ELRF[™] Best's Schedule P 2019







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Exclusive to Best's Financial Suite - P/C, US subscribers

Insureware and AM Best have created ELRF[™] Best's Schedule P 2019. This application, freely available with a Best's Financial Suite - P/C, US subscription, is pre-loaded with Best's Financial Suite - P/C, US data in an ICRFS[™] structured database primed for Insureware's analytical tools.

Structured access to Best's Financial Suite - P/C, US data

Secure the information you need fast!

Empowered with this application you will obtain:

- Offline access to Best's Financial Suite P/C, US data and derived financial metrics in an ELRF[™] structured database.
- Pre-calculated critical financial information:
 - o Reserves Held;
 - o %IBNR;
 - o Total Loss Ratio;
 - o Survival Ratios; and
 - o Much more!

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

- All available Best's Financial Suite P/C, US triangles:
 - o Paid losses;
 - o Case Reserve Estimates;
 - o Incurred Losses (not including BULK and IBNR);
 - o Bulk and IBNR;
 - o Number of Claims Reported; and
 - o Number of Claims Closed.

Acquire any Best's Financial Suite - P/C, US loss development array data for trend analysis instantly.

- Additional triangles:
 - o Reserves Held (CRE + BULK and IBNR); and

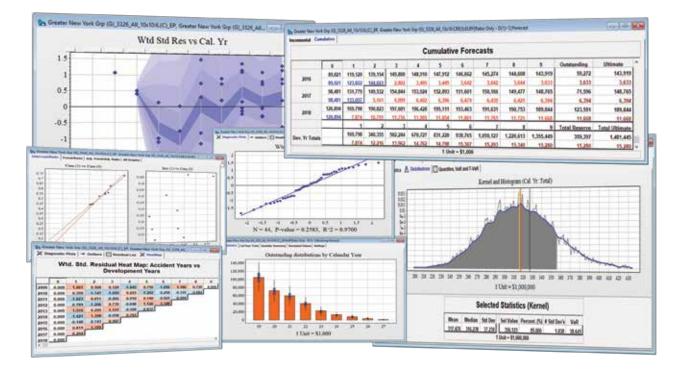
o Ultimates Held (Incurred Losses including BULK and IBNR).

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

iangle Groups Variables Triangle Ty ree View Query View	show TG Preview Find.						
Type of TG	a Tsangle Group	Line of Business	Reserves Held	Ultimates Held	Survival Ratio	Ad Summal Ratio	Relative Survival Ratio
Valuation Date	Tel Atlantic Sulety Co. 22032 Al. 10/10	Z-MLOBs Com	142	511	3.09	249	0.10
Sampling Period	Tat Atlantic Surety Co., 22032, All, 20x10	2-44 LOB: Com.	142	501	3.09	2.49	0.99
Currency	Tat Auto & Casualty Ins Co. 11233 AL 10/10	0 Z-48L08+Com.	2,969	127,193	0.87	0.84	0.29
Line of Business	Tat Auto & Casualty Int Co_11233_AIL20x10	2 ZAFLOB: Com	3,969	127,193	0.87	0.64	0.28
Peterves Held	Tist Auto & Cesually Ins Co. 11233_CAL_10e		292	2,408	1.07	1.03	0.40
Vitimates Held	1st Auto & Ceruely Ins Co. 11233_CAL_20e	Alignmential A	232	2,408	1.07	1.01	0.40
V Survival Ratio	1 11 Auto & Casualty Ins Co. 11233. OLOcc. 1		151	509	4.00	2.05	0.90
V Ad Survival Ratio	Tet Auto & Cesually Ins Co. 11233 OLOcc.	20i10 H1 Other Liabil	151	509	4.00	2.85	0.90
Relative Sunitial Ratio	1st Auto & Cesually Int Co. 11233 PPA 10	10 B-Private Patte	3,233	61,236	0.72	0.68	0.33
Y Adi Relative Survival Ratio	1st Auto & Cessally Ins Co. 11233 PPA 20	d B Privale Pace	3,233	61,236	0.72	0.68	0.33
V Loui Ratio	Tat Auto & Casualty Ins Co., 11233, Short, 10		293	63,040	-1.43	-1.42	-0.72
Felaive Loss Ratio	Tat Auto & Casualty Ins Co., 11230, Short, 20		293	63.040	-1.40	-1.42	-0.72
V Total Gross Earred Plenium	Tat Choice Advantage Ins Co. I. 12427_AL		5.061	62,262	2.00	1.99	0.64
V 1 IENA	Tat Divice Advantage Ins Co. I. 12427_AL		5.061	62.262	2.00	1.99	0.64
Aggregation	Tet Choice Advantage Ins Co. 1, 12427_CAL		1.653	9.041	2.40	2.30	0.91
V Derensions	Till Dioke Advantage Ini Co. 1, 12427_CAL		1.653	3.041	2.40	2.30	0.91

2

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.

ELRF models 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 validate that assumptions made by link ratio and related methods are carried by the data - including the bootstrap technique.

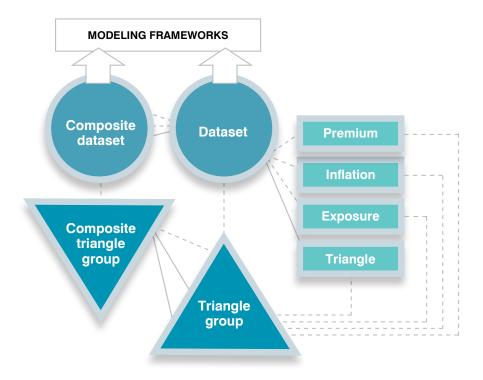
Link ratio techniques:

- Volume weighted average, Chain ladder;
- Arithmetic average;
- Last N diagonal weighted average;
- Two parameter smoothing;
- Three parameter smoothing;
- Bornhuetter-Ferguson; and
- Much more!

ELRF[™] Best's Schedule P 2019 data organization

Best's Financial Suite - P/C, US data are grouped by company and Line of Business into triangle groups.

In Insureware parlance, triangle groups contain data (triangles, premiums, exposures, models, and more) related to the same Line of Business – or other grouping category. These building blocks are then provided to the modeling frameworks for analysis.



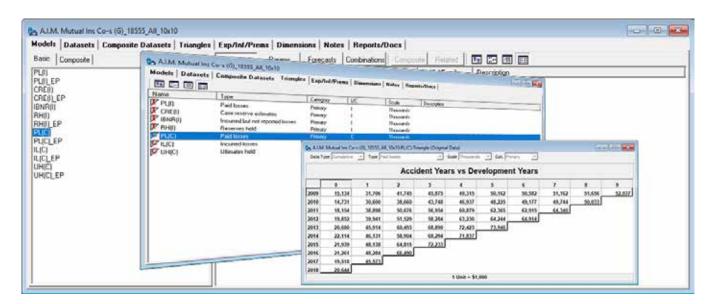
Triangle groups contain building blocks for easy analysis:

- Triangles (loss development arrays);
- · Exposure, Inflation, Premium vectors; and
- Datasets which link triangles with [optional] exposure, inflation or premium vectors.

Net data are available in triangle format for ready analysis. The last calendar year of Gross data are stored in vector format where available).

Inside a Triangle Group

Some contents of the triangle groups are shown below:



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Classification variables

ELRF[™] Best's Schedule P 2019 allows up to 4000 top level variable classifications with unlimited sub-categories and sub-levels to be associated with triangle groups. The variable and value classification system ensures navigation to individual triangle groups (and triangles within triangle groups) is achieved with a few mouse clicks.

Pre-calculated critical financial information, such as:

- Reserves Held;
- %IBNR;
- %Premium ceded;
- Total Loss Ratio;
- · Survival Ratios; and
- Reinsurance Loss Ratios are stored as classification variables.

The calculated values can be included in queries and sorted – serving to further speed up navigation through the system.

roe View Durity View	Show Ti	and the second design of the s		10.000	1	Construction of	CONTRACTOR OF STREET	2010/01/01/02/07			(and)
Type of TG	n Tranged		Line of Business	Reserves Held	Ultimates Held	Surviva Ratio	Add Survival Platio	Relative Survival Flato	Adj Rebitive Survival Ratio	Loss Flatin	
Valuation Date		#No 54495 Co. 22002 A8,10410	2 ARLORY CHR.	10	\$11	101	249	5.00	8.45	11.25	1.14
Sampling Period	71446	etic Sunty Co_22032_AB_20x10	Z-ARLOB: Com.	142	531	2.09	2.45	0.99	0.85	11.25	0.19
Line of Dustness	Classification	Censely In Co., 11233_AIL_10430	Z-ARLOB: Com.	3,969	127,193	6.87	0.84	0.29	0.29	64.09	0.97
The or summers		Cervely In: Co., 11233, 44, 20450	Z-All LOBs Com	1,969	127,593	6.67	0.84	0.28	0.29	64.09	0.97
 Reserves HekS Ubissilvo Hekd 	variables	Casually ins Cir_11233_C4L_10x10	C-Connectal A.	292	2.408	1.07	1.01	0.47	0.42	25.50	0.36
Survival Ratio		Casualy in: Ca_11233_CAL_20r10	C-Conmercial A	292	2,400	1.07	3.01	0.40	0.42	25.58	0.36
Adj Sanwal Rate		6 & Casualty Int Co., 11209, 01.0cc., 10410	H1-Other Liabilt	158	509	4.05	2.05	0.90	0.66	38.44	0.60
Relative Superal Page	🔽 Tst.Au	to & Canually Inv Co. 11230_0L0cc_20x10	H1-Other Liabilit	153	509	4.98	2.05	0.90	0.66	35.44	0.00
Ad Relative Stativityal Ratio	Tot Ad	to & Casualty Ins Co., 11230_PPA_10v10		33	61,226	0.72	0.68	0.23	0.33	87.15	0.9
Loui Rale	🔽 1d Ad	is & Casualty Ins Co_11230_PPA_20x18	Triangle G	roups 👔	68,236	0.72	0.68	0.33	0.33	67.19	0.94
Fishing Loss Ratio	C 1st.Aut	to & Canually Ins Co., 11230, Short, 10x10		90	63,040	1.43	4.42	0.72	0.77	65.26	1.0
Total Earned Frankan	4 🔽 1d.6d	e & Canually Ins Co. 11233, Short, 20-10	Y-Short LOB+ C	299	62,040	1.42	1.42	4.72	-0.77	95.26	1.04
Total Secon Larved Pressure	1 tot Da	sice Advantage Ins Co. L 12427_A8_10x1	Z-M LOBs Cals.	5,063	62,262	2.00	1.59	0.64	0.68	74.29	1.13
2.000		sice Advantage Ini Co. L 12827_A8_20x10	Z-AlLOR: Con.	5.061	62,262	2.00	1.99	0.64	0.68	74.29	1.13
Agregation		oice Advantage Int Co. 1, 12427, CAL, 10x10	C-Connecial A	1.653	3.041	2.40	2.30	0.91	0.34	40.37	6.56
V Dimensiona		oke Advantage Int Co. I_12427_CAL_20x10	E-Commercial A	1.653	3.047	2.40	2.30	0.91	0.94	40.37	0.56
7 2 Premium mediad		oce Advanlage Ini Co. 1_12427_HOFD_10x10	AHoneowner	39	115	(Nore)	Notel	Novel	[None]	37.30	0.99
N Lines		sice Advantage Ini Co. 1, 12427, HOFD, 20/10		- 99	119	(Nore)	Novel	Disnet	(None)	37.56	0.50
Company Name		sice Advantage Ins Co. 1, 12627, PPA, 10(10	E-Poyste Facue	2,000	12.953	217	2.21	6.99	1.09	67.14	0.34
AME Number		oce Advantage Ins Co. 1, 12627, PPA, 20/15	E-Poyate Parton	2.000	16.953	2.17	2.21	0.99	1.09	87.14	0.54
AMB Group Name		nice Advertage Ins Co. 1, 12427, Short, 10x10	Y-Short LDB+ C	325	34.074	0.71	873	0.36	0.39	103.78	1.65
AMS Group Number		aioe Advantage Ins Co. 1 12427 Short 20x10				0.71	0.73	8.36	0.39	103.78	1.68
AMD Group Lead Indicator		enius North America Ins. 3641 All 10x10	Z ALLOBI Com	Class	ification	8.33	Norel	267	Norel	Norel	Nove
/M8 Subgroup Number		entury North America Inc. 3641 Ail: 20v10	ZARLOR: Cen	verieble	values by		Norel	2.67	Planel	61.45	0.94
7 AMB Subgroup Name		emus North America Inc. 3641_CAL_10x10	C-Connectis A	variable	values by	Pitre]	Binel	Disnei	Pionel	Norel	Norel
V NoMering		enius North America Inc. 2645 CAL 20/10	E-Consteroial A.	Trianc	le group	Norel	Norel	[None]	(None)	16.00	1.25
V Maileting Type		enury North America Inc. 2641 HOFO 10/10	A Honeuwreni -	L	<u>3</u> . eup	Norel	Norel	(None)	[None]	Notel	Dionel
Cegarication Type		enury North America Inc. 2011 (2010) 2010	A Management		30.100	Provel	(horse)	(Popers)	proves	10.000	1.04
-V State											

Users of the application can:

- · Create their own variables and values;
- Create new triangle groups by combining existing Best's Financial Suite P/C, US triangle groups allowing:
 - o Aggregations by company;
 - o Aggregations by Lines of Business; or
 - o Any other combination desired!

ICRFS[™] users can utilize COM technology to run scripts to automatically create, assign, or otherwise calculate variables and values of interest from the Best's Financial Suite - P/C, US data.

Database navigation

Finding data is a quick and easy exercise.

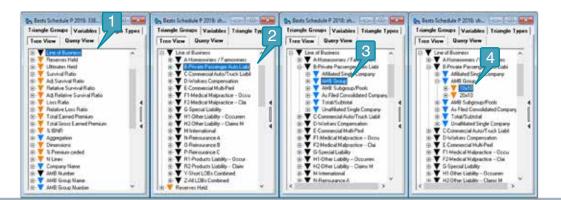
Know the name of the company you wish to analyze? Simply begin typing the name in the triangle group window and the application will jump to triangle groups beginning with that name.

Two main views are presented to enable quick access of information: tree view and query view. These two views are structurally similar, but activate different combinations of exploratory filters in the ELRF[™] Best's Schedule P 2019 database.

Navigation via Tree View

The tree view navigation panel empowers the user to drill down into the Best's Financial Suite - P/C, US data by selecting single values from any number of variable categories. Each subsequent filter further focuses the query.

For instance, the image below illustrates the sequential procedure to filter from the 30,000 triangle groups in the ELRF[™] Best's Schedule P 2019 database to 70 triangle groups with particular characteristics.



Type of TG A	Triangle Group	Line of Susiness	Reserves Held	Ultimates Held	Survival Rate 1	Addition of Resol	Relative Survival Ratio	Ad Relative Summal Ratio	Lons Ratio	Relative Loss Flatio
Valuation Date	State Fam Ges GL 88 PFN, 15x10	8 Private Pantel	21,647,757	1015101328	2.00	2.22	1.05	1.09	75182	1.01
Sampling Period	Betatwe Hathama Ins Go Est. 811, PPA, 10x10	S-Private Pante	16.813.122	37,545,717	2.28	1.33	1.04	0.36	76,75	1.08
Currency	C Abitale Inv Gop (G), 0, 79%, 10-10	S-Private Parce	11.040.001	75,512,301	2.50	2.43	1.10	1.32	66.72	0.96
T Line of Business	CISAL 0 p IGL 4000 FPA, 10:10	S-Privale Parcel	7.462.000	46,153,256	2.09	1.06	0.96	0.91	16.36	1.21
IE Y Altoneovenus / Famous	Cherly Mutual Ins Cons (G) 60 FPA 10(10	B Private Pauce	6.697,201	37,610,002	2.40	2.27	1.10	1.11	76.57	0.99
10 🖤 B Private Passenges Auto	American Family/Main Street Am, 18928, PPA, 10x18	S-Private Paces	2575149	17,283,506	2.28	2.67	1.04	1.02	71.79	1.01
8 V Aliked Single Concer	Travelers Gip (0), 19674, PPA, 10x10	B-Private Parite	2 533 513	16.062.690	2.23	2.01	1.02	0.99	66.55	0.53
E V AND GOLD	Auto-Owners Inc Grp (S), 4354, PPA, 10x10	8-Private Parce	1.443.209	7,827,777	257	2.28	1.37	3.13	75.29	1.05
10 ¥ 10:00	Eine Ins Gup 101, 4283, PFA, 30x10	8-Private Pasie	1.432.212	3.491.292	213	1.55	0.97	0.98	72.10	1.05
a V Dionei	CSAA Ive Exp.(5)_19450_PPA_10x10	S Private Parite	1.329.297	8.827.072	210	1.92	0.96	0.94	7271	1.02
# 7 0/SRo-1 # 7 1/SRo-2	C Anica Mutual Gep (G), 19522, PPA, 10410	B-Private Parce	267.147	5,059,053	2.00	1.97	0.96	0.97	76.49	1.07
a Zisheki	Hanover Inc Grp Prop & Cas Cos, 4061 (PPN, 10x10)	B Private Parce	545.000	2,636,270	2.09	1.57	0.96	0.97	19.75	0.90
# 3 358-4	Pahades Dep 101 16426 PPA 10/10	S-Private Parcel	499.302	2,844,216	2.53	2.52	1.20	1.20	75.06	1.05
# ¥ ASR-4	American PLC Cols Kit 4009 FPA 10x10	S-Private Plante	497.027	3.363.239	2.01	1.91	0.92	0.94	97.96	1.23
# ¥ 5/586	A T National General Core (5), 19963, PPA, 10x10	S-Private Parcel	431,338	4,709,715	2.19	2.16	1.00	1.05	71.05	1.00
# 7/5R-0	American Informational Grap (SE), 18540, PPA, 10x10	8 Private Parcel	394,173	2,230,374	2.78	2.27	1.27	1.11	58.21	0.63
# ¥ 9c5Pic+10	Steller In: Con (St. 598, FF4, 10/10	S-Private Parce	382.256	3,125,084	2.23	2.06	1.02	1.01	72.68	1.02
16-7 SR(-0	Chubb INA Gap (51, 10458, PPA, 10/10	8-Private Pacos	371,153	2175.754	2.37	211	1.00	1.02	65.06	0.93
9 7 SR510	Alleghary Ins Holdings Gap (G) 10(40, PPA, 10x10	B-Private Parcel	329.107	1.591.069	2.45	211	1.12	1.04	75.22	1.06
a 7 2040	American National Phap & Cas C, 18565, PPA, 10/10		317 523	2.070.057	210	2.00	1.00	0.90	73.00	1.04
R V AMB Subgroup/Foots	The Crearval Inc Cost (1) 4294 PPG, 1040	B-Private Parce	297,779	1.579.017	210	1.99	0.96	0.99	73.69	1.03
H-Y As Filed Consolidated Congary	Plenouth-Rack Corp (5), 18066, FPA, 10x10	B-Private Parcel	230.622	1.510.091	2.23	2.15	1.02	1.05	53.61	0.98
8 V Total/Subletal	NYCH Inc Big (51, 18562, PFA, 10/10	8-Private Parine	233.273	1,312,029	2.96	2.01	1.35	1.38	69.52	0.97
🛞 💎 Unafikated Single Company	5 Saleto Gra (G), 18080, PPA, 10x10	8-Private Parite	255.000	1,705,605	2.24	2.27	1.02	111	55.80	0.52
B T C Conneccial Auto/Truck Liabl	Westleid Gip IG1 730 PPA 10410	8-Private Parce	123,418	1,230,961	211	2.00	0.96	0.98	66.60	0.10
B Volkes: Compensation	CLMS In Society Gip 60, 10704, PPA, 10410	S-Private Parce	157.907	865,141	2.22	2.07	1.01	1.02	76.62	1.07
8 🝸 E Conversial Hult-Peri	Coregal Ins Gro (GL 2158, PPA_10-10	B-Proste Pacie	152.518	983,866	2.0	2.30	1.10	1.13	76.53	1.07
※ ▼ F1 Modical Maturation - Occu	Evente for the the the the tents	D Private Pacot.	192,510	202,000	1.00	1.00	1.10	1.1.2	76.50	4.00

- 1. Select a top level variable here Line of Business.
- 2. Choose a subcategory eg: B-Private Passenger Auto Liability.
- 3. Select Aggregation AMB Group was chosen as the sub category.
- 4. Add the attribute Dimensions 10x10 to the filter.
- 5. Finally, choose Survival Ratios between 2 < SR <= 3 to complete the query.
- 6. Sort by Reserves Held to order the companies from largest to smallest by held reserves.

In tree view, any sub-category can be included once and acts as a refinement of the previous query. Within a few mouse clicks, a small number of Best's Financial Suite - P/C, US triangle groups can be identified matching the attributes selected.

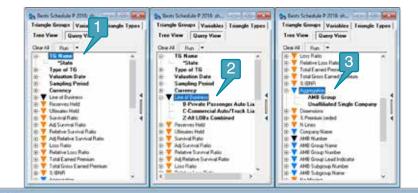
The results of tree view queries are shown immediately on selection of the filter. All operations are designed for maximum performance enabling analysts to obtain the data quickly and effortlessly.

6

Navigation via Query View

The query view navigation panel provides a more flexible methodology of constructing queries into the ELRF[™] Best's Schedule P 2019 database.

- Any variable can be searched with basic support for wild-cards;
- Single or multiple values can be selected from the same classification variable;
- Queries can be set to run automatically (default) or manually.



angle Groups Variables Triangle Types										
er View Query View Show	@ Preview Find									
w All Run + Trangle	Group	Line of Buseeus	Reserves Hold	UNimates Heikt	Survival Ratio	Ad Sorvival Flatio	Relative Survival Plato	Ad Relative Stational Ratio ?	Eners Flatio 7	Relative Loss Flato
TG Name	te kn Gp.(GL8_AL_10/10	Z4H08+Con	15,746,673	168,737,577	2.40	2.34	0.78	0.00	61.59	0.94
	re les Gas (GL 8_CAL_10x10	C-Commercial A	611.068	2,101,088	3.35	2.95	1.27	1.21	73.40	1.02
Type of 16 Patra	te Ins Go (CLR_PPA_10x10	S-Private Paces	11,045,001	75,512,001	2.58	2.45	1.10	1.22	69,72	0.96
Valuation Date	State Ins Co. 10956, Alt, 10x10	Z44L08xCom	1,101	21,360	2.63	2.46	0.85	0.84	68.04	1.04
Sampling Period	lives his Co., 20073, AL 10x10	ZALLOB; Cars.	296	Novi	11.38	(Norw)	3.63	Pionel	[Nore]	(Norw)
Currency Phone	State Ins Gip (G), 18570, AL 10-10	244L08xCom	29,851	382.271	1.54	1.51	0.49	0.52	00.98	1.20
	State Ins Gip (6), 18570, CAL, 10-10	CConversial A.	106	2,399	1.20	312	0.48	1.29	76.41	1.07
	State Ive Gep (G), 10570_FF94_10x10	S-Private Plants.	27,376	253.600	1.54	1.43	0.71	0.73	85.66	1.20
	State Inc Fund 3472, 44, 10v10	2 44 LOBs Com	411.129	1.552.394	4.22	4.04	1.95	1.30	80.07	1.22
Z-AB LOB+ Conhined	State Bar Ason Mullin, 11235 All 15x10	244L00s Com	38.579	70,224	5.00	4.77	1.61	1.63	50.65	9.77
V Reserves Held	e States Ins Co. Inc. 10646 All 10x10	Z Al LOB: Con	851	11,297	1.92	1.60	0.62	0.95	67.02	1.02
Villenates Held	States Ini Co. Inc., 10646, CAL, 10x10	CConnected A	0	(Norw)	Pionel	Direi	Morel	Planel	Norel	(None)
V Sarrival Ratio	e States Ine Co. Inc., 10646, PRN, 10x10	B-Foreite Places	600	6.008	2.04	1.86	0.92	0.81	63.45	0.97
Y Ad Sunival Ratio	ale Mutual Inc Co., 10720, 44, 10/10	241108x Cars	5.541	62,005	2.37	2.37	0.76	0.01	54.08	0.93
TRADING SUPPORT FLOO	ana State Fund 3475 All 10x10	Z Ali LORix Com	465.738	1,172,623	9.24	8.21	2.97	3.15	25.06	1.14
	tain States Healthcare FIRIT, 75575 AL 10x10	Z-Alt LOBs Com	54,620	200.089	2.63	3.45	0.04	1.75	36.76	1.47
	er State Mulual Ins Co. 860 All. 10v10	Z Alt LORe Com	54.563	1.013.256	2.05	2.67	0.92	0.91	60.18	0.92
	w State Mutual Ins Co. 860 CAL 10x10	CCorportid A	1.504	3.607	10.90	3.22	412	3.79	13.60	0.47
	er State Mutual Int Co. 860, PPA, 10x10	D-Private Plana	60.450	294.476	2.07	2.66	1.21	1.00	57.02	0.90
	win States Ins Exchange Bill, All, 10x10	ZALLORI Com	5.004	73,299	2.06	2.05	0.12	0.97	51.98	0.79
	em States Ins Exchange 640 CAL 10x10	C Commercial A	420	5.014	0.57	0.56	0.22	0.23	42.63	0.60
	Auto Ins Colo 201 856 At 1010	ZALOB/Con	1,561,626	11.525.472	2.49	2.50	0.60	0.05	65.28	0.99
	Auto Ini Con El 1856 CAL 10410	C-Committee A	241542	1,270,825	202	225	0.76	0.10	29.14	111
	Auto Inc Color (0), 856 (PPA, 10x10)	E Provide Passe	234,851	2.401.819	1.64	1.50	0.75	0.73	72.73	1.02
	Congeniustion Ins Fund, 4029, 48, 10x10	746(08) Com	5.628.766	10.402.205	815	1.08	2.94	338	80.98	1.22
	Fam Sep (5) 88 A8 10:10	Z Al LOBy Con	10.257.375	383.495.857	2.15	2.09	0.63	0.71	60.02	1.00
	Few Go (51, 18, CAL, 10/10	C Cosmercial A	533,103	2,677,303	2.09	1.91	0.79	0.78	76.47	1.07

In the example shown above, a query is constructed to show triangle groups having the following features:

- 1. Display all triangle groups containing 'State' in their name.
- 2. Select the following three lines of business:
 - a. B-Private Passenger Auto Liability;
 - b. C-Commercial Auto/Truck Liability;
 - c. Z-All LOBs Combined.
- 3. Choose aggregation levels:
 - a. AMB Group;
 - b. Unaffiliated Single Company.
- 4. Finally, select only the triangle groups with 10x10 Dimensions.

Any variable column can be sorted as the user desires.

Analytical tools:

- The Extended Link Ratio Family
 - ^o Mack
 - The bootstrap technique, and
- Link Ratio Techniques

ELRF[™] Best's Schedule P 2019 incorporates the Extended Link Ratio Family (ELRF) and Link Ratio Techniques (LRT) modules.

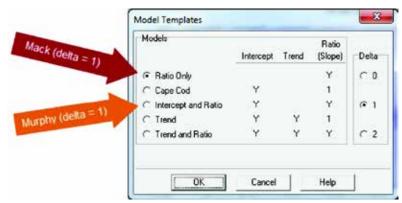
The default model in ELRF is the Mack method (equivalently volume weighted averages). This method is currently the most popular method in use amongst actuaries. It is a statistical regression formulation of the Link Ratio method known as the chain-ladder.

The bootstrap technique can be applied to any link ratio model in ELRF (including Mack).

A ratio 'to ultimate' can also be specified.

Extended Link Ratio Family (ELRF)

The Extended Link Ratio Family (ELRF) modeling framework formulates average link ratios as regression estimators and is extended to include intercepts (Murphy) and constant trends down each development year across accident years.



Any cumulative array, Incurred Losses, Paid Losses, Number of Claims Reported, and so forth can be analyzed in the ELRF modeling framework.

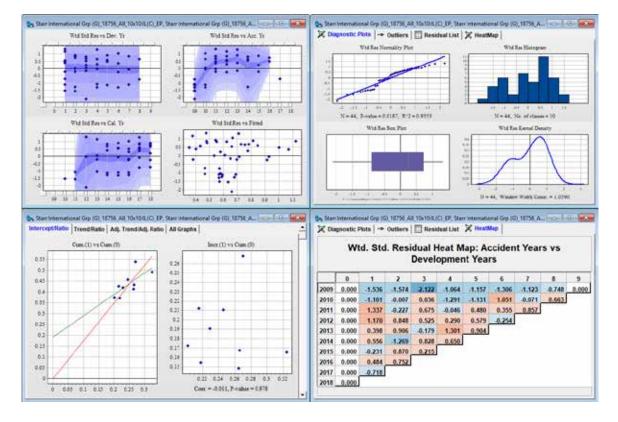
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	7-8	- and		4 203,310	1	4 912,618	1	8 57,000	* 90,600	To Officers				\$1,000,000.00		
	To Ultimate	2018		201.010	104,000	21,000	P6.250 96.359	50,739	4,184 54,598	30.00	#17,45A 38,225		Quantile Su	mmary for	Accident 1	ears
	-	2015	207,294	210,280	14.579	104,983	27,454	83,545 7,362	11,728	364,679	1,645,344	_	(Sa	mple Distri	ibution)	
		28%	201,201	208,455	135,458	91,442	67.728 8.758	8,64	45,513	200,056	1,197,812	Acchieve	nis.	01444	00%	39.35
			118.000	29,95	15,578	110,044	91,322	51,967	91,588 4311	304,045	1014307	2010	758,511	181,339	817,043 947,890	1,000,02
		2017	10,001	45,755				" data patrice	41.10	- 44.50	2,340.542	3845	1,111,030	1,148,139	1,204,504	1,201,75
		ant ans		217,349 217,349	105,542	100,016	85,001	41,452	6.458	80.005	201 101	2015	1.236.277	1.308.954	1.545.261	1.441.00
			10,000	217,589		100,000 10,000 10,000 10,000		258		Total To Official 2.797,050		2015 2017 2018	1.236,277 2,247,254 3,212,549	1,011,054	1,36,81 2,400,030 1,506,749	1,440,60 2,713,42 3,740,50

From dataset to estimating model parameters, calculating the forecast to running the bootstrap, the Extended Link Ratio Family (ELRF) is transparent, intuitive, and easy to use.

ELRF[™] also contains a number of statistical model diagnostics that measure how well the respective model fits the data. These diagnostics are not as widely used in the actuarial community as they should be.

When using link ratio based methods, it is critical that actuaries verify that the corresponding assumptions apply for the data.

An illustration showing these diagnostics for the Mack method applied to a Paid losses dataset is provided below. The diagnostics all show that there are issues with the method: there is a clear change in the residuals in the calendar (and accident) direction [top-left], the residuals are not normally distributed [top-right], an intercept is required [lower-left], and structure remains in the residuals [lower-right].



It is now common to supplement the use of the Mack or other similar methods with additional techniques used to derived a loss distribution. The most commonly used of such methods is called the bootstrap technique. The ELRF module also includes a bootstrapping module that obtains loss distributions for pure link ratio models (including Mack).

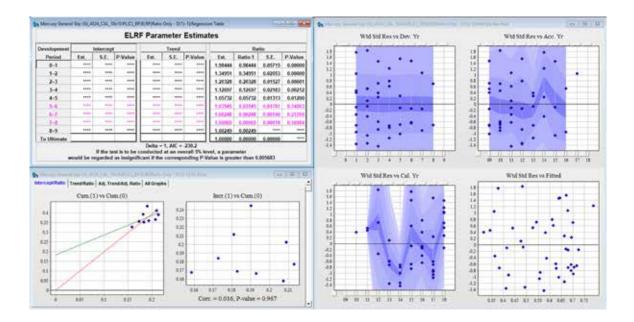
These analytical tools add significant power as:

- Standard actuarial methods are available within a flexible, easy to use graphical interface for all Best's Financial Suite - P/C, US loss triangle data;
- The ELRF[™] database structure provides a complete warehousing solution for all associated data, models, and notes;
- Extensions of actuarial methods formulated within a regression framework allow more advanced application of the standard methods including the bootstrap; and
- Comprehensive diagnostic tools are included to test whether models are appropriate for a company's data.

Brief examples of analytical tools

Comprehensive diagnostic tools assess link ratio methods applied within a regression framework. Link ratio methods are extended to include intercepts and trends. It is insufficient to simply compute an answer, rather the diagnostics should be used to assess whether the answer obtained from the method(s) are credible.

For instance, consider the Mack method applied to this Best's Financial Suite - P/C, US data.



When the residuals (trends in the data – trends in the method) are plotted versus the three time dimensions (development, accident, and calendar) it is clear the residuals versus calendar year are very volatile. Further, the link ratios do not have predictive power (the correlation between the development periods 0 and 1 is not statistically significant).

The mean reserve (175M) produced by the Mack method when completing the square is likely too low. At the very least the actuaries using the Mack method (or any method) need to be able to support the projections from the method.

			Accide	ent Per	iod vs	Develop	pment	Period	(Increr	nental	Foreca	nst)		
ſ	Cal.Per.Total.	0	1	2	3	4	5	6	1		9	To Ultimate	Outstanding	Ultimate
2013	43,133	12,742	12,544	8,292	6,487	4,940	2,375	1,566	113	30	114	0	1,623	45,583
2013	38,415	12,742	10,982	8,189	6,995	2,532	2,719	1,760	127	14	5	0	1,775	1,775
2014	50,545	17,682	17,407	14,136	10,913	8,263	4,428	2,896	210	55	211	0	7,800	85,055
2014	42,680	17,682	22,763	13,237	11,398	12,175	2,225	2,529	213	24	10	0	3,753	3,753
2015	61,752	22,763	22,409	15,665	11,761	9,261	4,711	3,061	223	59	224	0	17,560	90,498
2013	68,950	22,763	22,056	13,036	15,083	3,995	2,471	3,237	235	26	15	0	6,044	6,044
2016	76,321	25,780	25,379	16,500	13,245	9,955	5,064	3,312	240	63	241	0	32,120	97,275
4919	75,572	25,780	21,430	17,945	2,127	4,568	2,697	1,525	256	28	19	0	7,402	7,402
2017	83,607	23,257	22,895	17,630	13,838	10,400	5,291	3,460	251	56	252	0	51,188	101,630
2011	75,560	23,257	27,185	3,042	2,935	4,618	2,846	3,709	269	30	22	0	3,014	9,014
2018	84,539	21,222	20,892	14,719	11,553	8,683	4,417	2,889	209	55	210	0	63,628	84,850
2010	97,787	21,222	4,313	3,274	3.038	4,480	2,732	3,505	252	28	30	0	12,202	12,202
	Total Fitted/Observed		2019	2020	2021	2022	2023	2024	2025	2026	2027	Total To Ultimate	Total Reserve	Total Ultimate
Cal. Yr Totals	503,451	-	67,257	46,360	30,430	17,678	8,387	3,427	515	307	210	0	174,573	682,717
al. If rotan	598,144	5 6	7,792	7,288	6,560	6.381	4,617	3,517	255	37	30		21,898	21,898

The left most column shows the totals, by calendar year, for the fitted model mean (black numbers) and the observed losses (blue numbers). As indicated by the volatility in the residuals, the fitted means by calendar year oscillate at being above or below the observed values. Risk capital allocation would be important for this line.

The Mack method was applied to the Best's Financial Suite - P/C, US (2017) data for the same company and line of business for the previous year. The projected mean for the 2018 calendar year (excluding the first development period) is 60M. The observed losses in 2018 for accident year 2017 and prior years are 76.6M.

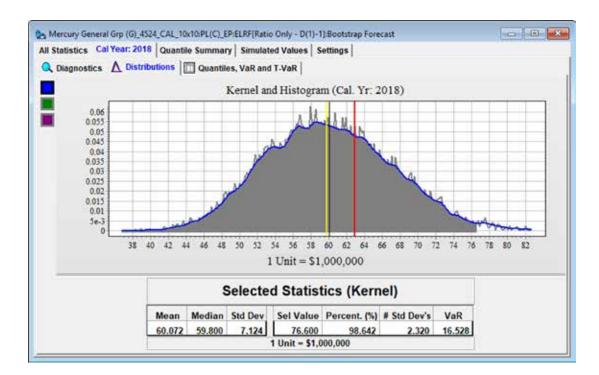
			Accide	ent Per	iod vs	Develo	pment	Period	(Increr	nental	Foreca	ast)		
	Cal.Per.Total.	0	1	2	3	.4	5	6	1	8	9	To Ultimate	Outstanding	Ultimate
2012	40,972	10,538	10,005	6,584	4,660	2,834	1,521	1,058	37	48	1	0	1,144	36,713
in	42,224	10,538	8,019	5,035	3,948	4,715	3,314	1,525	40	56	34	0	1,531	1,531
2013	43,844	12,742	12,098	8,418	6,304	4,003	1,954	1,291	45	59	1	0	3,350	44,791
8010	38,889	12,742	10,982	8,189	6,996	2,532	1,585	1,908	50	70	43	0	2,519	2,519
2014	49,955	17,682	16,788	14,350	10,603	6,696	3,384	2,237	78	102	2	0	12,498	77,571
	42,841	17,682	22,763	13,237	11,398	1,169	2,529	3,052	81	113	6.8	0	5,280	5,280
2015	59,639	22,763	21,612	15,902	11,428	7,128	3,603	2,381	83	109	2	0	24,732	82,587
	68,975	22,763	22,056	13,036	2,006	3,517	2,800	3,371	89	124	75	0	6,313	6,313
2016	74,216	25,780	24,477	16,751	12,634	7,881	3,983	2,632	91	120	2	0	44,093	91,30
200	75,681	25,780	21,430	3,174	2,309	3,915	3,108	3,735	- 99	138	84	0	8,331	8,33
2017	81,100	23,257	22,081	16,086	12,133	7,568	3,825	2,528	88	115	2	0	64,426	87,683
- 1970 - 1970	75,561	23,257	4,088	3,501	2.562	5962	3,139	3,739	. 99	.137	84		11,498	11,498
	Total Fitted/Observed		2018	2019	2020	2021	2022	2023	2024	2025	2025	Total To Ultimate	Total Reserve	Total Ultimate
al. Yr Totals	457,927	_	60,072	40,616	25,946	14,069	6,643	2,729	209	117	2	0	150,405	607,695
an II rears	457,290	1	6,761	6,325	6,254	5.077	4,877	3,743	185	161	84	600	19,933	19,933

The projected mean, 60M, is much lower than the actual losses for the 2017 and prior years, 76.6M.

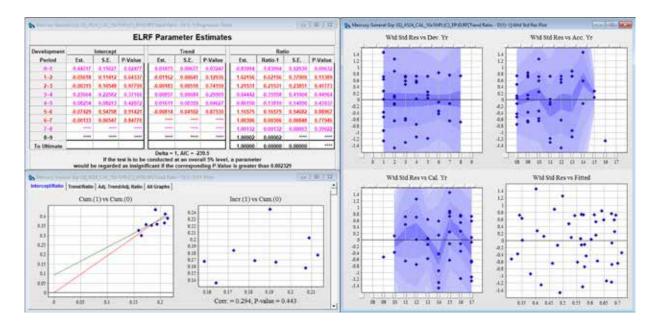
This was no hint in the 2017 data, after the Mack method was applied, that the losses for the next calendar year were going to deteriorate this way. One would want to hope that the reasons for the change in trend were understood by the actuarial team in advance.

Just how bad is the 76.6M loss versus the projected Mack mean of 60M?

If the bootstrap is run for the Mack method on the 2017 data, and the simulations centered on the Mack mean, then the probability of observing a loss higher than 76.6M is about 2% (see below). If the Mack method had been applied in 2017 and used to set the reserves (and there was no hint of the losses coming in 2018), then the loss of 76.6M would have incurred a substantial loss of risk capital.



What if the average trend down each accident year is fitted along with intercepts, trends, and link ratios?



The residuals now appear random about a zero trend but still exhibit volatility. The total mean reserve projected from this model is 187M.

			Accide	ent Per	iod vs	Develo	pment	Period	(Increr	nental	Foreca	ast)		
	Cal.Per.Total.	0	1	2	3	4	5	6	1	8	9	To Ultimate	Outstanding	Ultimate
2012	41,404	10,538	7,257	6,314	4,546	3,984	3,020	462	42	47	1	0	553	36,122
evie	42,224	10,538	8,019	5,035	3,948	4,715	3,314	3,865	67	56	42	0	3,883	3,883
2013	38,952	12,742	12,407	7,195	6,057	4,631	5,053	109	55	61	1	0	5,280	46,721
2013	38,889	12,742	10,982	8,189	6,996	2.532	878	6,962	97	73	54	0	7,067	7,067
2014	47,315	17,682	19,688	13,426	10,242	3,658	7,180	1,129	112	102	2	0	12,181	77,261
100.5	42,841	17,682	22,763	13,237	11,398	5,883	1,781	10,492	205	114	83	0	12,208	12,208
2015	61,506	22,763	21,345	12,871	10,715	7,941	10,718	155	122	115	2	0	29,768	87,623
ens	68,975	22,763	22,056	13,036	2,926	5,230	1,943	14,238	229	132	95	0	15,449	15,445
2016	74,995	25,789	25,059	11,294	10,441	12,419	14,350	-1,004	128	125	2	0	47,755	94,955
ZVIN	75,681	25,780	21,430	3,332	4,184	6,375	2,652	20,300	270	145	105	0	21,776	21,776
2017	79,938	23,257	36,549	16,515	13,908	8,232	15,639	.44	178	150	2	0	91,130	114,387
enn	75,561	23,257	5,905	5,309	5,193	11.126	3,565	22,548	380	169	118	0	26,559	26,559
	Total Fitted/Observed		2018	2015	2020	2021	2022	2023	2024	2025	2026	Total To Ultimate	Total Reserve	Total Ultimate
al. Yr Totala	457,562	-	67,840	42,285	38,277	22,917	14,859	201	304	152	2	0	186,833	644,123
al. Tr cotats	457,290		10,241	11,167	13,446	18,253	20,588	22,651	421	199	118		74,832	74,832

The difference between this estimate, 187M, and the Mack estimate, 175M, (13M) is not insubstantial relative to the total mean. Further, this is without taking into consideration a ratio to ultimate. Whichever total reserve amount is booked, a compelling narrative underscoring the choice is required.

However, if the full ELRF method was applied in 2017, then the losses observed in 2018 would still be higher than expected, but would not have been as adverse as if the Mack method was used.

The adverse development is not necessarily true adverse development but rather arises due to poor model selection.

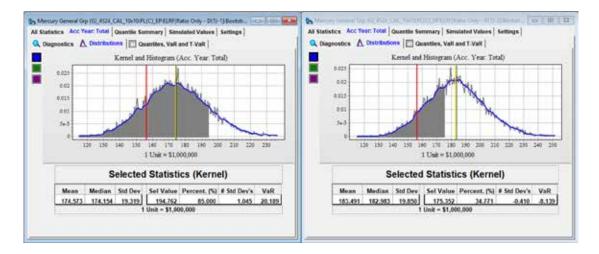
The bootstrap technique

The bootstrap technique can be applied to any link ratio method. Further, the user can enter in suitable model means overwriting the projected means allowing the bootstrap sample distributions to be associated with arbitrary forecasts.



For instance, the bootstrap technique applied to the Mack method (left) shows the bootstrap sample with the Mack mean on the total. If instead, we use the means obtained from the full ELRF model (ratio, intercept and accident year trends) we can still run the bootstrap on the Mack residuals but use the means from this method instead. This produces the result on the right.

Simulations of the distributions can be examined by accident year, calendar year, or total (the latter is shown below).



In this way, we observe that the Mack method severely under predicts the loss reserve distribution arising from the bootstrap samples – assuming the full ELRF model is generating reasonable results.

Value-at-Risk (V@Rs) and Tail-Value-at-Risk (T-V@Rs) are calculated for bootstrap distributions. An example is given for the Mack method below.

	and a lar	Distribution	a													
					Quanti	le Statis	stics, V	aR and	I T-VaR	(Acc. Y	ear: To	otal)				
		Sec	gie		1	Ker	uit			LogNo	rmal			Garri	tia i	
	Quedle.	# 5.0.'s	VaR	T.VaH	Quantile	# 5.0.%	VaR	T.VaR	Quantile	\$5.0.5	Vall	T.VaR	Quantile	15.0.5	VAR	T.VaR
99.6	229.537	2.845	54,964	60,531	729.710	2,854	55.137	61,137	233.301	3.640	18,728	67,230	234.605	2.900	\$6,032	63.510
99.5	228.557	2,784	53,784	59.287	228.321	2.782	53,748	59,179	231.291	2.936	56.718	45.321	228.808	2,807	54,235	61.828
99.4	226.871	2,707	52,298	58,290	226.701	2,598	52.128	58.192	229.627	2,850	35.854	63.745	227,313	2,730	52,740	60.435
99.7	224.671	2.503	50,058	57,225	225.439	2.612	50.465	57.650	220.204	2.776	\$3,679	62.599	226.031	2,164	51.458	59.242
99.2	223.662	2.50	49.088	56.275	223.893	2.551	49.320	56.552	225.958	2.212	\$2.385	61.224	224,906	2,605	50.333	58.13/
99.1	222.658	2,489	48.085	55.431	222.957	2,504	48.364	55.680	225.848	2,654	\$1,275	60.179	221.902	2.553	49,329	57.267
99.0	222.239	2,467	47,666	54,680	222.600	2.459	47,507	54.474	224.847	2.682	50.274	59.238	222.994	2.506	48.421	56.427
58.0	215.730	2.130	41.157	49.295	215.867	2.137	41.234	43,405	218.027	2,245	43.454	52.873	216.762	2.184	42.109	50.707
97.A	211.042	1.929	37,269	45,994	212,849	1,940	37.475	45.077	213,018	2,031	39.245	48.990	212.673	1,982	38,300	47,121
96.0	209.430	1.804	34.857	43.428	209.465	1,806	34.892	43.447	210.710	1.871	36.137	46.549	229.981	1.833	35.408	44.585
95.0	297,236	1.691	37.663	41.483	207,345	1,696	32.772	41.626	208,219	1.742	33.645	43.889	297.649	1,712	33.076	42.509
94.0	205.427	1.597	30.854	39,861	205.547	1.603	30.974	39.967	206.123	1.633	31,550	42.003	205.679	1.610	31.106	40.758
93.0	263.957	1.521	25.384	38.464	203.972	1.522	29.399	38.477	204.305	1.539	29.732	40.377	203.963	1.521	29.390	39,263

In addition to the analyses above, Bornhuetter-Ferguson calculations are also available.

				Born	huetter-F	Ferguson	& Expecte	d Loss F	Ratio Fore	cast			
	Premium	Expected	Ultimate	Paid	Exp.	Loss Ratio Me	thod	U	nk Ratio Metho	d	В	om Ferg Metho	d
ACC. TF	Premium	Loss Ratio (%)	Ratio	To Date	Ultimate	Outstanding	Ratio (%)	Ultimate	Outstanding	Ratio (%)	Ultimate	Outstanding	Ratio (%)
2009	75.286	68.11	1.000	51,232	51,279	47	68	\$1,232	0	68	51,232	0	61
2010	67,501	70.11	1.002	47,290	47,327	37	70	47,408	118	70	47,407	117	71
2011	61,470	68.40	1.003	41,801	42,043	242	68	41,932	131	68	41,932	131	61
2012	50,850	72.35	1.006	36,648	36,790	142	72	36,854	206	72	36,854	206	12
2013	66,069	68.78	1.041	44,160	45,442	1,282	69	45,983	1,823	70	45,961	1,801	71
2014	93,027	89.40	1.101	77,256	83,164	5,908	89	85,056	7,800	91	84,882	7,626	9
2015	108,962	84.29	1.241	72,938	91,849	18,911	84	90,498	17,560	83	90,760	17,822	83
2016	121,009	82.82	1.493	65,155	100,219	35,064	83	97,275	32,120	80	98,247	33,092	81
2017	128,480	84.82	2.015	50,442	108,972	58,530	85	101,630	51,188	79	105,328	54,886	82
2018	144,777	72.59	3.998	21,222	105,087	83,865	73	84,850	63,628	59	100,026	78,804	6

Link Ratio Techniques (LRT)

The standard link ratio methods as calculated automatically in the LRT module are:

- Chain Ladder (Volume Weighted Average)
- Arithmetic Average
- Geometric Average
- Average Without Min/Max
- Last N Diagonal Weighted Average
- Last N Diagonal Average
- Last N Diagonal Geometric Average
- Maximum Ratio
- Minimum Ratio
- Weighted Excluding High/Low
- Average Without Min/Max of Last N
- Weighted Average Without Min/Max of Last N
- Two parameter smoothing
- Three parameter smoothing

By default, N is set to be 4 periods, but N can be changed to any calculable value. A ratio 'to ultimate' can also be set.

Brief examples of analytical tools

All commonly used standard actuarial methods are available. These methods can be applied to any data type including Incurred Losses (below) and Paid Losses. Smoothing techniques are also included.

			S	election	15					
Method	0-12	12-24	24-36	36-48	48~60	60-72	72-84	84-96	96~108	To Ultimate (24 Periods
Standard Chain Ladder	1.43945	1.16231	1,09391	1.07417	1.02289	1.02423	1.00200	1.00052	1.00250	
Arithmetic Average	1.43889	1.16139	1.09295	1.07374	1.02319	1.02506	1.00202	1.00051	1.00250	
Geometric Average	1.43794	1.16055	1.09285	1.07300	1,02308	1.02479	1.00202	1.00051	1.00250	
Average Without Min/Max	1,43754	1.17031	1.09157	1.07351	1.02523	1.01329	1.00002	1.00051	1.00250	R
Wid. Average of Last 9	1.43945	1.16231	1.09391	1.07417	1.02289	1.02423	1.06200	1.00052	1.00250	HC
Average of Last 9	1,43889	1.16139	1.09295	1.07374	1.02319	1.02506	1.00202	1,00051	1,00250	
Geom. Average of Last 9	1.43794	1.16055	1.09285	1.07300	1.02308	1.02479	1.00202	1.00051	1.00250	
Maximum Ratio	1.52621	1.20675	1.12007	1.12219	1.04103	1.06642	1.00651	1.00091	1.00250	
Minimum Ratio	1.36101	1.06247	1.07272	1.02620	0.99925	1.00725	0.99953	1.00012	1.00250	
Weighted Ex High/Low	1.43760	1.17113	1.09193	1.07534	1.02524	1.01334	1.00002	1.00052	1.00250	
Average Without Min/Max of Last 9	1.43754	1,17031	1.09157	1.07351	1.02523	1.01329	1.00002	1.00051	1.00250	
Weighted Average Without Min/Max of Last 9	1.43760	1.17113	1.09193	1.07534	1.02524	1.01334	1.00002	1.00052	1.00250	
Judgement	1.43945	1.16231	1.09391	1.07417	1.02289	1.02423	1.00200	1.00052	1.00250	1.00000
Industry Data	1.42000	1.18000	1.09000	1.05000	1.03300	1.02000	1.01500	1.01000	1.01000	1.02265
2-par Smoothing	1.42643	1.20591	1.09943	1.04801	1.02318	1,01119	1.00541	1,00261	1.00126	1.00118
3-par Smoothing	1.43822	1.17175	1.08857	1.05158	1.03229	1.02124	1.01449	1.01017	1.00731	1.02265
Final Selection	1.43945	1.16231	1.09391	1.07417	1.02289	1.02423	1.00200	1.00052	1.00250	1.02265
Product	2,11689	1,47063	1,26527	1,15665	1.07679	1.05269	1.02779	1.02574	1.02521	1.02265

Further information

To see the database and analytical tools in action please visit: www.insureware.com

If any modeling support is required for a particular segment by any Best's Financial Suite - P/C, US subscribers, Insureware can provide this support on a fee-for-service basis.

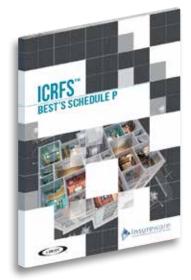
Contact info@insureware.com for more information.



Introducing ICRFS[™] Best's Schedule P 2019

You have ELRF™ Best's Schedule P 2019 and want more modeling power?

Insureware has created ICRFS[™] Best's Schedule P 2019 for you.



This premium application from Insureware adds the innovative probabilistic modeling frameworks of ICRFS[™] to the functionality of ELRF[™] Best's Schedule P 2019.

The Probabilistic Trend Family (PTF) modeling framework enables analysts to describe the trends in the data in all time directions (development, accident, and calendar) along with the volatility around those trends. The Multiple Probabilistic Trend Family (MPTF) modeling framework extends this further by also including correlations between lines of business – measured from the data.

A comparison of the list of features can be found below.

and modeling transeworks	ELRI** Best's Schedule P 2018	KRUS** Best's Schedule P 2018	Data and modeling transworks	ELRF = Best's Schedule P 2018	ERFS** Best's Schedule P 2011
Database			Extended Link Ratio Family (ELRF)		
st's Financial Suite - P/C, US data by LoB and total	Yes	Yes	Mack	Yes	Ye
Associated key fields	Yes	Yes	Marphy	Yes	Ye
Industry Totals	Yes	Yes	Trends (down accident years) and intercepts	Yes	Ye
I financial information including:			Optimisation	Yes	Ye
Reserves and Ultimates Held	Yes	Yes	Bornhuetter-Ferguson	Yes	Ye
Gross and Net Premium	Yes	Yes	Bootstrap	Yes	Ye
%IBNR	Yes	Yes	Quantiles, V@Rs, and T-V@Rs	Yes	Ye
Total Loss Ratios	Yes	Yes	Probabilistic Trend Family (PTF)		6
Survival Ratios	Yes	Yes	Full trend identification (including calendar)		Yes
Ratios relative to industry	Yes	Yes	Volatility quantification		Yes
Financial Suite - P/C, US triangles			Modeling wizard		Yes
Paid Losses	Yes	Yes	One year ahead statistics (CDR)		Yes
Case Reserve Estimates	Yes	Yes	Liability stream		Yes
Incurred Losses (not including BLILK and IBNR)	Yes	Yes	Risk capital by Act. or Cal. Year		Ye
Bulk and IBNR	Yes	Yes	Reinsurance		Yes
Premium	Yes	Yes	Variation in Mean Ultimate		Ye
Number of Claims Reported	Yes	Yes	Quantiles, V@Rs, and T-V@Rs		Yes
Number of Claims Closed	Yes	Yes	Multiple Probabilistic Trend Family (MPTF)		
Additional Triangles	1 1		Full trend identification (including calendar)		Ye
Reserves Held	Yes	Yes	Volatility quantification		Yes
Ultimates Held	Yes	Yes	Correlations		Yes
Link Ratio methods			One year ahead statistics (CDR)		Ye
Link Ratio Techniques (LRT)	Yes	Yes	Liability stream		Yes
ate Link Ratio Techniques (AURT)	Yes	Yes	Risk capital by Acc. or Cal. Year		Te
ayment Per Claim Incurred (PPCI)	Yes	Yes	Reinsurance		Ye
Projected Case Estimates (PCE)	Yes	Yes	Variation in Mean Ultimate		Ye
Bornhuetter-Ferguson (BF)	Yes	Yes	Solvency 8 one-year ahead metrics		Ye
Fisher-Lange (FL)	Yes	Yes	Ultimate year risk horizon metrics		Ye

ICRFS[™] Best's Schedule P 2019 empowers you to answer questions like:

- Are our company's loss costs similar to our competitors?
- How do our company's trends, risk diversification, and loss ratios rank in the industry?
- What correlations should be used to calculate our risk diversification?
- Which companies could be targeted for reinsurance or acquisition?
- What Lines of Business contribute to distress in the event of a 1/200 event next calendar year?



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 has advised on a wide-range of insurance matters including:

- Reserve due diligence;
- Mergers and Acquisitions;
- Assessing risk capital and Solvency II capital requirements for submissions to regulators and rating agencies;
- Underwriting and pricing; and
- Reinsurance transactions.

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

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