehensive model identification and validation tools
- Creative solutions for insoluble problems within a robust, yet flexible, framework
- ... and much more!

**Get a new perspective on your
company's position?**

View

Best's Schedule P

**in an ICRFS™ structured database
with ICRFS™ modeling frameworks**



ELRF™ Best's Schedule P

Exclusive to Best's Schedule P subscribers

Insureware and A.M. Best have created ELRF™ Best's Schedule P. This application, freely available with a Best's Schedule P subscription, is pre-loaded with Best's Schedule P data in an ICRFS™ structured database primed for Insureware's analytical tools.

Structured access to Best's Schedule P data

Empowered with this application you will obtain:

- Offline access to Best's Schedule P long-tail liability lines and derived financial metrics in an ICRFS™ structured database.

Secure the information you need fast!

- Pre-calculated critical financial information:
 - Reserves Held;
 - %IBNR;
 - Total Loss Ratio;
 - Survival Ratios; and
 - Much more!

Drill down by classification variables and sort metrics to glean hidden insights.

- All available Best's Schedule P triangles:
 - Paid losses;
 - Case Reserve Estimates;
 - Incurred Losses (not including BULK and IBNR);
 - Bulk and IBNR;
 - Number of Claims Reported; and
 - Number of Claims Closed.

Acquire any Schedule P loss development array data for trend analysis instantly.

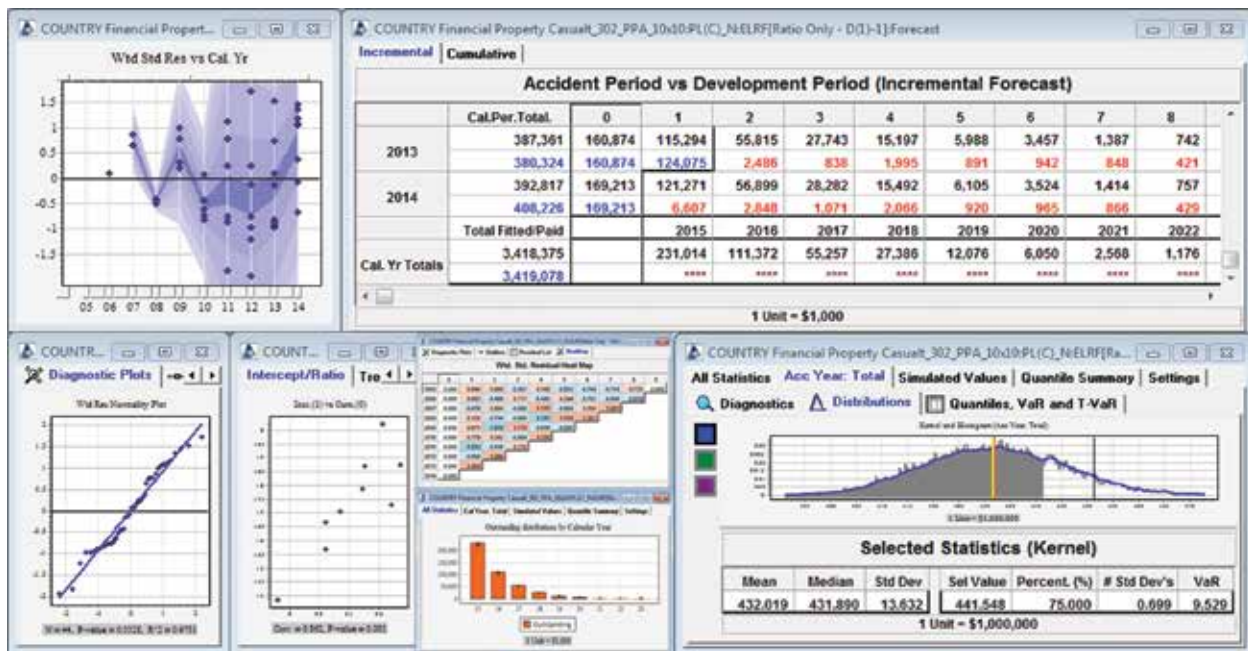
- Additional triangles:
 - Reserves Held (CRE + BULK and IBNR); and
 - Ultimates Held (Incurred Losses including BULK and IBNR).

Construct a complete picture of a company's reported liabilities, their holdings, and their financial positioning in the industry.

Triangle Group	Valuation Date	Company Name	Line of Business	Reserves Held	Total Earned Premium	Survival Ratio	Relative Survival Ratio	Loss Ratio	Relative Loss Ratio	%IBNR
Ball & Walling Inc Group (S)_B11_PPA_15A10	2014	USO	Ball & Wall	1047084	8978323	2.33	1.07	71.49	1.05	23.71
Progressive Ins Group (S)_260_PPA_15A10	2014	USO	Progressive Ins	9621742	8220127	1.80	0.83	61.39	0.91	22.94
USAA Group (S)_4000_PPA_15A10	2014	USO	USAA Group (S)	5081010	2828729	2.20	1.01	79.49	1.16	59.82
Waterworks Group (S)_2907_PPA_15A10	2014	USO	Waterworks Gr	2081128	4482084	1.81	0.83	43.21	0.83	28.87
American Family Ins Group (S)_124_PPA_15A10	2014	USO	American Fam...	1977208	2098871	2.40	1.10	50.49	1.03	56.34
Travelers Group (S)_1807A_PPA_15A10	2014	USO	Travelers Ins	1749881	2348953	2.22	1.02	63.81	0.94	48.58
East Ins Group (S)_4261_PPA_15A10	2014	USO	East Insurance	1119681	1932984	2.32	1.08	69.87	0.97	49.69
Auto Owners Ins Group (S)_0384_PPA_15A10	2014	USO	Auto Owners I	1368053	7209384	2.76	1.27	77.29	1.14	26.81
Multi-Auto & Home Group (S)_3903_PPA_15A10	2014	USO	Multi-Auto &	1030225	1212870	2.11	0.97	64.82	0.95	26.82
Allstate Ins Group (S)_2885_PPA_15A10	2014	USO	Allstate Insur...	1014054	5488081	3.18	1.46	74.95	1.09	36.77
Auto Club Group (S)_317_PPA_15A10	2014	USO	Auto Club Ins	948037	6098713	2.89	1.28	78.69	1.15	64.23
Auto Club Ins Group (S)_1985_PPA_15A10	2014	USO	Auto Club Ins...	528295	1938733	2.91	1.32	66.86	0.96	32.36
Mercury Group (S)_4524_PPA_15A10	2014	USO	Mercury Insur...	369410	1394949	1.75	0.80	63.83	0.83	42.88
Auto Club Enterprises Ins Group (S)_1975_PPA_15A10	2014	USO	Auto Club Ent...	851239	1153526	1.83	0.88	62.84	0.91	43.82
Aetna Mutual Group (S)_18522_PPA_15A10	2014	USO	Aetna Mutual	729584	5803986	2.57	1.18	70.74	1.04	95.38
Harvest Ins Group (S)_Car-Car (S)_490_PPA_15A10	2014	USO	Harvest Insur...	482113	627229	2.01	0.92	66.87	0.88	37.60
Armed Property & Casualty Ins (S)_1984_PPA_15A10	2014	USO	Armed Propert...	482528	4441132	1.85	0.78	68.82	0.87	90.80
Paladin Group (S)_1942_PPA_15A10	2014	USO	Paladin Group	478882	3727946	2.28	1.18	68.88	1.19	38.28
COUNTRY Financial Property Casualty (S)_302_PPA_15A10	2014	USO	COUNTRY Fin...	448195	5789946	1.88	0.86	66.71	0.86	30.34
American FSC Co (S)_4009_PPA_15A10	2014	USO	American FSC	353661	1942972	1.60	0.83	62.46	1.21	46.87
Keene PCC Group (S)_184_PPA_15A10	2014	USO	Keene PCC	329167	7500091	1.59	0.73	68.93	1.03	37.81
Southern Farm Bancard Casualty (S)_4237_PPA_15A10	2014	USO	Southern Farm	320008	4980889	1.87	0.86	74.62	1.09	52.76
Shelter Ins Co (S)_588_PPA_15A10	2014	USO	Shelter Insur...	286288	3779252	2.00	0.86	68.80	1.01	95.59
Allstate Ins Group (S)_198_PPA_15A10	2014	USO	Allstate Insur...	286025	3609168	1.90	0.87	66.87	0.90	38.28
American National PCC Group (S)_1886_PPA_15A10	2014	USO	American Nat...	284666	2440668	2.24	1.09	71.28	1.04	37.17
State Auto Ins Co (S)_186_PPA_15A10	2014	USO	State Auto Ins	254281	398642	1.72	0.79	65.45	0.97	32.90
National General Co (S)_18862_PPA_15A10	2014	USO	National Gene...	248727	2534789	1.44	0.66	68.89	1.01	37.43
American International Group (S)_1094_PPA_15A10	2014	USO	American Intern...	236642	671895	1.86	0.86	73.29	1.08	71.45
State Group (S)_1888_PPA_15A10	2014	USO	State Group (S)	221188	2329285	2.18	1.07	61.27	0.89	3.24
George Mutual Casualty Flood (S)_2817_PPA_15A10	2014	USO	George Mutual	210149	3483159	1.57	0.71	61.89	0.90	32.81
NYCM Ins Group (S)_18862_PPA_15A10	2014	USO	NYCM Insuranc	199022	1934658	2.18	1.08	66.37	0.97	62.26



Analytical tools including the Mack method and the bootstrap technique



Two modeling frameworks are included: the Extended Link Ratio Family (ELRF) and Link Ratio Techniques (LRT) The ELRF module formulates link ratio methods as regression estimators and extends them.

- Methods include:
 - Mack (regression formulation of volume weighted average, chain ladder);
 - Exclusion of whole periods or individual points from estimations;
 - Murphy;
 - Bornhuetter-Ferguson; and
 - Much more!

Within an interactive, intuitive, graphical interface.

- Comprehensive diagnostic tests to validate that assumptions made by link ratio and related methods are carried by the data - including the bootstrap technique.
- Link ratio techniques:
 - Volume weighted average, Chain ladder;
 - Arithmetic average;
 - Last N diagonal weighted average;
 - Two parameter smoothing;
 - Three parameter smoothing;
 - Bornhuetter-Ferguson; and
 - Much more!

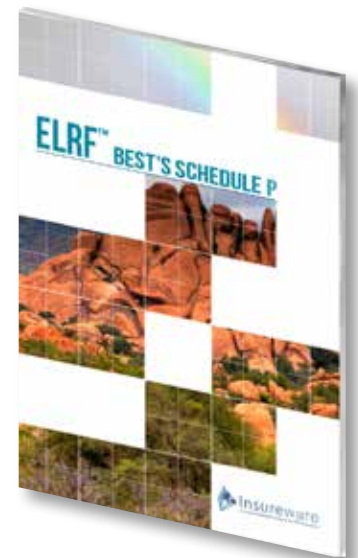
Positioning. Acquisition. Investing. Monitoring.
Be informed with accurate and timely information.

ELRF™ Best's Schedule P

Exclusive to Best's Schedule P subscribers

- **Free with a Best's Schedule P subscription!**
- Offline access to Schedule P long-tail liability lines and derived financial metrics;
- Pre-calculated critical financial information including Reserves Held, %IBNR, Total Loss Ratio and more!
- Drill down by classification variables and sort metrics to glean hidden insights;
- All available Schedule P triangles;
- Additional Reserves Held and Ultimates Held triangles where they can be calculated;
- All analytical tools included in ELRF™!

Construct a complete picture of a company's reported liabilities.



ICRFS™ Best's Schedule P

Exclusive to Best's Schedule P subscribers



- All of the benefits and features of ELRF™ Best's Schedule P.
- Probabilistic Trend Family (PTF) Modeling Framework:
 - Identify trends in the three directions (development, accident, and calendar);
 - Measure the volatility around the trends; and
 - Compare loss costs between companies and LOBs.
- Multiple Probabilistic Trend Family (MPTF) Modeling Framework:
 - Measure correlation between LOBs driven by the data;
 - Determine risk capital allocation and diversification credit for entire companies;
 - Calculate Solvency II one-year ahead statistics and associated risk for individual Lines of Business or whole companies; and
 - Much more!

ELRF™ Best's Schedule P is available to all Best's Schedule P subscribers through BestLink and requires an active Best's Schedule P subscription for the relevant years. The pre-loaded Best's Schedule P data includes both Net (20x10 and 10x10) arrays.

For more information on Best's Schedule P
please contact A.M. Best.
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An Insureware case study

Did poor methodology sink Tower Group?



Tower Group: a failure in progress since 2007

- A new calendar year trend that emerged in 2006 was steadily eroding their financial position and culminated in the failure of Tower Group in 2013 when under-reserving was finally noticed.
- What took experts and stakeholders so long to see the problem?
- Statistical models which describe calendar year trends in the data clearly demonstrate Tower Group was sinking way back in 2009!
- Commonly used methodologies do not measure calendar year trends.
- Using the right modeling tools in 2007 could have saved Tower Group. By 2011 it was far too late.

About Insureware

Insureware is not your typical long-tail liability risk management firm: we are R&D focused. Our team of world-class statisticians originated many of the ideas that the industry now aspires to. They have published numerous papers not only in actuarial journals but also in preeminent statistical journals. Insureware creates and supports the only comprehensive, enterprise wide, long-tail liability risk management software in the world.

Insureware creates unique collaborative partnerships with each client. The partnership facilitates the growth of incomparable knowledge, benefits, and applications.

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